Feasibility Report

8 Miles Avenue and 1265 Riverway Drive, Kelso

Department of Communities, Housing and Digital Economy

02 June 2023

→ **The Power of Commitment**



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1. Introduction

1.1 Purpose of this report

This Feasibility Report has been prepared for the Department of Communities, Housing and Digital Economy (DCHDE) for land located at 8 Miles Avenue and 1265 Riverway Drive, Kelso (the subject site) described as Lot 1 and 2 on RP741376. This report documents the potential of the subject site to be redeveloped with a multiple dwelling.

1.2 Scope and limitations

The following tasks have been undertaken as part of this report:

- Identify the *Townsville City Plan 2014 (V 2022/02)* (Planning Scheme) mapping which applies to the subject site (zoning maps, overlay maps, local maps, etc.)
- Extract and document relevant Planning Scheme provisions for the subject site that have bearing on the subject site's maximum yield (site cover, net density, maximum height, car parking, footpath/road dedications, landscaping, overlay constrained land, etc.)
- Calculation of highest and best use and potential unit development yield based on the Planning Scheme development parameters for the relevant zone, identified site constraints and surrounding developments in the area
- Prepare an indicative building footprint / layout sketch based on the proposed development yield
- Undertake Before You Dig Australia (BYDA) and Townsville City Council (TCC) infrastructure location searches
- Assessment of the capacity of the existing lot connections based on yield calculations (water, sewer and stormwater)
- Undertake flow and pressure test and review results and indicate whether available water main performance is suitable for domestic service requirements
- Determination of the type of connection and size required to service the proposed number of dwellings
- Outline the results of the investigation and recommend any required upgrades including indicative construction costs
- Preparation of concept sketch showing the location of the existing services and proposed upgrades
- Contour and detail survey
- Geotechnical investigation.

1.3 Limitations and qualifications

This report has been prepared by GHD for the Department of Communities, Housing and Digital Economy and may only be used and relied on by the Department of Communities, Housing and Digital Economy for the purpose agreed between GHD and the Department of Communities, Housing and Digital Economy as set out in Section 1 of this report. GHD otherwise disclaims responsibility to any person other than the Department of Communities, Housing and Digital Economy arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report. The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

This report has been prepared based on the availability of information at the time of preparation. Where relevant, information provided to GHD by Government Authorities (such as TCC online information) may be subject to change without notice.

It is noted that the development parameters defined in Section 2.3 of this report have been prepared based on the *Townsville City Plan 2014 (V 2022/02)* and GHD's experience in calculating development yields with similar planning and site constraints.

The potential development yield figures produced within this document are approximate only. Actual yield will be dependent on a range of design parameters including, but not limited to, mix of lot sizes, lot configuration, setbacks, building design, car parking requirements, private open space provisions and supporting infrastructure capacity.

GHD has prepared the indicative cost estimate using information reasonably available to the GHD employees who prepared this report; and based on assumptions made by GHD. The cost estimate is indicative only. Actual prices, costs and other variables may be different to those used to prepare the cost estimate and may change. Unless as otherwise specified in this report, no detailed quotation has been obtained for actions identified in this report. GHD does not represent, warrant or guarantee that the project can or will be undertaken at a cost which is the same or less than the cost estimate.

2. Town planning assessment

2.1 Subject site

The relevant details for the subject site are presented in Table 1.

Table 1 Subject site details

Item	Details
Site Address and Real Property Description	8 Miles Avenue and 1265 Riverway Drive, Kelso Lot 2 on RP741376 Lot 1 on RP741376
Local Government Area	Townsville City Council (TCC)
Planning Scheme	*Townsville City Plan 2014 (V 2022/02)*
Site Area	1,618m^2
Zoning	Low Density Residential Zone

The location of the subject site is presented in Figure 2-1.



Figure 2-1 Site Location

Source: QLD Globe

2.1.1 Subject site characteristics

The subject site has a frontage of 20.115m onto Miles Avenue and 20.115m onto Riverway Drive. The site is surrounded by low density dwellings with low density dwellings adjoining both sides of the subject site. The subject site is located within proximity to Rasmussen State School, Apex Dog Park, Good Shepherd Catholic School and Good Shepherd Community Centre.

2.2 State planning matters

2.2.1 State Assessment and Referral Agency

The State Assessment and Referral Agency (SARA) provides a whole of government approach to land use planning and acts as an assessment agency for development with the potential for significant State Planning Impacts.

2.2.1.1 Far North Queensland Regional Plan



Figure 2-2 DA mapping, regional plan

Source: Department of State Development, Manufacturing, Infrastructure and Planning

As detailed in Figure 2 above, the subject site is identified as being in the Townsville Urban Area under the North Queensland Regional Plan 2020-2045 which supports infill development in urban areas.

2.2.1.2 State transport corridor

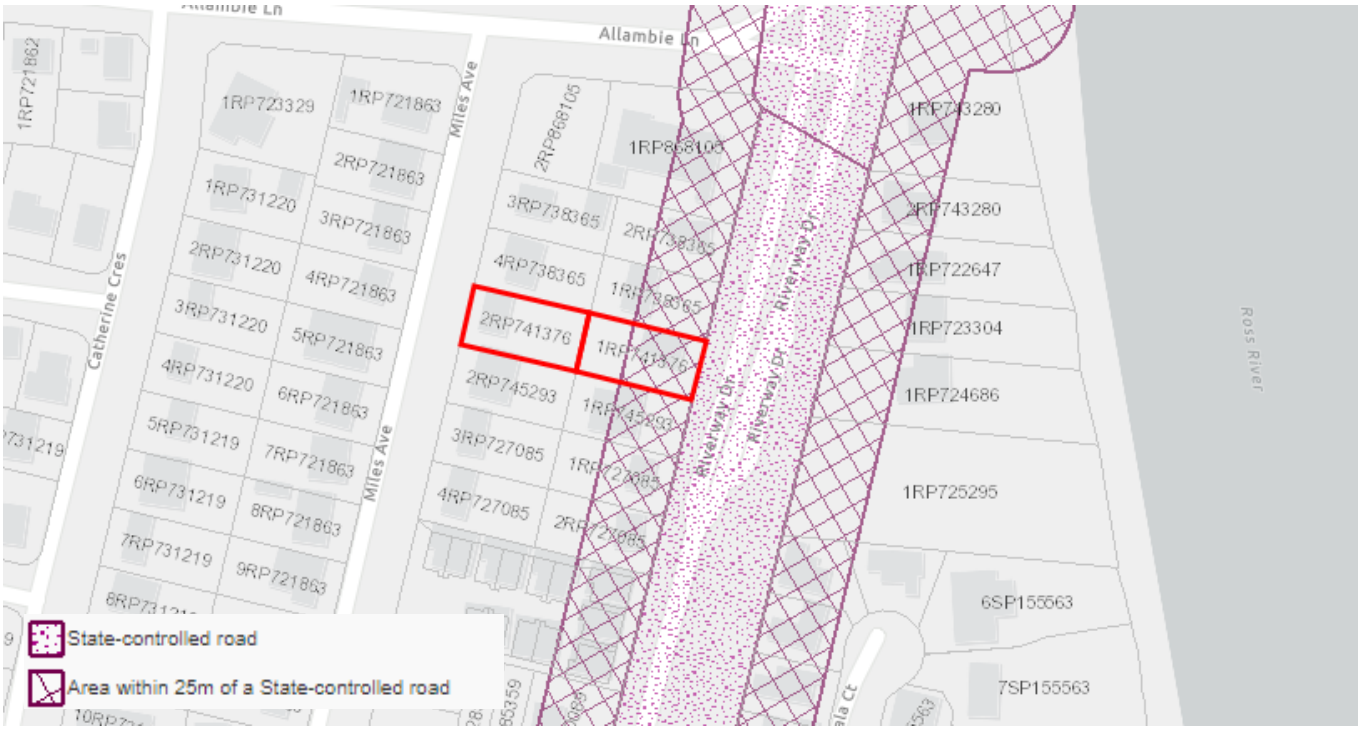


Figure 2-3 DA mapping – State transport corridor

Source: Department of State Development, Manufacturing, Infrastructure and Planning

The site is mapped within the State transport corridor due to its proximity to a State-controlled road (Riverway Drive). A development application for a Material Change of Use, other than an excluded material change of use, that is assessable development under a local categorising instrument, within 25m of a State-controlled road would require referral to SARA to assess the potential impacts of the development on the State-controlled road. If this development is undertaken by DCHDE for the purposes of social housing it would not be considered assessable development under a local categorising instrument and as such would not require referral. However it is recommended input be sought from Department of Transport and Main Roads (TMR) on the proposed development.

2.2.2 State Planning Policy

The State Planning Policy (SPP) sets out the State's interests in land-use planning and development across Queensland. The SPP was updated to a consolidated document in 2017 to coincide with the release of the *Planning Act 2016*. The SPP must be considered as part of any development application under the *Planning Act 2016*. Part 2 of the Planning Scheme states all State planning policies have been appropriately reflected in the Planning Scheme.

The site is not impacted by any State interests that aren't appropriately reflected in the Planning Scheme.

2.3 Planning Scheme provisions

2.3.1 General

The Planning Scheme applies to the development of the subject site. The Planning Scheme is purposed to regulate urban development, and provisions specific design requirements upon land within the TCC local government area (LGA). The below sections outline the provisions of the Planning Scheme and detail its relevance to the proposed development of the subject site.

2.3.2 Zoning

As shown in Figure 2-4, the subject site is classified as being within the Low Density Residential Zone.

1. *'The purpose of the Low Density Residential Zone code is to provide for predominantly dwelling houses.*
2. *The particular purpose of the code is:*
    a. *Primarily accommodate dwelling houses and dual occupancy dwellings;*
    b. *Provide for housing choice and affordability by allowing for a range of lot sizes;*
    c. *Maintain the low-rise and lower density character of Townsville's suburbs;*
    d. *Maintain a high level of residential amenity; and*
    e. *Achieve accessible, well-serviced and well-designed communities.'*

Additionally, item 3(g) states, low-rise multiple dwellings, residential care or retirement facilities may be acceptable within this zone where provided in locations that are within a convenient walkable distance to centres, public transport and community activities, and where of a scale that is consistent with the local character.



Figure 2-4 Zone map

Source Townsville City Council interactive mapping

2.3.3 Land use definition

The proposed development of the subject site for low rise multi-unit dwellings is defined under the Planning Scheme as 'multiple dwellings' as per below:

'Premises containing three or more dwellings for separate households.'

2.3.4 Category of assessment

Table 2 provide the relevant category of assessment for residential development under the Low Density Residential Zone for the following uses:

– Dwelling house

– Dual occupancy
– Multiple dwelling.

Table 2 Category of Assessment –Low Density Residential Zone

Use	Category of Assessment – Low Density Residential Zone	Consistency
Dwelling house	Accepted Development subject to requirements of the Flood Hazard Overlay Code and Airport Environs Overlay	Consistent
Dual occupancy	Accepted Development subject to requirements of the Flood Hazard Overlay Code and Airport Environs Overlay	Consistent
Multiple dwelling	Impact assessment	Consistent, apart from the car parking requirements

A multiple dwelling development would be subject to the assessment against all relevant sections of the Planning Scheme including the following codes:

– Low Density Residential Zone Code
– Airport environs overlay code
– Flood hazard overlay code
– Landscape code
– Transport impact, access, parking code

2.3.5 Overlays

The subject site is subject to the following overlays contained within the Planning Scheme:

2.3.5.1 Airport Environs Overlay



Figure 2-5 Airport Environs Overlay

Source Townsville City Council interactive mapping

The subject site is identified within the Airport Environs Overlay and more specifically included within the Runway Separation Distances – 13km and the Operational Airspace – airspace more than 90m above ground level. The Airport Environs Overlay Code addresses development issues within the vicinity of airports and aviation facilities. This overlay will not impact the proposed multiple dwelling development.

2.3.5.2 Flood hazard Overlay



Figure 2-6 Flood hazard Overlay

Source Townsville City Council interactive mapping

The subject site is identified within the Flood Hazard Overlay and more specifically the Medium Hazard Area and the Low Hazard Area. This purpose of this overlay is to manage development outcomes in flood hazard areas so that risk to life, property, community, economic activity, and the environment during future flood events is minimised, and to ensure that development does not increase the potential for flood damage on-site or to other property. The proposed development will be required to achieve a minimum habitable floor level of 300mm above the defined flood event, and the floor level of all non-habitable rooms will need to be above the defined flood event and ensure it does not result in a worsening of flooding on the site or on neighbouring properties. A flood search was done through Townsville Flooding MAPS (current as 31/05/2023). The proposed development will be required to achieve a minimum habitable floor level of 23.68m (300mm freeboard above the defined event of 23.38m). The Draft Architectural Sketches prepared by Architects Dovey and Associates (project number C086FO) propose three ground floor units. To achieve the minimum habitable floor level these units will need to be built between 0.57m and 0.07m above ground level. It is unlikely this will impact the proposed developments ability to remain below the maximum building height of 8.5m.

2.3.5.3 Road hierarchy overlay



Figure 2-7 Road Hierarchy Overlay

Source Townsville City Council interactive mapping

The subject site is identified within the Road Hierarchy Overlay and more specifically the Sub-Arterial Road Sub-Category. This overlay ensures that development implements the policy directions of the specific elements of the Strategic Framework and is suitable for the location. Riverway Drive is a State-controlled Road therfore, it is recommended that access be obtained from the lower order road (Miles Avenue). It is unlikely this will impact the achievable yield on site.

2.3.5.4 Infrastructure road noise corridor overlay

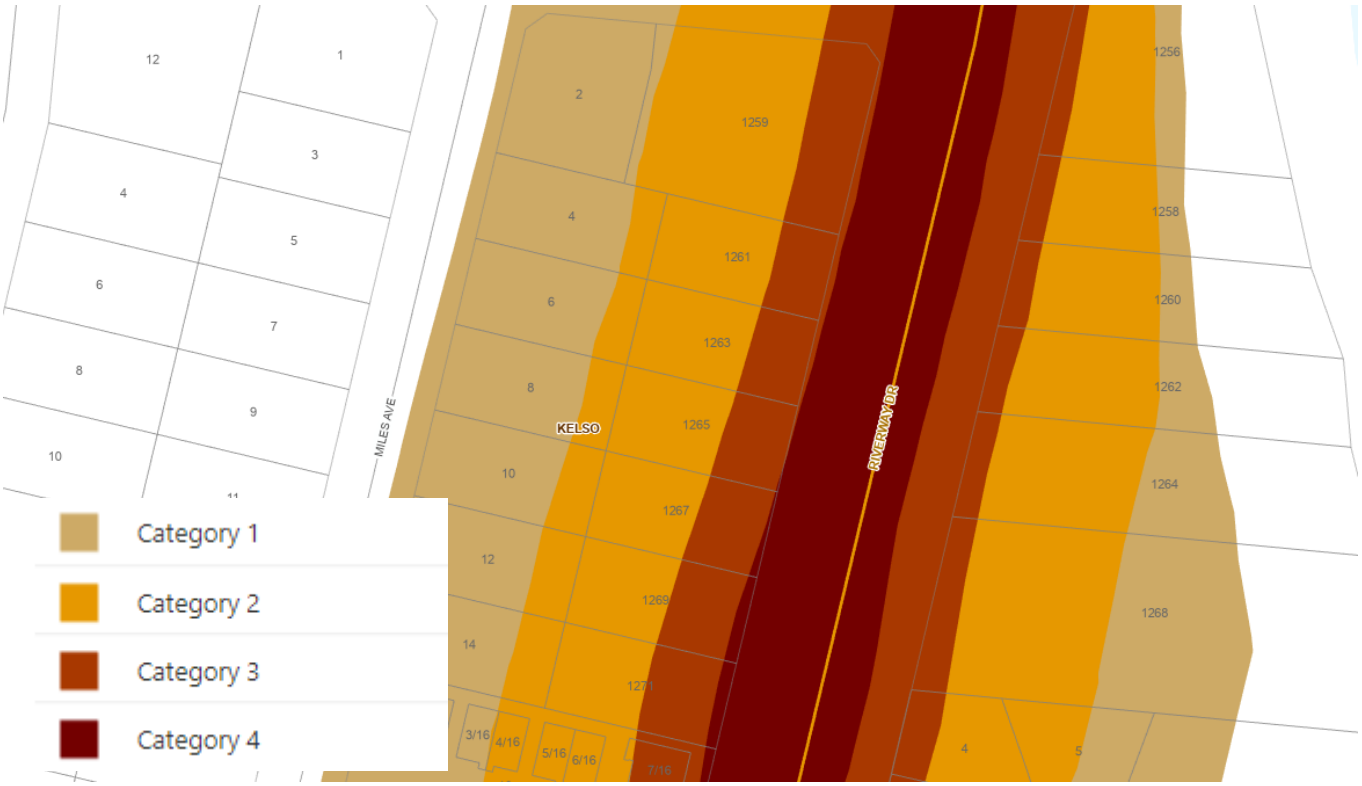


Figure 2-8 Infrastructure Road Noise Corridor Overlay

Source Townsville City Council interactive mapping

The subject site is identified within the Infrastructure road noise corridor overlay and more specifically the road noise corridor –Categories 0 – 4 (Riverway Drive is a State-controlled Road). There is no overlay code associated with the Infrastructure road noise corridor overlay however, the proposed development will also need to comply with the requirements of Queensland Development Code MP4.4 – Buildings in a transport noise corridor, which may require the implementation of noise attenuation measures.

2.3.6 Other Planning Scheme provisions

Table 3 provides the provisions contained within the Planning Scheme applicable to the Low Density Residential Zone and the proposed use and include:

- Site area and location requirements
- Building height
- Site cover
- Setbacks
- Car parking
- Private open space
- Open space.

Table 3 Planning Scheme provisions and Acceptable Outcomes in Townsville City Plan 2014 (V 2022/02)

Provision	Low Density Residential Zone Code
Site Area and Location Requirements	Where for a multiple dwelling, the premises: Is located within 400m of a centre zone or public transport stop on a major road; Has a minimum site area of 1000m^2 and 20m frontage where for a multiple dwelling; Is locate within 400m of a park. *AO21 of the Low Density Residential Zone Code*

Provision	Low Density Residential Zone Code
Maximum Building Height	Building Height does not exceed 2 storeys and 8.5m if it is within 10m of a site boundary, and 3 storeys if it is 10m or more from a site boundary; and The maximum length of any wall is 12m. *AO22 of the Low Density Residential Zone Code*
Maximum Site Cover	Maximum of 65% *AO22 of the Low Density Residential Zone Code*
Setbacks	**Front setback:** Within 20% of the average front setback of adjoining buildings; or Where there are no adjoining buildings, 3m A landscape area within a minimum dimension of 1m is provided along the full frontage of any road frontage (excluding crossover and pedestrian access only). **Side setback:** 1.5m for a wall up to 4.5m high; 2m for a wall up to 7.5m high; 2.5m for any part of a wall over 7.5m high *AO23.1, AO23.2, AO23.3, AO23.4 of the Low Density Residential Zone Code*
Car Parking	Vehicle parking structures are located: Behind the building setback; or Behind the building; or At basement level. *AO16 of the Low Density Residential Zone Code* One point seven (1.7) spaces per dwelling; Point two (0.2) spaces per dwelling for visitors (and one (1) dedicated car washing bay for the entire development). A dedicated car washing bay is not required where there are 5 or less dwellings provided. A dedicated car wash bay also may be integrated with visitor parking to serve both functions. *SC6.10 Parking Rates Planning Scheme Policy*
Minimum Communal Open Space Provisions	Sufficient communal open space is provided to create flexible spaces suitable for a range of activities. *PO30 of the Low Density Residential Zone Code* Communal open space provides facilities including landscaping and shade treatments such as green roofs, green walls or community gardens contribute to the attractiveness of these spaces. *PO31 of the Low Density Residential Zone Code*
Minimum Private Open Space Provisions	**Ground floor:** A minimum area of 35m^2, A minimum dimension of 3m; and Clear of any utilities such as gas, water tanks or air-conditioning units. **Above ground:** Balconies are provided with: A minimum of 9m^2 for 1 bedroom unit or 16m^2 for 2 or more bedroom unit; With a minimum dimension of 3m; and Clear of any air conditioning unit or drying space. *AO29.1, AO29.2 of the Low Density Residential Zone Code*

2.3.7 Potential development site yield

The Planning Scheme also allows for yield by maximum site cover as per the provisions of the Planning Scheme. A maximum potential yield of **18, two bedroom units** or **22, one bedroom units** could be achieved over the subject site, based on the below assumptions:

– A total development site area of 1,618m²
– A maximum building height of 2 storeys
– A maximum site cover of 65%
– 2 bedroom, 2 bathroom unit dwelling configurations and 80 m^2 of GFA per unit
– 1 bedroom, 1 bathroom unit dwelling configurations and 65 m^2 of GFA per unit
– A development efficiency of 70% to account for loss of floor space through stairways, entrances etc.

Table 4 Potential development site yield under the Planning Scheme

Potential development yield	Calculation	Number of Multi-unit Dwellings
Site Cover	$Site\ Cover = 65\%$ $Subject\ Site\ Cover = 0.65\ \times 1618$ $Subject\ Site\ Cover = 1051.7$	Developable Site Cover = 1051.7m^2
GFA Calculation	$Permitted\ GFA = Storeys \times Site\ Cover$ $Permitted\ GFA = 2 \times 1051.7$ $Permitted\ GFA = 2103.4$	Permitted GFA = 2103.4m^2
Two bedroom unit	$Efficiency = 70\%$ $GFA = 0.7 \times 2103.4$ $GFA = 1472.38$ $Yield = \frac{GFA}{Unit\ Size}$ $Yield = \frac{1472.38}{80}$ $Yield = 18.40$	**18, two-bedroom units**
One bedroom unit	$Efficiency = 70\%$ $GFA = 0.7 \times 2103.4$ $GFA = 1472.38$ $Yield = \frac{GFA}{Unit\ Size}$ $Yield = \frac{1472.38}{65}$ $Yield = 22.65$	**22, one-bedroom units**

Further consideration of physical site constraints and limitations has been undertaken through the Draft Architectural Sketches prepared by Architects Dovey and Associates (project number C086FO) and the associated discussion below to provide a more accurate yield for the site.

2.3.7.1 Adopted yield

The Draft Architectural Sketches prepared by Architects Dovey and Associates (project number C086FO) consider a number of design aspects to achieve an accurate yield on site. The sketches demonstrated that a yield of **6, two**

bedroom units and 6, one bedroom units can be achieved on the subject site. In order to achieve this yield, the following aspects require consideration:

The proposed development complies with the Planning Scheme provisions for site area and frontage, building height, setbacks, site cover, private open space, and communal open space.

– **Site Area and Location Requirements:** The subject site complies with the site area and location requirements prescribed in Acceptable Outcome AO21 of the Low Density Residential Zone which state:

  The premises:

  a. Is located within 400m of a centre zone or public transport stop on a major road;

  b. Has a minimum site area of 1000m^2 and 20m frontage where for a multiple dwelling;

  c. Is locate within 400m of a park.

  The subject site is located roughly within 170m of a District Centre Zone, has a site area of 1,618m^2 and a site frontage of 20.15m on both the Miles Avenue and Riverway Drive and is within 222m of Apex Park. Therefore, a Multiple Dwelling development on the subject site would comply with Acceptable Outcome AO21 of the Low Density Residential Zone Code and would be considered **'consistent'** with the Planning Scheme.

– **Car parking numbers**: The Draft Architectural Sketches propose 13 parking bays in lieu of the 23 parking bays prescribed in Schedule 6.10 of the Parking Rates Planning Scheme Policy. The proposal would be required to demonstrate the development can accommodate peak parking demand without overflow of car parking on nearby properties or on-street, in accordance with the relevant planning scheme requirements. The provision of one car park per unit is considered to satisfy DCHDE requirements, which are based on social housing car parking statistics from the Australian Bureau of Statistics.

– **Sewer main**: The subject has a sewer main running through the southern portion of the site. The architectural sketches have allowed for a 3m easement over this sewer and designed around it. However, there is a link bridge that crosses the sewer to connect the two buildings. Input from Townsville City Council would be required as to whether this is an acceptable solution.

Refer to the table below for a breakdown of the planning scheme compliance with the Draft Architectural Sketches.

Table 5 Compliance table

Item	Requirement	Proposed	Compliance
Maximum building height	8.5m/ 2 storeys within 10m of site boundaries	8.5m/ 2 storeys	**Complies**
Site Area & Frontage	Minimum 1000m^2 and 20m	1,618m^2 and 20.15m	**Complies**
Site cover	65% of 1600m^2 (1040m^2)	56% (820m^2)	**Complies**
Front setbacks	Within 20% of the average front setback of adjoining buildings (6m)	6m	**Complies**
Side setbacks	– 1.5 m setback up to 4.5 m – 0.5m for every 3m above 4.5 m building height	3m	**Complies**
Private open space	Ground floor units, minimum area of 35 m² with a minimum dimension of 3m. First floor units, minimum area of 9m² for 1 bed and minimum area of 16m² for 1 bed, both with a minimum dimension of 3m.	Ground floor units over 55m² and above (55m², 70m² and 100m²) First floor units, minimum area of 9m² for 1 bed and minimum area of 16m² for 1 bed, both with a minimum dimension of 3m.	**Complies**
Communal open space	– Sufficient communal open space is provided to create flexible spaces suitable for a range of activities.	290m^2 provided	**Complies**

Item	Requirement	Proposed	Compliance
	– Communal open space provides facilities including landscaping and shade treatments such as green roofs, green walls or community gardens contribute to the attractiveness of these spaces.		
Car parking numbers	1.7 spaces per dwelling plus 0.2 spaces per dwelling and incorporated wash bay (20 covered bays, 3 visitor bays)	10 covered bays and 1 visitor bay provided	**Non-compliant**

2.3.8 Summary

The Draft Architectural Sketches prepared by Architects Dovey and Associates (project number C086FO) provides a multiple dwelling design that is mostly consistent with the requirements of the Planning Scheme. The Draft Architectural Sketches demonstrate **6, two bedroom units and 6, one bedroom units** can be achieved on the subject site. The proposed development is located in the Low Density Residential Zone and is considered Impact assessable, however due to the subject site's location a Multiple Dwelling would likely be considered **'consistent'** with the Planning Scheme. The proposed development cannot achieve the acceptable outcome for parking however sufficient justification can be provided against the performance outcome.

3. Geotechnical investigation

A geotechnical investigation has been undertaken for the subject site. Refer to Appendix D for a copy of the Geotechnical Report. The ground conditions encountered in the boreholes are broadly characterised as alluvium comprising mostly stiff or stronger silty clays or sandy clays, with localised very dense clayey sand encountered at depth in one of the three bores.

The subsurface conditions encountered are summarised below:

– **Silty Clay:** Encountered in all bores from the surface to between 0.8m and 5.6m depth, and below the sandy clay in Bore 2 to bore termination at 7.3m depth. Generally stiff or stronger, but logically firm within Bore 2 from the surface to 0.1m depth and within Bore 3 to 0.4m depth.
– **Sandy clay:** Encountered in all bores below the silty clay to bore termination in Bore 1 and to 5.4m and 6.3m depth in Bores 2 and 3 respectively. Ranging between stiff and hard.
– **Clayey sand:** Very dense and encountered in Bore 3 from 6.3m to termination at 7.35m depth.

No free groundwater was observed in any of the bores prior to backfilling. It should be noted that groundwater conditions are affected by climatic and drainage conditions, and human influences, and will therefore vary with time. Townsville is located in the tropics and usually subject to distinct wet and dry seasons, during which the groundwater levels may vary considerably.

The presence of shallow soils with an allowable bearing pressure of less than 100 kPa (ie firm clays) triggers a ‘Class P’ classification in strict adherence to AS2870 (2011). For this site, reclassification is considered feasible provided that all footings are supported by replacement controlled fill or stiff or stronger clays are consistently encountered below 0.4m depth. It is also noted that the footprint of the proposed building is likely to be beyond the scope of AS280 (2011).

Using the methods outlined in Section 2 of AS 2870, characteristic surface movements (ys) of approximately 20mm to 30mm are estimated for the site in its current condition, corresponding to a ‘Class M’ provided that all footings are supported by engineered fill or stiff or stronger clays. The effect of tree-induced soil moisture change has not been assessed in the above site classification (such as removal of the existing trees or any new trees close to the building). The building designer should refer to AS 2870 in this regard.

It is suggested that an allowable bearing pressure of 100 kPa be adopted for the design of small pad and strip footings founded within ‘controlled’ fill or natural stiff or stronger clays as consistently encountered below 0.4m depth. Settlements of less than 10mm are estimated for pad and strip footings up to 1m and 0.6m wide, respectively, loaded and supported as above based on the conditions encountered in Bores 1 and 3 and assuming a founding depth of at least 0.4m.

Upper level footings and uncased bored piles are considered suitable founding options for the site due to the absence of sands and groundwater within the depth of investigation.

4. Service connections

A map of the existing services infrastructure located in the vicinity of the proposed development was obtained from Before You Dig Australia (BYDA). The BYDA service maps are included in Appendix A (job number: 33898315, enquiry date: 28th March 2023). Townsville City Council (TCC) Community Mapping was also accessed to provide further details of the water and sewer networks, as shown in Figure 4-1. Service locations were verified onsite where possible by a site survey by Statewide Survey Group on 8th April 2023.



Figure 4-1 Existing Sewer, Water, and Stormwater infrastructure in vicinity of subject site

Source: TownsvilleMAPS – Community

4.1 Existing services

4.1.1 Water

A review of TCC Community mapping indicates the following water mains are within the vicinity of the subject site:

- 150 mm diameter (dia.) asbestos cement (AC) reticulation main within the western road reserve of Miles Avenue
- 300 mm dia. AC reticulation within the western road reserve of Riverway Drive
- 525 mm dia. asbestos cement/fibre reinforced concrete (AC/FRC) distribution main in the western road reserve of Riverway Drive
- 1000mm dia. concrete raw water main under the centre of Riverway Drive Carriageway.

An existing DN25 water connection is provided from the 150 mm water main in the western side of Miles Avenue to Lot 2 (the western half of the subject site). An existing DN25 water connection is provided from the 300mm water main in the western side of Riverway Drive to Lot 1 (the eastern half of the subject site).

There are two existing fire hydrants located on the 150mm water main in Miles Avenue approximately 40m south and 38m north of the junction of the property connection and the water main. This is confirmed by Site survey. An additional fire hydrant is located on the 300mm water main in Riverway Drive approximately 2m north of the north-east property boundary corner. The hydrant 2m north of the subject site is shown in Figure 4-2.



Figure 4-2 Existing fire hydrant (underground services locations indicative only)

4.1.2 Sewer

TCC Community mapping indicates that there is an existing 150 mm dia. PVC sewer main running parallel to the rear of Lot 2, bisecting the subject site. The sewer flows south from a maintenance shaft in a lot to the north of the site (Lot 2 on RP738365) through the adjoining properties to a maintenance shaft located in a lot to the south of the subject site (Lot 1 on RP727085). The invert levels at the upstream and downstream maintenance shafts are 21.78m and 21.24m respectively.

TCC Community mapping indicates there is an existing 100 mm dia. PVC sewer connection servicing Lot 1, located approximately 4.5m north of the south-west corner of the lot connecting to the onsite maintenance hole. Two individual 100mm PVC property connections servicing Lot 2 are indicated, approximately 9m and 11m north of the south-west corner of Lot 1.

4.1.3 Stormwater

There is an existing 600mm dia. reinforced concrete stormwater pipe which flows north from an inlet pit in the eastern kerb and channel of Riverway Drive (opposite the subject site). The pipe continues along in the eastern verge of Riverway Drive to the intersection of Allambie Lane where it then flows east and discharges to Ross River approximately 160m north-east of the subject site.

There is an existing 375mm dia. RCP in the eastern road reserve of Riverway Drive, south of the subject site, which conveys stormwater south to maintenance shaft at the intersection of Mac Court. This network discharges to Ross River approximately 220m south-east of the subject site.

A 375mm dia. RCP located in the northern end of Miles Avenue within the eastern verge conveys stormwater north to a set of inlet pits at the intersection of Allambie Lane and Miles Avenue. Stormwater is then conveyed west via a series of larger pipes to an open drain in the northern road reserve of Allambie Lane. The network eventually discharges to Bohle River approximately 1.8km west of the subject site.

The size and condition of the existing stormwater pipes should be confirmed to determine whether they have sufficient capacity for the proposed development.

Kerb and channel is located at the road-facing property boundaries of Lot 1 and 2 of the subject site.



Figure 4-3 Existing stormwater infrastructure north of the subject site

Currently, roof runoff from the eastmost dwelling on the subject site and a covered car parking area attached to the dwelling is directed underground via downpipes. Roof runoff from the westmost dwelling is directed underground via downpipes. Kerb adaptors were not identified in Miles Avenue or Riverway Driveway. It is unknown from survey and BCC mapping where the downpipes direct roof water runoff, this should be confirmed via pipe location services.

The kerb and channel of Miles Avenue directly in front of the subject site falls to the north at a grade of approximately 0.2%. The kerb and channel of Riverway Drive directly in front of the subject site falls to the north at a grade of approximately 0.3%. The subject site is currently 78% grassed and as such stormwater would infiltrate the soil before runoff occurs. Increasing the impervious area of the site would cause runoff to flow to the kerb and channel of Miles Avenue.

4.2 Proposed service connections

This section reviews the water, sewer and stormwater lot service connections for the proposed development site. Refer to Appendix B for a summary sketch showing the proposed connections. An assumed yield of six one-bedroom units and six two-bedroom units is adopted as demonstrated in the draft architectural sketches prepared by Architects Dovey and Associates (project number: C086FO). It is assumed that all units are one bathroom only, however the service calculations should be revised once the final development layout is confirmed.

4.2.1 Water connection

4.2.1.1 Domestic Water Service

As such, a preliminary service sizing for the ultimate development has been carried out in accordance with the Australian Standard AS 3500.1:2021 - Plumbing and Drainage – Part 1: Water Services. The probable flow rate for 12 units is 1.94 L/s as stated in Table 3.2.3 Minimum Probable Simultaneous Demand for Dwellings. Assuming a velocity of 1 m/s, an indicative water meter size for the probable flow rate is approximately 50 mm. As such, it is recommended a new 50 mm water connection is made to the existing 300 mm main within the western road reserve of Riverway Drive. Note this preliminary connection sizing allows for a domestic service; detailed sizing calculations including a fire service assessment should be completed once the proposed development layout and servicing requirements have been finalised. It should be confirmed with council whether a connection can be made to the existing 300mm main in the western verge of Riverway Drive prior to further design stages.

Flow and pressure testing undertaken by Premier Fire indicates that the existing 150 AC main in Miles Avenue and 300 AC main in Riverway Drive have sufficient performance for the anticipated domestic service demand for the proposed development. This should be confirmed once the final design demand has been determined. Refer to Appendix C for the full Premier Fire Flow and Pressure Test Report.

4.2.1.2 Fire Services

Once the final layout of the proposed development is finalised, consideration must be given to confirm the design requirements for firefighting on site. Note that the Building Code of Australia- Part E1 – Fire Fighting Equipment states that a fire hydrant system must be provided to serve a building having a total floor area greater than 500 m^2 and where a fire brigade is available to attend a building fire.

4.2.2 Sewer connection

A single property connection to the existing sewer is required. Table 3.3.1 of the Australian Standard AS3500.2:2021 – Plumbing and Drainage – Part 2: Sanitary Plumbing and Drainage (AS3500.2) states that a DN150 connection is suitable for up to 855 fixture units (assuming it is laid at a minimum 1% grade).

Fixture unit counts have been undertaken in accordance with Table 6.3(A) of AS/NZS 3500.2. The rating shown in Table 6 can be attributed for the assumed yield of the site.

Table 6 Fixtures and loading unit calculation

Fixture	Number of fixtures	Loading units per fixture	Total loading units
Bathroom group in a single room (basin, bath, shower, water closet)	12	6	72
Kitchen sink	12	3	36
Clothes washing machine	12	5	60
Dishwashing machine	12	3	36
Total			**204**

A total of 204 fixture units for the development site will be applicable for the proposed 12-unit development. This is an estimate, and the final design flow can only be calculated once the site layout for the proposed development is finalised. Based on Table 6.3(B) of AS3500.2, a projected flow rate per unit is approximately 1.6 L/s.

It is therefore recommended that an upgraded 150 mm diameter connection be provided to the existing sewer maintenance hole located in the centre of the subject site. It is recommended that the size and grade of the connection is confirmed during the detailed design. Unused sewer property connections are to be made redundant. The size, grade, condition and capacity of the existing downstream sewer should be confirmed during further design stages.

The existing sewer main bisects the subject site from south to north. Building over a sewer main is prohibited, as such a minimum 3m easement has been placed over the existing sewer main.

4.3 Stormwater

The proposed development will be subject to assessment against the Queensland Urban Drainage Manual (QUDM) and TCC Schedule 6.4.8 Stormwater Management.

4.3.1 Lawful point of discharge

The lawful point of discharge as per *Townsville City Plan 2014* is a location agreed with council.

As the site currently drains to the western boundary it is proposed that stormwater is discharged to the kerb and channel of Miles Avenue. The downstream capacity of the networks should be confirmed in further design stages to ensure they have the additional capacity required. A new grated box drain, inlet pit, and 3/200x100 RHS's will be required to discharge to the kerb and channel.

4.3.2 Flow estimation

Development of the site will increase the impervious area and thus the site peak stormwater discharge. A preliminary calculation estimates that the peak post-development discharge will be 78 L/s for a design storm of 10% AEP (1 in 10 years), 5 minute duration. This calculation is summarised in Table 7.

Table 7 Stormwater runoff preliminary calculations

Parameter	Value
Design Storm	10% AEP (1 in 10 year), 5 minute duration
C_{10}	0.87
Rainfall intensity, I	197 mm / hr
Site area, A	1640 m^2
Design peak discharge, Q_{10}	**78 L/s**

Notes:

2. In accordance with Section 7.13.3 of the Queensland Urban Drainage Manual (QUDM, 2016), the proposed development is attributed a drainage design standard of Level III (3).
3. The design storm for roof and allotment drainage for this category is the 10% AEP (1 in 10 Year ARI) storm event.
4. C_{10} coefficient of discharge value as per QUDM Table 4.5.3
5. Rainfall intensity retrieved from Bureau of Meteorology

4.3.3 Recommendations

The minimum components of the development site drainage system will be as follows:

– Guttering
– Downpipes
– Minor pipes and inlet pits in allotment
– Allotment drainage system designed to receive both roof-water and allotment surface runoff from one allotment or complex and comprising kerb inlets, junction pits or access chambers and underground pipe system etc. and discharging to a kerb inlet or trunk drainage system.

The lawful point of discharge should be confirmed during the detailed design once the proposed building layout is confirmed. Discharge to the kerb and channel of Miles Avenue via 3/200x100 RHS's is recommended. An acceptable drainage design for the under croft should be confirmed during detailed design. Further work to determine existing capacity of relevant infrastructure should be undertaken.

Discharge can be made following further investigation as part of a Site Based Stormwater Management Plan, once the proposed development site layout and final Gross Floor Area (GFA) have been confirmed. Stormwater quality treatment and detention systems such as rain gardens, and gross pollutant traps may be required as part of the proposed development.

5. Flood assessment

A desktop review of available flood information has been undertaken to consider the flood risk of the subject site. As shown in Figure 5-2 a small section of the site is impacted by the low and medium flood hazard. The site is not impacted by storm tide inundation area.

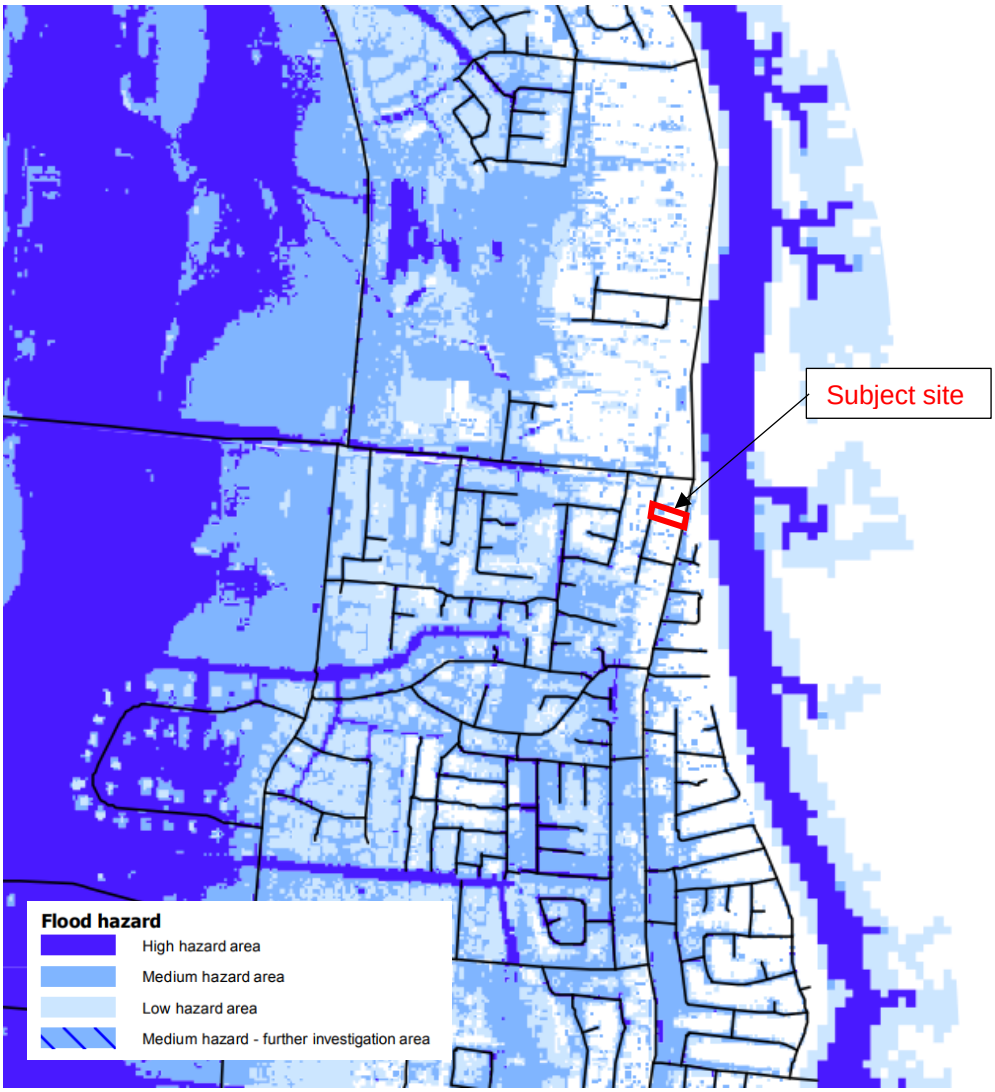


Figure 5-1 Flood hazard map

Source: Townville City Plan

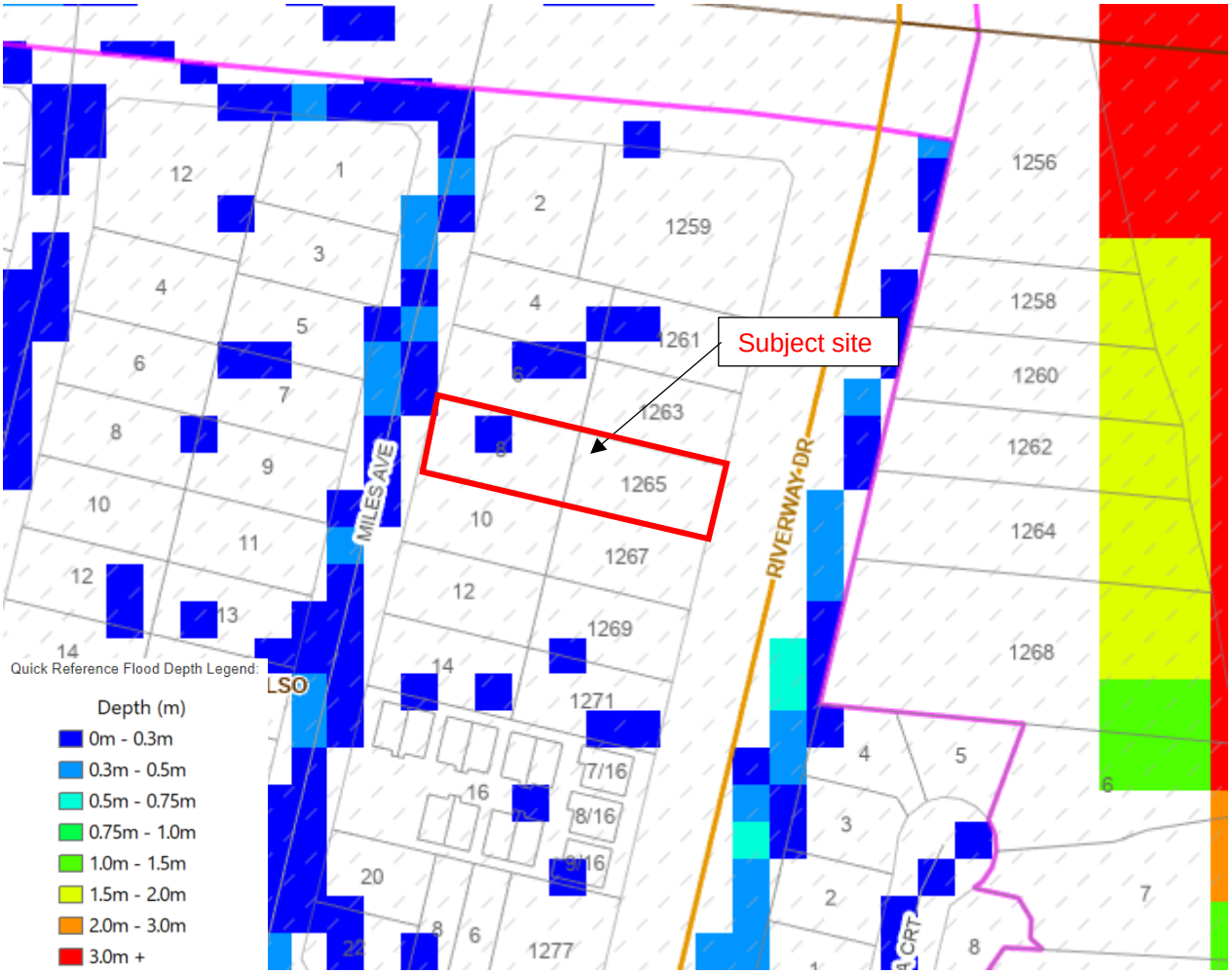


Figure 5-2 1% AEP Flood Depth Map

Source: TCC interactive mapping

Council's 1% AEP map provides further flood information including the depth of overland flow flooding. The site is indicated to have inundation levels between 0 and 0.3m.

In the proposed development the ground floor is designed for carparking and three units. A flood search was done through Townsville Flooding MAPS (current as 31/05/2023). The proposed development will be required to achieve a minimum habitable floor level of 23.68m (300mm freeboard above the defined event of 23.38m).

To achieve the minimum habitable floor level the ground floor units will need to be built between 0.57m and 0.07m above the existing ground level.

A flood impact assessment including flood risk assessment will be required in further work to prove the proposed development meets the requirements of the Flood Overlay Code, including no worsening of flood conditions internally or externally to the site.

6. Site enabling works

Survey undertaken by Statewide Survey Group on 8th April 2023 indicates the site currently falls at approximately 0.7% to the west. The subject site is below the level of the roadway of Riverway Drive and at or above the level of Miles Avenue. Kerb and channel bordering the site prevents runoff from Riverway Drive flowing onto the subject site. The lowest point of kerb and channel within the bounds of the survey is located adjacent the north-west corner of the property boundary. The area contours are shown in Figure 6-1.

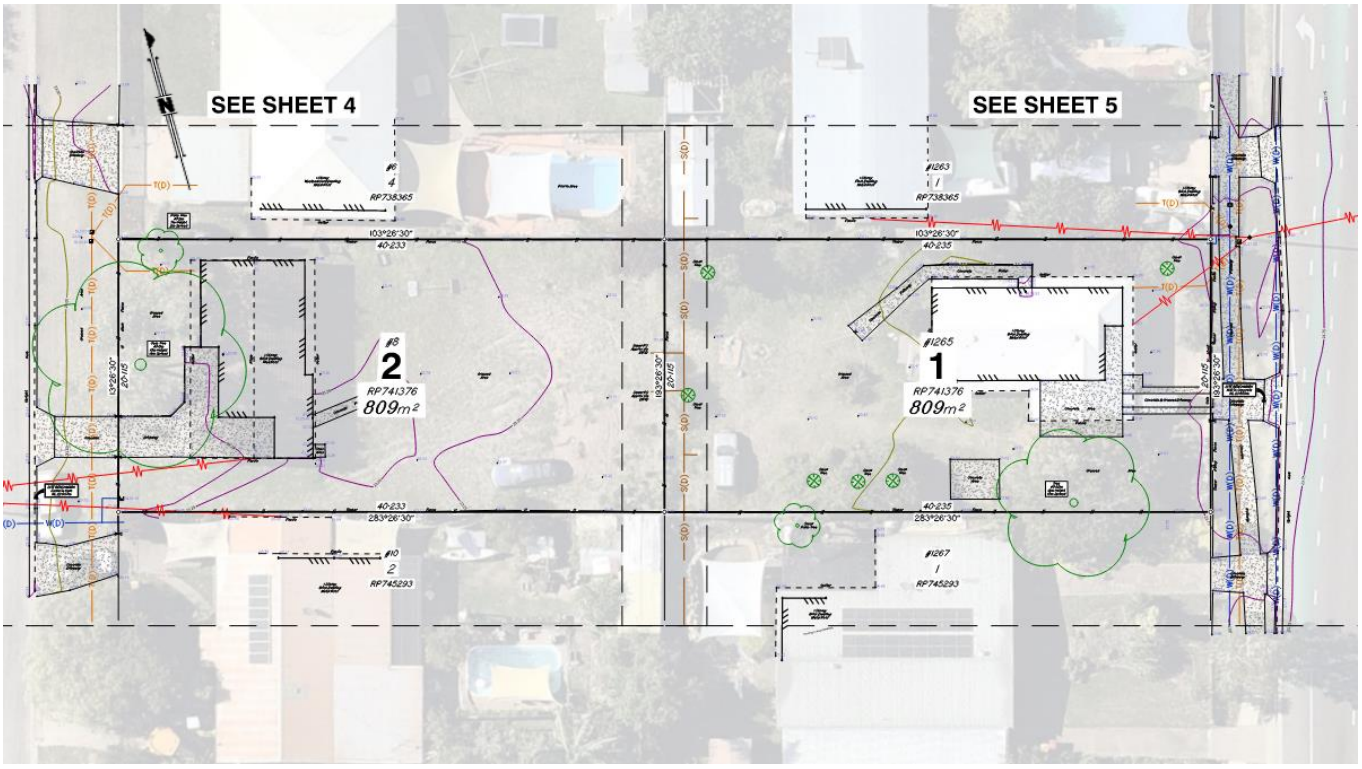


Figure 6-1 Extract of site survey

Minor reshaping will be required to ensure the design surface meets maximum carpark grades as stipulated in AS2890 – Parking Facilities, including maximum gradient of 4% for a service bay and 2.5% for PWD bay. Where the existing grade requires reducing, it is recommended that filling is generally avoided and earthworks in cut or localised cut/fill is utilised (while maintaining surface level 300 mm above the Defined Flood Level and ensuring the general site topography is not modified). It must be shown during further design stages that an earthworks design that conforms to both AS2890 and the TCP Flood Overlay Code can be achieved. Note that the undercroft must remain open at all sides such that floodwater may enter.

A flood impact assessment including flood risk assessment will be required in further work to prove the proposed development including associated earthworks meets the requirements of the Flood Overlay Code, including no worsening of flood conditions internally or externally to the site.

7. Cost estimate

Table 8 shows an indicative cost estimation for the early works associated with the redevelopment of this site including water, sewer, and stormwater service connections.

Table 8 Indicative cost estimate

Item	Indicative cost estimate
Preliminaries (site establishment, survey etc.)	$10,000
Upgraded water connection to existing main in western verge of Riverway Drive	$4,500
Upgraded sewer connection to existing sewer main within site	$8,500
Stormwater discharge to kerb and channel in eastern verge of Miles Avenue	$12,000
Site works including traffic control, driveway to property boundary and removal of existing driveways	$24,000
Total (excl. GST)*	**$59,000**

** Note that this estimate excludes professional fees, plan sealing and titling costs, Council fees and charges, legal costs, relocation costs, demolition costs, design and construction contingencies, cost escalation, fencing and landscaping and building works.*

8. Conclusion and recommendations

This Feasibility Report has been prepared for DCHDE for 8 Miles Avenue and 1265 Riverway Drive, Kelso (the subject site), described as Lot 1 and 2 on RP741376.This report documents the potential of the subject site to be redeveloped with multiple dwellings, and the consideration of new water, sewer and stormwater connections required to facilitate the redevelopment.

The subject site is located within the Low Density Residential Zone of the *Townsville City Plan 2014 (V 2022/02)*. The Draft Architectural Sketches prepared by Architects Dovey and Associates (project number C086FO) demonstrate that a potential yield of **6, two bedroom units and 6, one bedroom units** may be achieved on site for the proposed social housing development in accordance with the requirements of the Planning Scheme. The proposed development is considered Impact assessable, however due to the subject site's location a Multiple Dwelling would likely be considered **'consistent'** with the Planning Scheme. The proposed development cannot achieve the acceptable outcome for parking however sufficient justification can be provided against the performance outcome.

A geotechnical investigation has been undertaken for the subject site. The subsurface conditions encountered at the field test locations primarily comprised silty or sandy clays that were consistently stiff or stronger below 0.4m depth. Shallower clays in Bores 1 and 3 were firm or stiff. Very dense clayey sand was encountered below 6.3m within Bore 3 to bore termination at 7.35m depth. No free groundwater was encountered within the bores prior to backfilling. It is recommended that all existing vegetation, topsoil and firm clays (up to approximately 0.4m depth) be stripped from the building and pavement footprints and replaced with 'controlled' engineered fill. The presence of shallow soils with an allowable bearing capacity of less than 100 kPa triggers a 'Class P' classification in strict adherence to AS2870 (2011), however, a 'Class M' could be applied to the design of structures within the scope of AS2870 provided that all footings are supported by stiff or stronger clays below the depths of approximately 0.4m. Upper level footings and uncased bored piles are considered suitable founding options for this site due to the absence of sands and groundwater within the depth of investigation.

New sewer and water property connections will be required for the proposed development. A single 50 mm water connection is recommended to the existing 300 mm water main in the western verge of Riverway Drive, directly in front of the subject site. The final configuration of fire pumps, water storage and booster cabinets are to be determined during the design phase. A DN150 sewer connection to the existing 150 mm sewer main located across the south-east corner of the subject site is recommended. Further work to verify the condition and existing capacity of the sewer main should be undertaken. Unused existing sewer and water property connections are to be made redundant.

It is recommended that stormwater runoff from the proposed development is discharged to the kerb and channel of Miles Avenue directly in front of the subject site. This will require a new box drain, inlet pit, and 3/200x100 RHS's. Further investigation to verify that there is sufficient capacity in the existing downstream stormwater infrastructure should be undertaken during detailed design.

Stormwater quality treatment and detention system requirements should be investigated further as part of a Site Based Stormwater Management Plan once the proposed site layout and subsequent GFA of the development have been confirmed.

The subject site is impacted by flooding. A flood search was done through Townsville Flooding MAPS (current as 31/05/2023). The proposed development will be required to achieve a minimum habitable floor level of 23.68m (300mm freeboard above the defined event of 23.38m). To achieve the minimum habitable floor level the three ground floor units will need to be built between 0.57m and 0.07m above the existing ground level. A flood impact assessment including flood risk assessment will be required in further work to prove the proposed development meets the requirements of the Flood Overlay Code, including no worsening of flood conditions internally or externally to the site.

Minor reshaping will be required to ensure the design surface meets maximum carpark grades as stipulated in AS2890 – Parking Facilities. Where the existing grade requires reducing, it is recommended that filling is generally avoided and earthworks in cut or localised cut/fill is utilised (while maintaining surface level above Designated Flood Level and ensuring the general site topography is not modified). It must be shown during further design

stages that an earthworks design that conforms to both AS2890 and the *Townsville City Plan* Flood Overlay Code can be achieved. Note that the under croft must remain open at all sides such that floodwater may enter.

Appendices

Appendix A

Before You Dig Australia

Job No 33898315

Phone: 1100
www.byda.com.au

Caller Details

Contact:	Alice Wake	**Caller Id:**	3312890	**Phone:**	(07) 4130 8402
Company:	GHD				
Address:	70 Barolin Street Bundaberg South QLD 4670	**Email:**	Alice.Wake@ghd.com		

Dig Site and Enquiry Details

WARNING: The map below only displays the location of the proposed dig site and does not display any asset owners' pipe or cables. The area highlighted has been used only to identify the participating asset owners, who will send information to you directly.



User Reference: 8 Miles Avenue, Kelso

Working on Behalf of: Private

Enquiry Date:	**Start Date:**	**End Date:**
28/03/2023	28/03/2023	28/03/2023

Address:
8 Miles Avenue
Kelso QLD 4815

Job Purpose:	**Onsite Activities:**
Excavation	Manual Excavation
Location of Workplace:	**Location in Road:**
Both	Road, Nature Strip, Footpath

- Check that the location of the dig site is correct. If not you must submit a new enquiry.
- Should the scope of works change, or plan validity dates expire, you must submit a new enquiry.
- Do NOT dig without plans. Safe excavation is your responsibility. If you do not understand the plans or how to proceed safely, please contact the relevant asset owners.

Notes/Description of Works:
8 Miles Avenue, Kelso

Your Responsibilities and Duty of Care

- The lodgement of an enquiry does not authorise the project to commence. You must obtain all necessary information from any and all likely impacted asset owners prior to excavation.
- If plans are not received within 2 working days, contact the asset owners directly & quote their Sequence No.
- ALWAYS perform an onsite inspection for the presence of assets. Should you require an onsite location, contact the asset owners directly. Please remember, plans do not detail the exact location of assets.
- Pothole to establish the exact location of all underground assets using a hand shovel, before using heavy machinery.
- Ensure you adhere to any State legislative requirements regarding Duty of Care and safe digging requirements.
- If you damage an underground asset you MUST advise the asset owner immediately.
- By using this service, you agree to Privacy Policy and the terms and disclaimers set out at **www.byda.com.au**
- **For more information on safe excavation practices, visit www.byda.com.au**

Asset Owner Details

The assets owners listed below have been requested to contact you with information about their asset locations within 2 working days.
Additional time should be allowed for information issued by post. It is **your responsibility** to identify the presence of any underground assets in and around your proposed dig site. Please be aware, that not all asset owners are registered with the Before You Dig service, so it is **your responsibility** to identify and contact any asset owners not listed here directly.
** Asset owners highlighted by asterisks ** require that you visit their offices to collect plans.
# Asset owners highlighted with a hash # require that you call them to discuss your enquiry or to obtain plans.

Seq. No.	Authority Name	Phone	Status
222821482	Ergon QLD	13 10 46	NOTIFIED
222821483	NBN Co Qld	1800 687 626	NOTIFIED
222821485	Telstra QLD Regional	1800 653 935	NOTIFIED
222821484	Townsville City Council	1300 878 001	NOTIFIED

END OF UTILITIES LIST

Lodge Your Free Enquiry Online – 24 Hours a Day, Seven Days a Week

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For Emergency Situations please call 13 16 70



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BYDA

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Date: 28/03/2023

Scale: 1:1025

OVERVIEW

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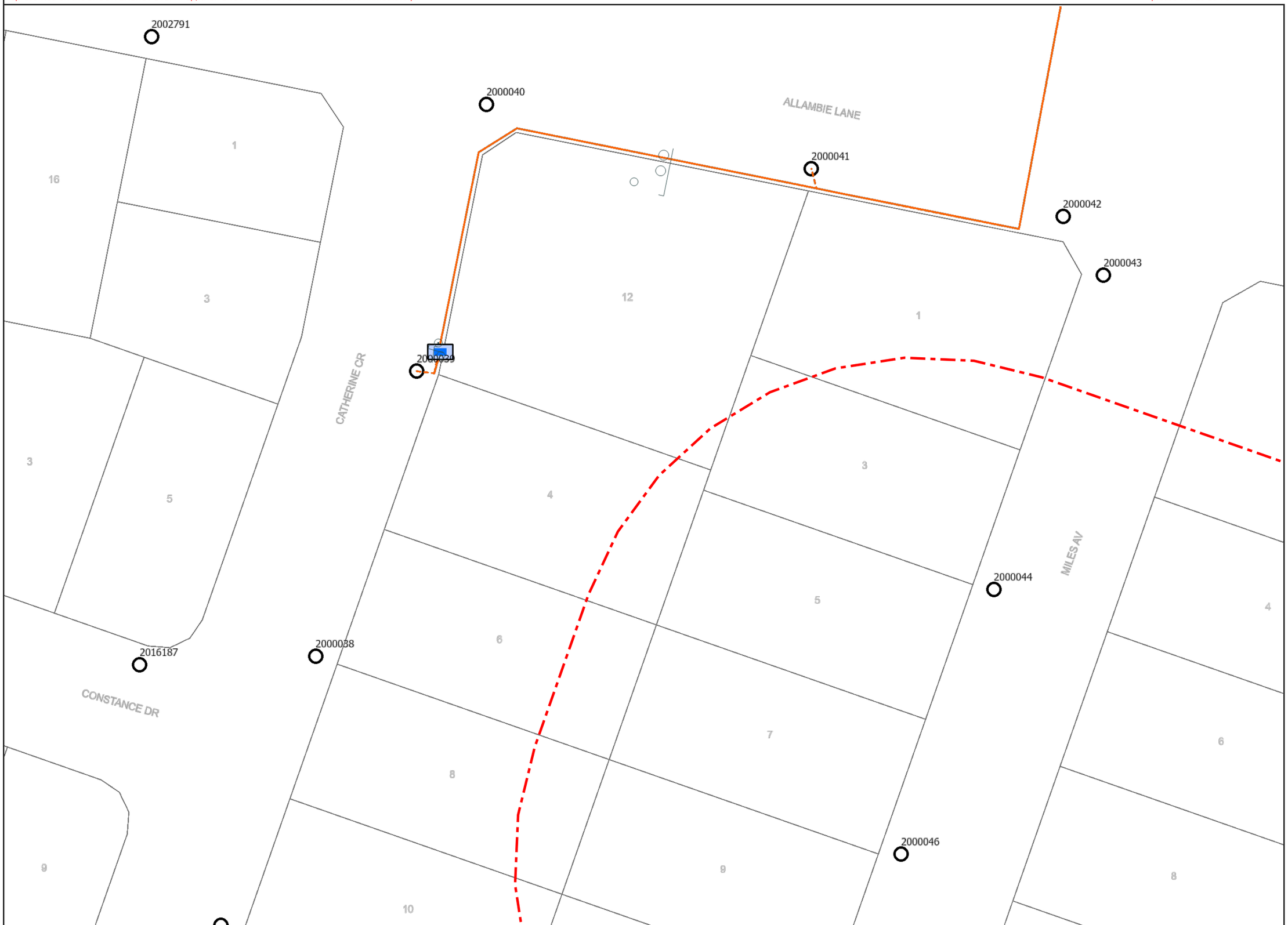
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Part of Energy Queensland

BYDA

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Tile No: 1

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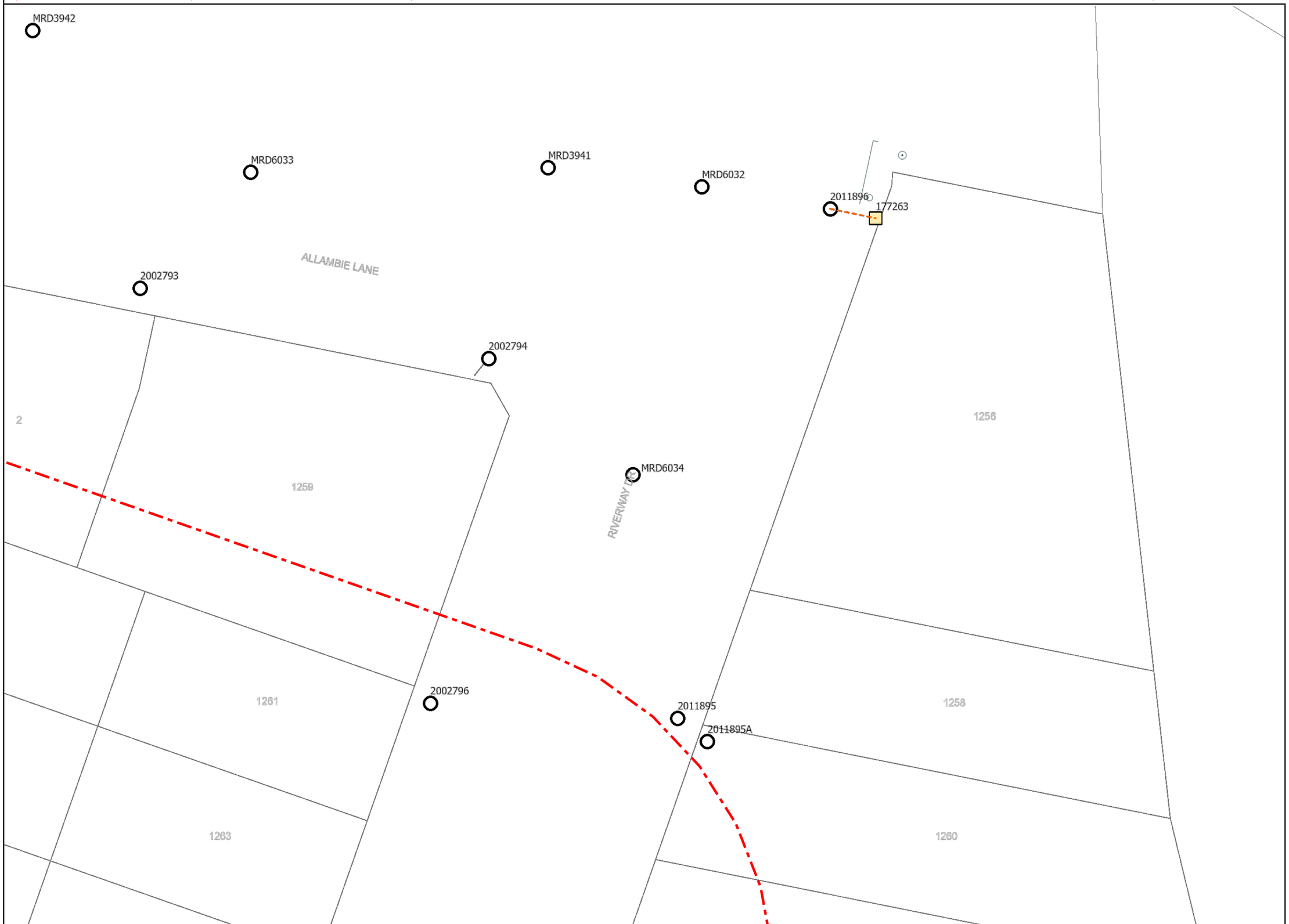
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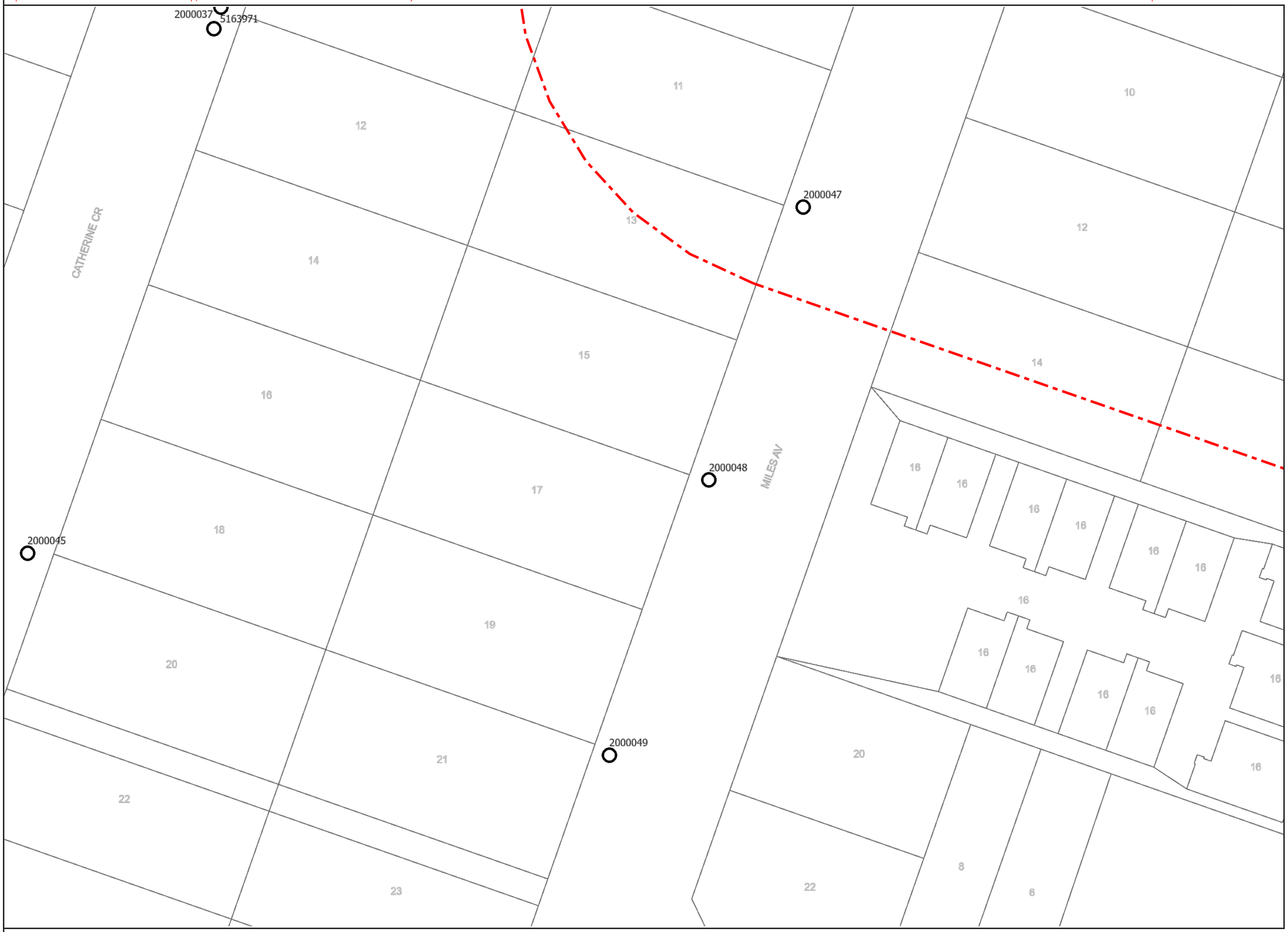
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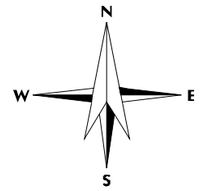
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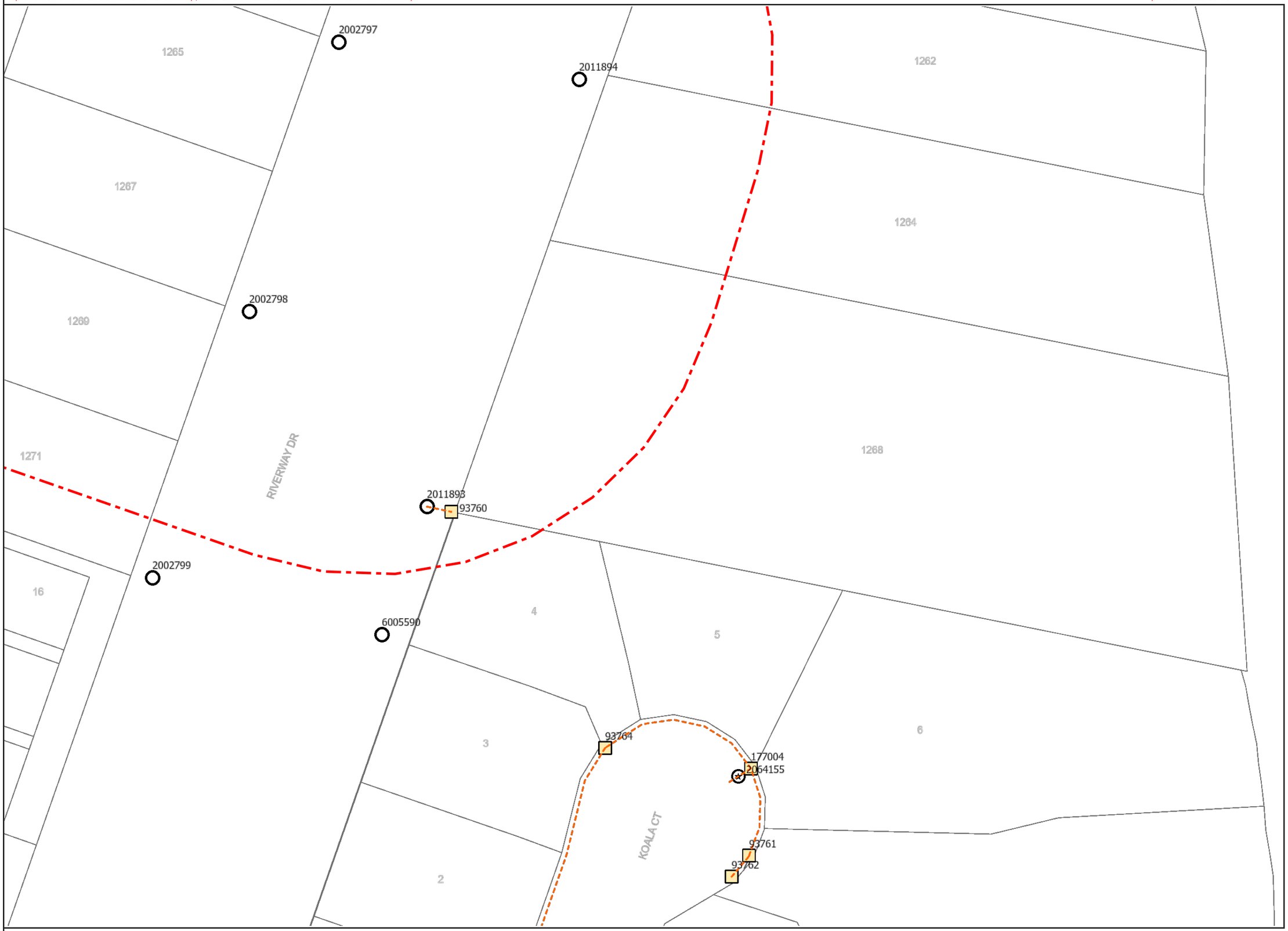
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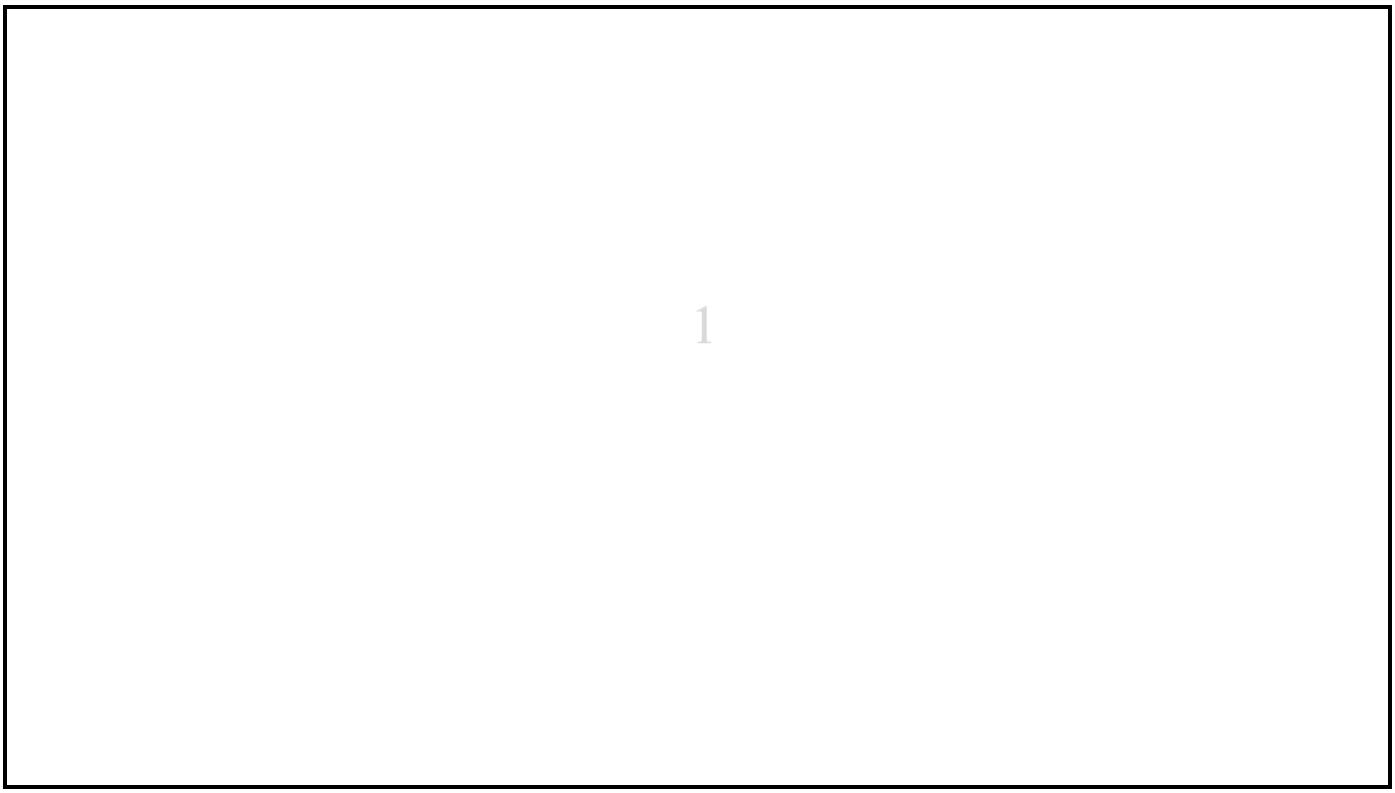
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To:	Alice Wake
Phone:	Not Supplied
Fax:	Not Supplied
Email:	Alice.Wake@ghd.com

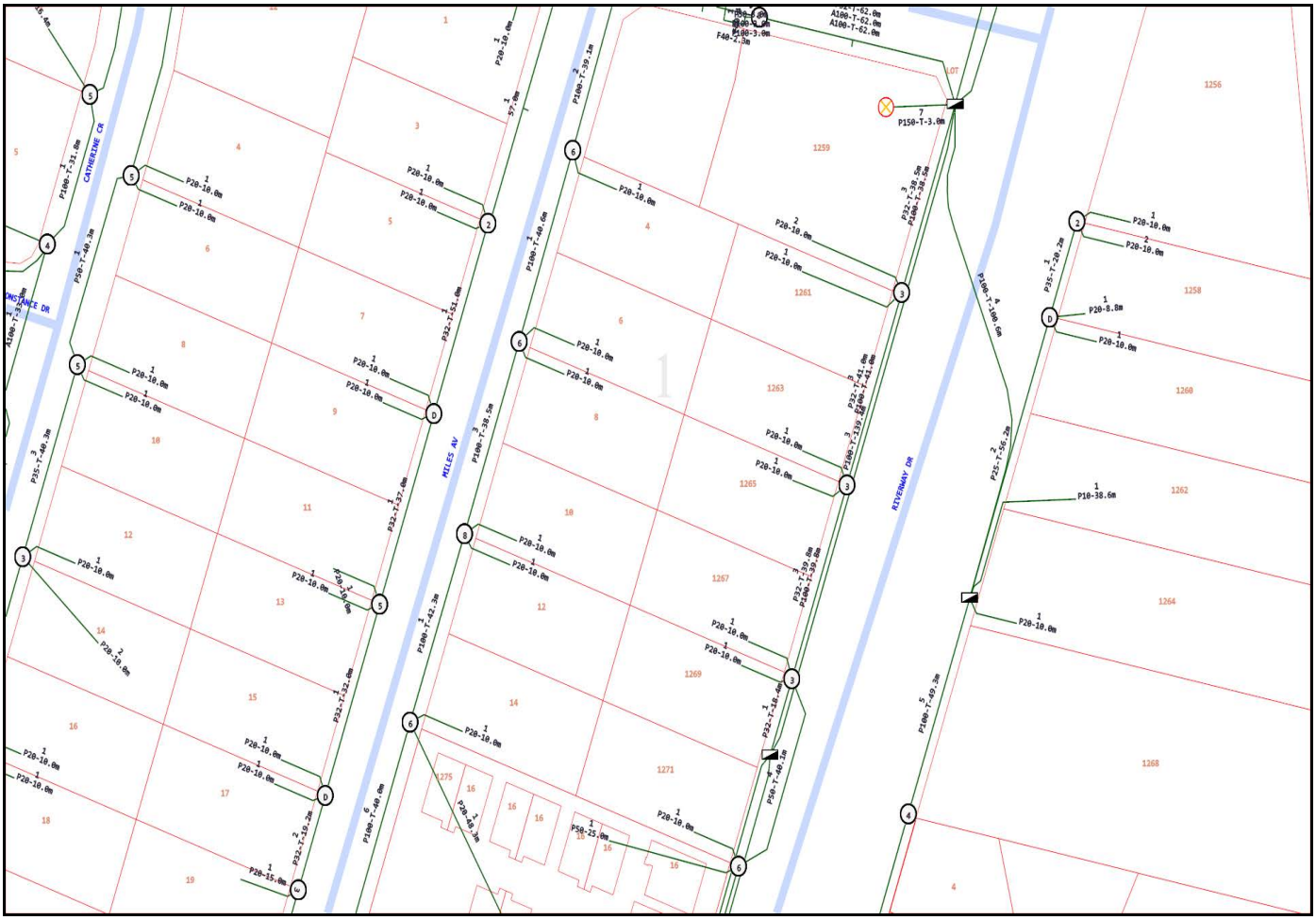
Dial before you dig Job #:	33898315
Sequence #	222821483
Issue Date:	27/03/2023
Location:	8 Miles Avenue , Kelso , QLD , 4815

Indicative Plans



LEGEND

34	Parcel and the location
5	Pit with size "5"
2E	Power Pit with size "2E". Valid PIT Size: e.g. 2E, 5E, 6E, 8E, 9E, E, null.
	Manhole
	Pillar
2 PO – T- 25.0m P40 – 20.0m 5 9	Cable count of trench is 2. One "Other size" PVC conduit (PO) owned by Telstra (-T-), between pits of sizes, "5" and "9" are 25.0m apart. One 40mm PVC conduit (P40) owned by NBN, between pits of sizes, "5" and "9" are 20.0m apart.
2 10.0m 5 9	2 Direct buried cables between pits of sizes ,"5" and "9" are 10.0m apart.
5 9	Trench containing any INSERVICE/CONSTRUCTED (Copper/RF/Fibre) cables.
5 9	Trench containing only DESIGNED/PLANNED (Copper/RF/Fibre/Power) cables.
5 9	Trench containing any INSERVICE/CONSTRUCTED (Power) cables.
BROADWAY ST	Road and the street name "Broadway ST"
Scale	0 20 40 60 Meters 1:2000 1 cm equals 20 m



Emergency Contacts

You must immediately report any damage to the **nbn™** network that you are/become aware of. Notification may be by telephone - 1800 626 329.

Cable Plan



Report Damage: https://service.telstra.com.au/customer/general/forms/report-damage-to-telstra-equipment
Ph - 13 22 03
Email - Telstra.Plans@team.telstra.com
Planned Services - ph 1800 653 935 (AEST bus hrs only) General Enquiries

TELSTRA LIMITED A.C.N. 086 174 781

Generated On 28/03/2023 09:24:14

Sequence Number: 222821485

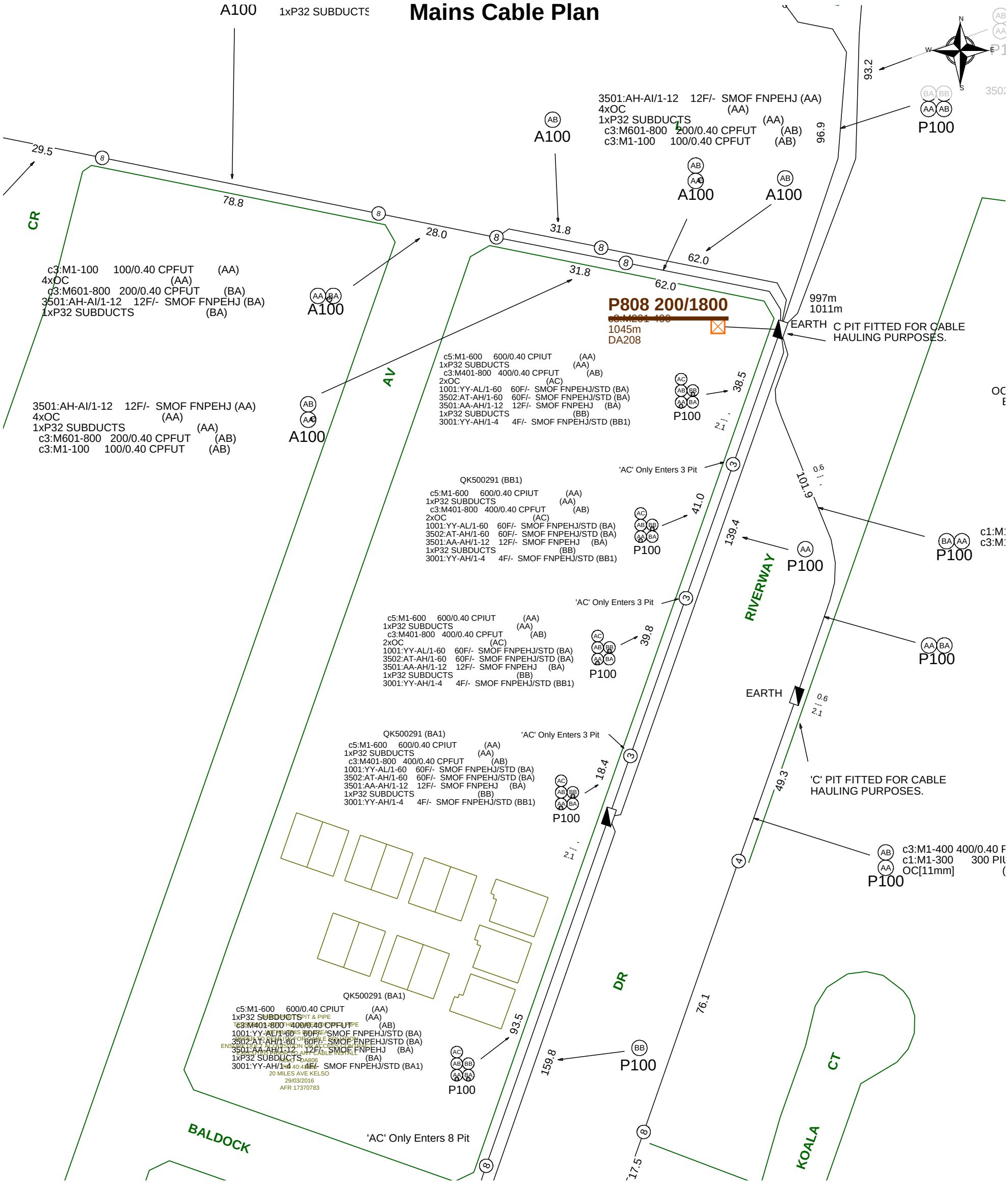
CAUTION: Fibre optic and/ or major network present in plot area. Please read the Duty of Care and contact Telstra Plan Services should you require any assistance.

The above plan must be viewed in conjunction with the Mains Cable Plan on the following page

WARNING
Telstra plans and location information conform to Quality Level "D" of the Australian Standard AS 5488-Classification of Subsurface Utility Information.
As such,Telstra supplied location information is indicative only.Spatial accuracy is not applicable to Quality Level D.
Refer to AS 5488 for further details. The exact position of Telstra assets can only be validated by physically exposing it.
Telstra does not warrant or hold out that its plans are accurate and accepts no responsibility for any inaccuracy.
Further on site investigation is required to validate the exact location of Telstra plant prior to commencing construction work.
A Certified Locating Organisation is an essential part of the process to validate the exact location of Telstra assets and to ensure the asset is protected during construction works.

See the Steps- Telstra Duty of Care that was provided in the email response.

Mains Cable Plan



PIT & PIPE
PIPE
ENSURE CABLE INSTALL
20 MILES AVE KELSO
29/03/2016
AFR 17370783

Report Damage: https://service.telstra.com.au/customer/general/forms/report-damage-to-telstra-equipment Ph - 13 22 03 Email - Telstra.Plans@team.telstra.com Planned Services - ph 1800 653 935 (AEST bus hrs only) General Enquiries	Sequence Number: 222821485
TELSTRA LIMITED A.C.N. 086 174 781	CAUTION: Fibre optic and/ or major network present in plot area. Please read the Duty of Care and contact Telstra Plan Services should you require any assistance.
Generated On 28/03/2023 09:24:16	

WARNING
Telstra plans and location information conform to Quality Level "D" of the Australian Standard AS 5488-Classification of Subsurface Utility Information.
As such,Telstra supplied location information is indicative only.Spatial accuracy is not applicable to Quality Level D.
Refer to AS 5488 for further details. The exact position of Telstra assets can only be validated by physically exposing it.
Telstra does not warrant or hold out that its plans are accurate and accepts no responsibility for any inaccuracy.
Further on site investigation is required to validate the exact location of Telstra plant prior to commencing construction work.
A Certified Locating Organisation is an essential part of the process to validate the exact location of Telstra assets and to ensure the asset is protected during construction works.

See the Steps- Telstra Duty of Care that was provided in the email response.

Before You Dig Australia (BYDA)
Pipeline Location Information

Townsville City Council
PO Box 1268
Townsville
QLD, 4810

To:
Alice Wake
70 Barolin Street

Enquiry Details	
Utility ID	37010
Sequence Number	222821484
Enquiry Date	28/03/2023 08:21
Response	**AFFECTED**
Address	8 Miles Avenue Kelso
Location in Road	Road,Nature Strip,Footpath
Activity	Manual Excavation

Enquirer Details	
Customer ID	3312890
Contact	Alice Wake
Company	
Email	Alice.Wake@ghd.com
Phone	+61741308402

Enquirer Responsibilities
The information shown on this map has been produced from the Townsville City Council's digital database. There is no warranty implied or expressed regarding the accuracy or completeness of the data. The data has been compiled for information and convenience only, and it is the responsibility of the user to verify all information before placing reliance on it. For accurate service locations please contact the Customer Service Centre on 1300 878 001

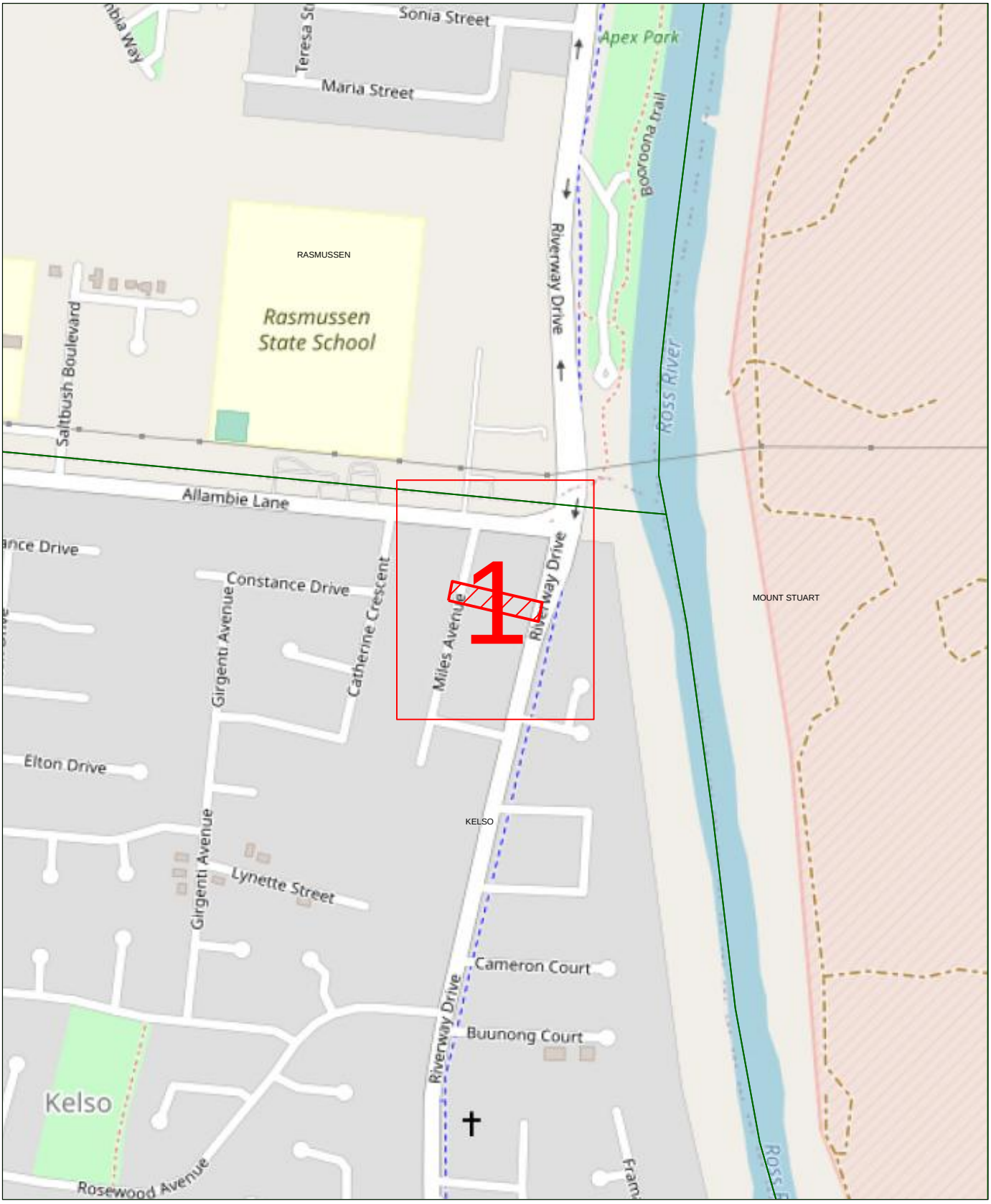
Powered By dbydsuite

Date: 28/03/2023

Overview Map

Sequence No: 222821484

8 Miles Avenue Kelso



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N

0 0.06km

Imagery sourced from Open StreetMaps

LEGEND:

1 Detail Map

Council Boundary

Suburb

Affected BYDA Work Area

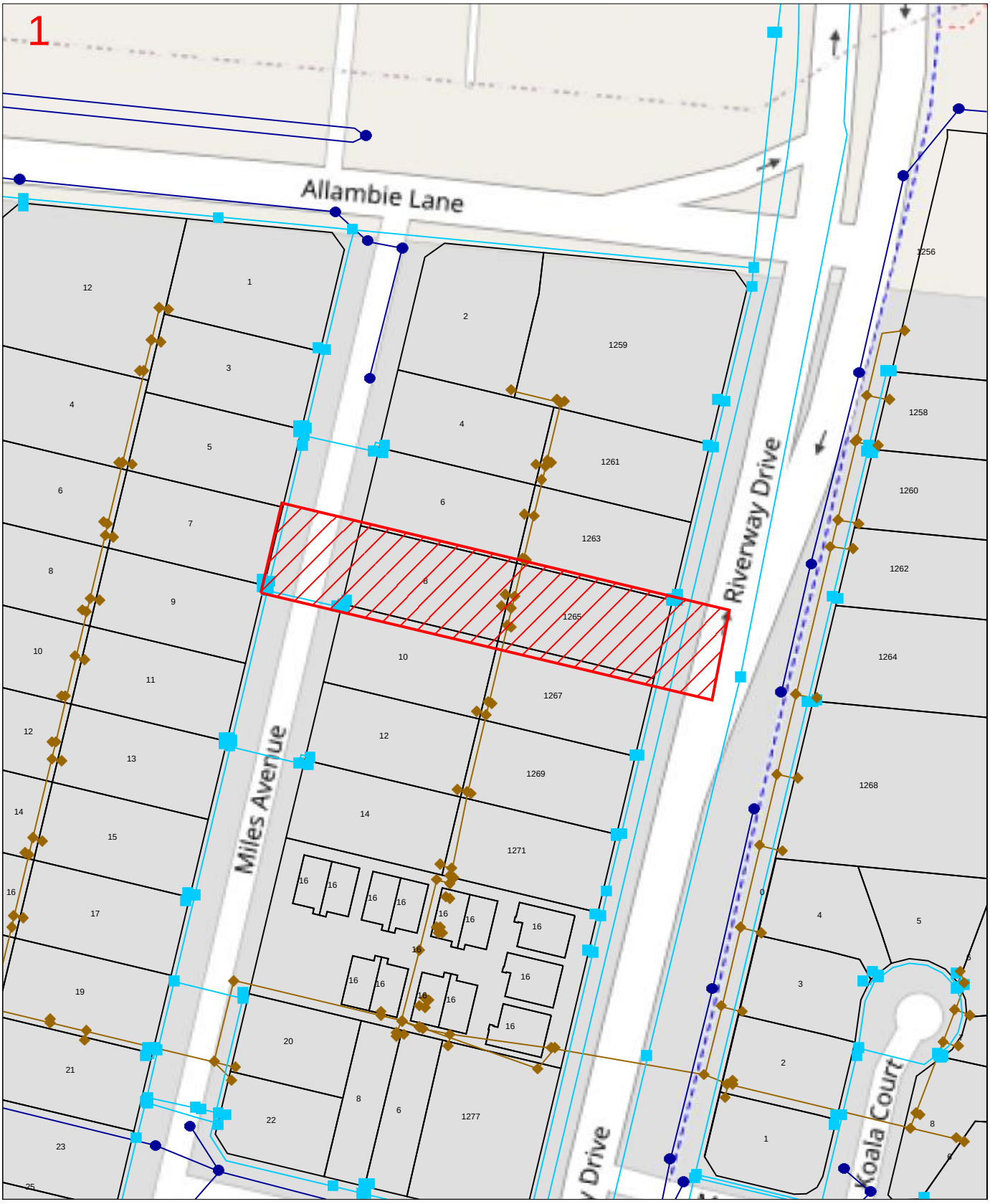
Powered By dbydsuite

Date: 28/03/2023

Map 1

Sequence No: 222821484

8 Miles Avenue Kelso



LEGEND:

- Council Boundary
- Suburb
- Property
- Affected BYDA Work Area
- Stormwater
- Water
- Waste Water
- Fibre Optics (TCC)

N

0 0.01km

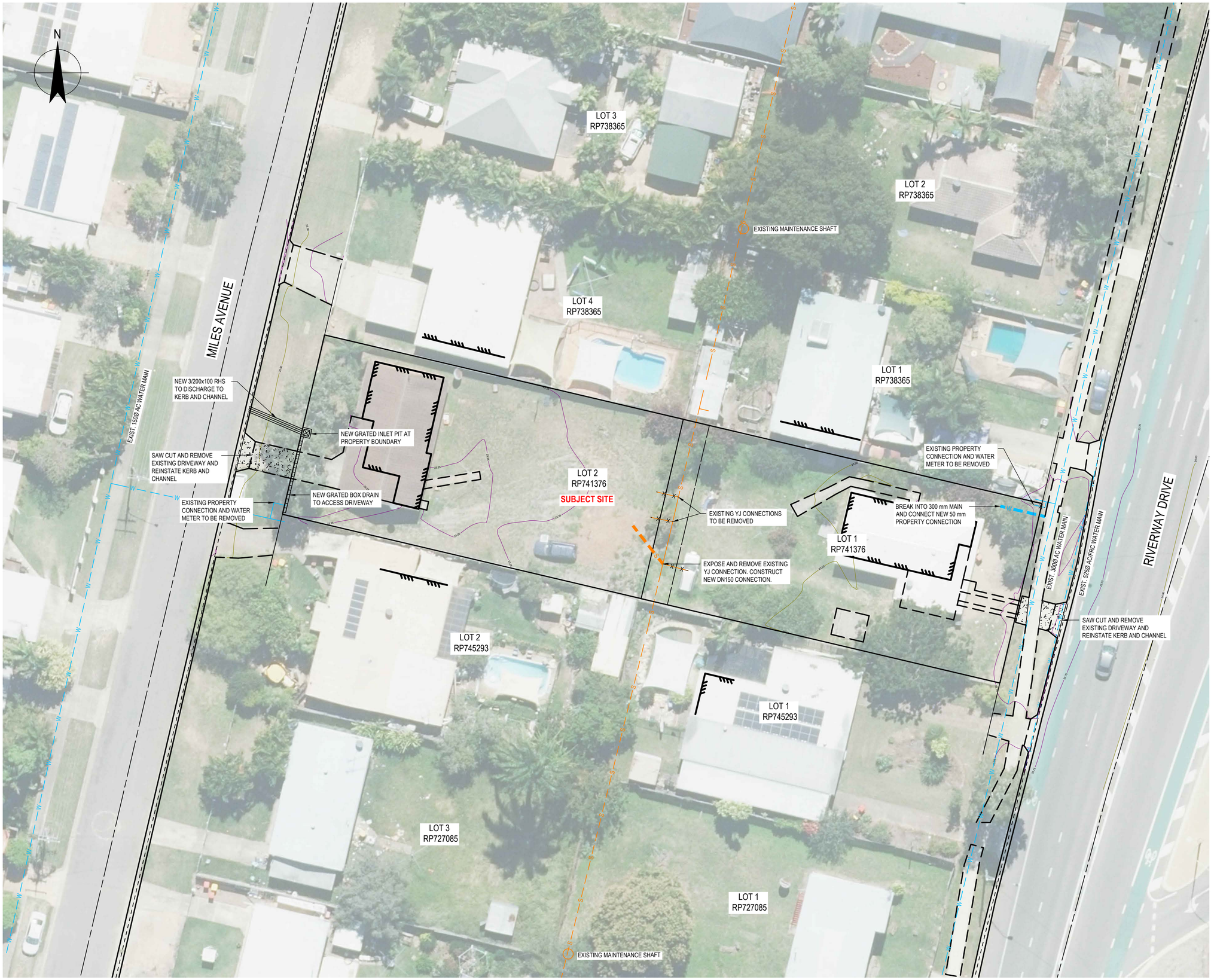
Imagery sourced from Open StreetMaps

The information shown on this map has been produced from the Townsville City Council's digital database. There is no warranty implied or expressed regarding the accuracy or completeness of the data. The data has been compiled for information and convenience only, and it is the responsibility of the user to verify all information before placing reliance on it. For accurate service locations please contact the Customer Service Centre on 1300 878 001

Powered By dbydsuite Protect your assets

Appendix B

Proposed Services Plan Sketch



PLAN

SCALE 1:200

LEGEND:

- INDICATIVE PROPERTY BOUNDARY
- SITE BOUNDARY
- PROPOSED SEWER
- PROPOSED WATER
- PROPOSED STORMWATER
- EXISTING DBYD SEWER
- EXISTING SEWER MAINTENANCE HOLE
- EXISTING DBYD STORMWATER
- EXISTING STORMWATER MAINTENANCE HOLE
- EXISTING DBYD WATER
- EXISTING FIRE HYDRANT
- EXISTING CONTOURS
- EXISTING SERVICE TO BE REMOVED
- EXISTING KERB AND CHANNEL
- EXISTING CONCRETE DRIVEWAY AND FOOTPATH

NOTES

1. THE PROPOSED SERVICE CONNECTIONS ARE TO BE CONFIRMED DURING SUBSEQUENT DESIGN PHASES ONCE A PROPOSED DEVELOPMENT LAYOUT HAS BEEN FINALISED. TYPE AND SCALE OF DEVELOPMENT FOR THE SITE MAY INFLUENCE SERVICING REQUIREMENTS.
2. SERVICE LOCATIONS ARE FROM BEFORE YOU DIG AUSTRALIA AND ARE INDICATIVE ONLY. STORMWATER, SEWER AND WATER SERVICES ARE INCLUDED ON THIS PLAN ONLY HOWEVER OTHER SERVICES EXIST IN AREA. REFER BEFORE YOU DIG AUSTRALIA PLANS FOR FULL EXTENT OF OTHER SERVICES.
3. EXISTING SITE FEATURES INCLUDING DETACHED DWELLING AND ESTABLISHED TREES WILL REQUIRE DEMOLITION PRIOR TO SITE DEVELOPMENT.
4. STORMWATER LAWFUL POINT OF DISCHARGE TO BE CONFIRMED UPON COMPLETION OF RELEVANT DRAINAGE MASTER PLAN (REFER GHD REPORT).
5. ASSESSMENT OF STORMWATER AND SEWER NETWORKS REQUIRED TO ENSURE AVAILABLE CAPACITY IN DOWNSTREAM NETWORK.
6. ONSITE STORMWATER MANAGEMENT ANTICIPATED AS PART OF FUTURE DEVELOPMENT OF SUBJECT SITE.

0 2 4 6 8 10m
SCALE 1:200 AT ORIGINAL SIZE

CONCEPT

rev	description	app'd	date
A	INITIAL ISSUE		

DEPARTMENT OF COMMUNITIES, HOUSING AND DIGITAL ECONOMY

8 Miles Avenue and 1265 Riverway Drive, Kelso

PROPOSED SERVICES PLAN

145 Ann St Brisbane QLD 4000 Australia
GPO Box 668 Brisbane QLD 4001
T 61 7 3316 3000 **F** 61 7 3319 6038
E bnemail@ghd.com **W** www.ghd.com

Conditions of Use: This document may only be used by GHD's client (and any other person who GHD has agreed can use this document) for the purpose for which it was prepared and must not be used by any other person or for any other purpose.

scale 1:200 for A1 | job no. 12528743-177
date MAY 2023 | rev no. A

approved (PD) SK001

Plot Date: 22 May 2023 - 3:17 PM Plotted by: Alice Wake Cad File No: \\ghdnet\GHD\AU\Brisbane\Projects\41\12528743\CADD\Drawings\12528743-177-8_MILES_AVENUE_KELSO.dwg

Appendix C

Flow and Pressure Test Report

PREMIER FIRE PTY LTD
44 Leyland Street, GARBUTT QLD 4814
PO BOX 7013, GARBUTT QLD 4814
PH: (07) 4775 6627
ABN: 61 085 589 591
QBCC: 745580
www.premierservicesgroup.com.au

Street Hydrant Performance Testing.

Hydrant Testing. Data Sheet.

JID-378917

Site Name: 8 Miles Avenue & 1265 Riverway Drive Kelso	Date: 10/01/2023

Address: 150 AC main in Miles Ave and the 300 AC main in Riverway Dr tested, as per below.

- Testing Requested details.
- Draw flow and measure hydrant pressure at H1 while measuring residual main pressure at H2, taking readings at 5 L/s increments up to full flow
- Repeat test using same hydrants but vice versa (draw flow from H2, measure main pressure at H1), taking readings at 5 L/s increments up to full flow
- Draw flow and measure hydrant pressure at H3 while measuring residual main pressure at H4, taking readings at 5 L/s increments up to full flow
- Repeat test using same hydrants but vice versa (draw flow from H4, measure main pressure at H3), taking readings at 5 L/s increments up to full flow
- Provide report, providing results for both tests (flow and pressure readings at each 5 L/s increment up to full flow), map showing tested hydrants and description of testing methods

Size of Hydrant Booster: N/A Street Hydrant	Duty	Build Class
N/A	20 L/s @ 200 Kpa Min	N/A

Locations of Flows.

Test 1	• Test point Draw flow and measure hydrant pressure at H1 while measuring residual main pressure at H2, taking readings at 5 L/s increments up to full flow.
Test 2	• Test Point Repeat test using same hydrants but vice versa (draw flow from H2, measure main pressure at H1), taking readings at 5 L/s increments up to full flow.
Test 3	• Draw flow and measure hydrant pressure at H3 while measuring residual main pressure at H4, taking readings at 5 L/s increments up to full flow

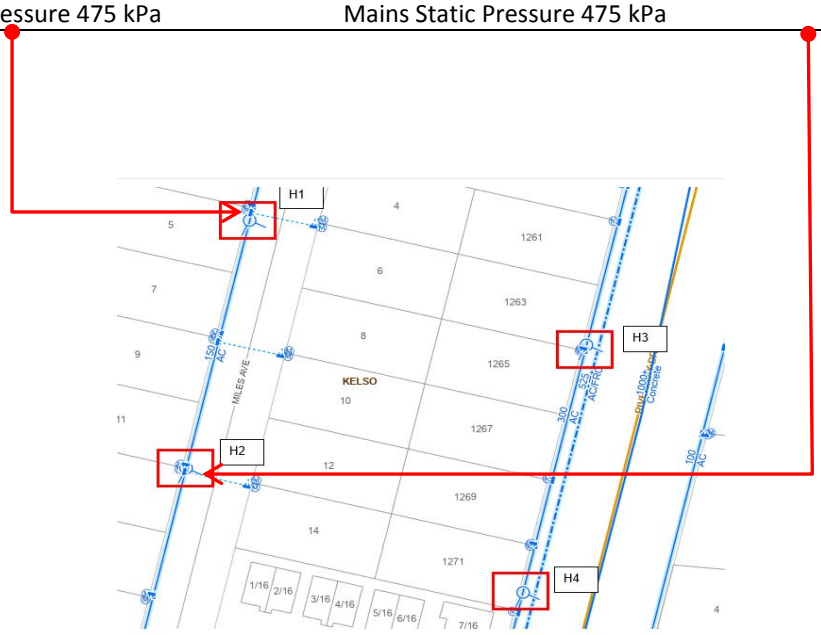
PREMIER FIRE PTY LTD
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PO BOX 7013, GARBUTT QLD 4814
PH: (07) 4775 6627
ABN: 61 085 589 591
QBCC: 745580
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Test 4	- Repeat test using same hydrants but vice versa (draw flow from H4, measure main pressure at H3), taking readings at 5 L/s increments up to full flow - Provide report, providing results for both tests (flow and pressure readings at each 5 L/s increment up to full flow), map showing tested hydrants and description of testing methods

Miles Street.

- Test 1: Draw flow and measure hydrant pressure at H1 while measuring residual main pressure at H2, taking readings at 5 L/s increments up to full flow

Litres & kPa Per Second Flowed @ H1	Residual Pressure Recorded @ H2
05 L/s @ 450 kPa	450 kPa
10 L/s @ 375 kPa	450 kPa
15 L/s @ 325 kPa	450 kPa
20 L/s @ 250 KpA	450 kPa
21 L/s @200 KpA Minimum kPa Required	450 kPa
24 L/s @ 100 kPa	450 kPa
Mains Static Pressure 475 kPa	Mains Static Pressure 475 kPa



Testing Equipment used.	Nata certified reference G14199	Date of Testing: 23/01/2023
Two Micrometres	Tested in accordance with ISO 10012:2004	
Two Hydrant stand pipes	Tolerance +/- 2 %	
Two Certified gauges	Tester Nick Cooper	
Serial: 19-1240	Signed	
Serial: 5402V7J		

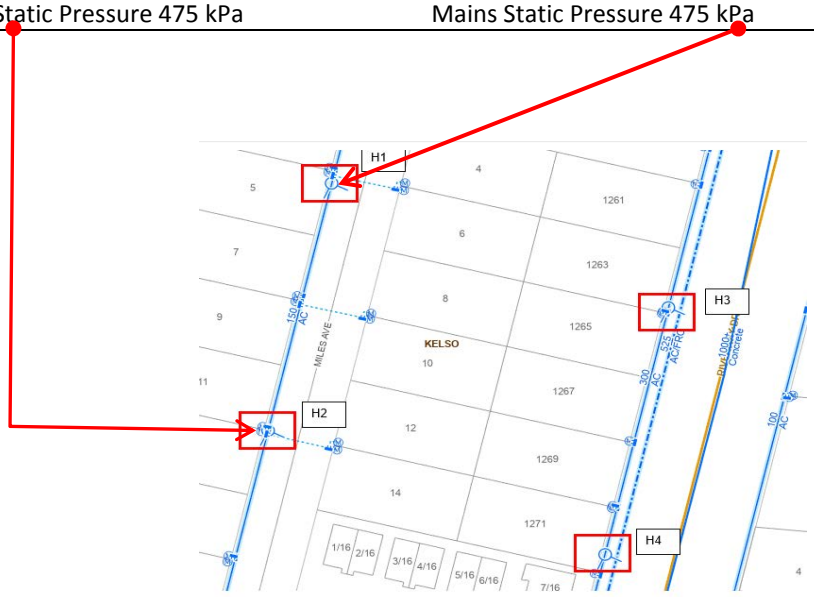
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JID-378917

Miles Street.

- Test 2: Test Point Repeat test using same hydrants but vice versa (draw flow from H2, measure main pressure at H1), taking readings at 5 L/s increments up to full flow.

Litres & kPa Per Second Flowed @ H2	Residual Pressure Recorded @ H1
05 L/s @ 410 kPa	450 kPa
10 L/s @ 310 kPa	450 kPa
15 L/s @ 140 kPa	450 kPa
18 L/s @ 50 KpA	450 kPa
14 L/s @ 200 KpA Minimum kPa Required	450 kPa
24 L/s @ 100 kPa	450 kPa
Mains Static Pressure 475 kPa	Mains Static Pressure 475 kPa

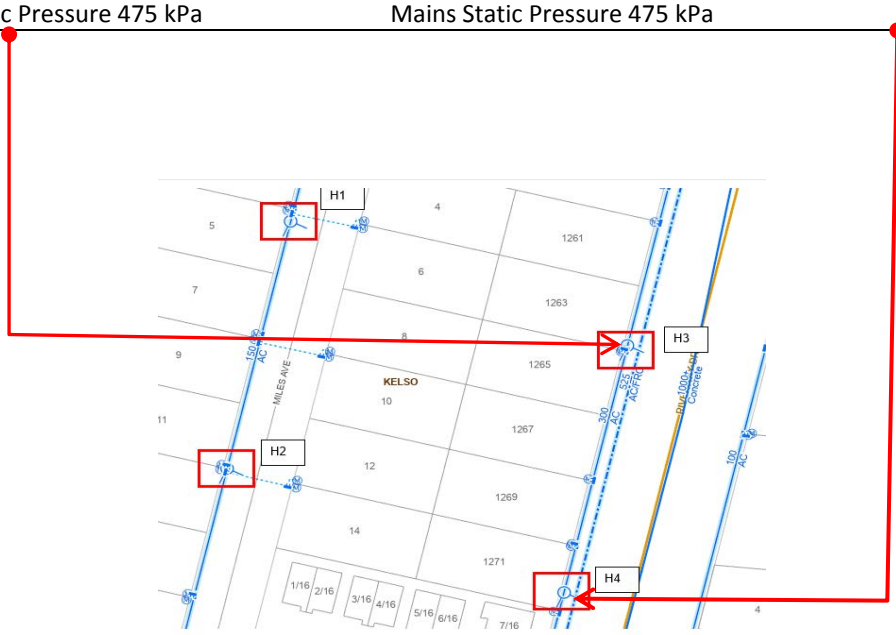


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Two Certified gauges	Tester Nick Cooper	
Serial: 19-1240	Signed	
Serial: 5402V7J		

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QBCC: 745580
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- Test 3: Draw flow and measure hydrant pressure at H3 while measuring residual main pressure at H4, taking readings at 5 L/s increments up to full flow

Litres & kPa Per Second Flowed @ H3	Residual Pressure Recorded @ H4
05 L/s @ 450 kPa	460 kPa
10 L/s @ 350 kPa	450 kPa
15 L/s @ 275 kPa	450 kPa
20 L/s @ 150 KpA	450 kPa
19 L/s @ 200 KpA Minimum kPa Required	450 kPa
23 L/s @ 100 kPa	425 kPa
Mains Static Pressure 475 kPa	Mains Static Pressure 475 kPa



Testing Equipment used. Nata certified reference G14199 Date of Testing: 23/01/2023

Two Micrometres Tested in accordance with ISO 10012:2004

Two Hydrant stand pipes Tolerance +/- 2 %

Two Certified gauges Tester Nick Cooper

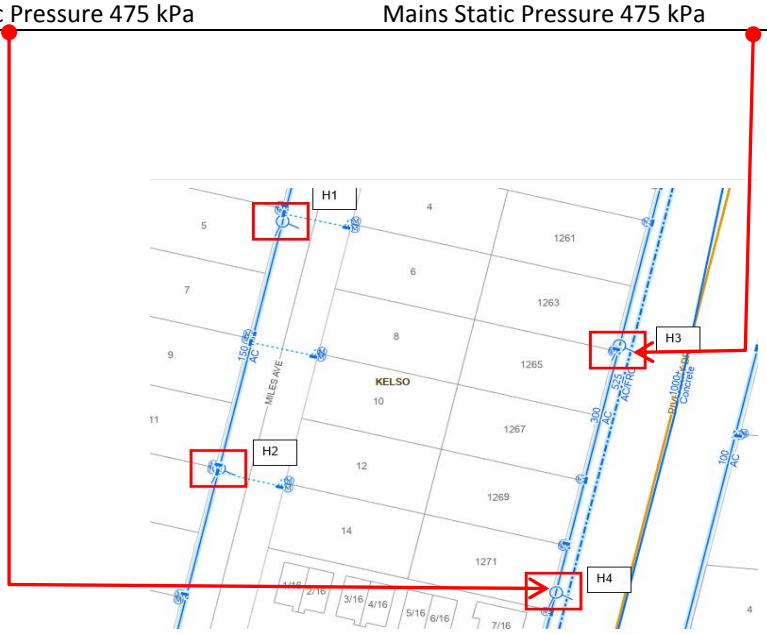
Serial: 19-1240 Signed

Serial: 5402V7J

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PO BOX 7013, GARBUTT QLD 4814
PH: (07) 4775 6627
ABN: 61 085 589 591
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- Test 4: Repeat test using same hydrants but vice versa (draw flow from H4, measure main pressure at H3), taking readings at 5 L/s increments up to full flow

Litres & kPa Per Second Flowed @ H4	Residual Pressure Recorded @ H3
05 L/s @ 450 kPa	450 kPa
10 L/s @ 400 kPa	450 kPa
15 L/s @ 300 kPa	450 kPa
20 L/s @ 200 KpA Minimum kPa Required	450 kPa
25 L/s @ 50 kPa	450 kPa
Mains Static Pressure 475 kPa	Mains Static Pressure 475 kPa



Testing Equipment used.	Nata certified reference G14199	Date of Testing: 23/01/2023
Two Micrometres	Tested in accordance with ISO 10012:2004	
Two Hydrant stand pipes	Tolerance +/- 2 %	
Two Certified gauges	Tester Nick Cooper	
Serial: 19-1240	Signed	
Serial: 5402V7J		

Appendix D

Geotechnical Report

Douglas Partners
Geotechnics / Environment / Groundwater

Integrated Practical Solutions

Report on
Geotechnical Investigation

Proposed Residential Development
8 Miles Avenue and 1265 Riverway Drive, Kelso

Prepared for
GHD Pty Ltd

Project 221251.00
April 2023



Douglas Partners
Geotechnics / Environment / Groundwater

Document History

Document details

Project No.	221251.00	Document No.	R.001.Rev0
Document title	Report on Geotechnical Investigation Proposed Residential Development		
Site address	8 Miles Avenue and 1265 Riverway Drive, Kelso		
Report prepared for	GHD Pty Ltd		
File name	221251.00.R.001.Rev0		

Document status and review

Status	Prepared by	Reviewed by	Date issued
Revision 0	David Hobbs / Luke Baxter	Mark Arnold	27 April 2023

Distribution of copies

Status	Electronic	Paper	Issued to
Revision 0	1	0	Mr Daryl Cochrane, GHD Pty Ltd

The undersigned, on behalf of Douglas Partners Pty Ltd, confirm that this document and all attached drawings, logs and test results have been checked and reviewed for errors, omissions and inaccuracies.

	Signature	Date
Author		27 April 2023
Reviewer		27 April 2023

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FS 604853

Douglas Partners Pty Ltd
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29 Civil Road
Garbutt QLD 4814
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Douglas Partners
Geotechnics | Environment | Groundwater

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Appendix A: About This Report
Drawing 1 – Site and Test Location Plan

Appendix B: Terminology, Symbols and Abbreviations
Soil Descriptions
Sampling, Testing and Excavation Methodology
Field Work Results

Appendix C: Laboratory Results

Appendix D: 'A Guide to Preventing Structural Damage' (QBCC (2015))

Report on Geotechnical Investigation
Proposed Residential Development
8 Miles Avenue and 1265 Riverway Drive, Kelso

1. Introduction

This report presents the results of geotechnical investigation undertaken in connection with a proposed residential development at 8 Miles Avenue and 1265 Riverway Drive, Kelso. The investigation was commissioned by GHD Pty Ltd on 23 March 2023 and was undertaken in accordance with Douglas Partners Pty Ltd (DP) proposal 221251.00.P.001.Rev0 dated 3 March 2023.

It is understood that the proposed development will comprise a two-storey residential building, probably with suspended concrete first floor and at-grade parking. Further details of the proposed development were not available at the time of report preparation. DP has presumed that the development would be split close to the adjoining boundary, resulting in two separate buildings.

The aim of the investigation was to provide the following:

- Summary of subsurface and groundwater conditions at the field test locations;
- Comments on:
  - Site preparation and earthworks;
  - Site classification in accordance with AS 2870 (2011);
  - Allowable bearing pressures and estimated settlements for spread footings;
  - Modulus of subgrade reaction and approximate settlement distribution for an engineered raft slab;
  - Allowable bearing pressures for bored or screw piles (founded within the depth of investigation, with pile type dependent on ground conditions encountered);
  - Recommended subgrade California bearing ratio (CBR) for pavement design based on textural classification; and
  - The likelihood of acid sulfate soils (ASS) based on available mapping, elevation and geology.

The investigation included the drilling of three boreholes and laboratory testing of selected samples. The details of the field and laboratory work are presented in this report, together with comments and recommendations on the items listed above.

This report must be read in conjunction with the notes About This Report in Appendix A along with any other attached explanatory notes and should be kept in its entirety without separation of individual pages or sections.

2. Site Description

The site (refer Drawing 1 in Appendix A) is a rectangular shaped area, some 80 m x 20 m in plan dimensions, comprising two residential lots (lots 1 and 2 on RP741376). The site is bordered to the north and south by residential properties and to the east and west by public roads. The site is relatively flat, with surface elevations falling gently westward from 23.6 AHD to 23.2 AHD.

At the time of investigation, the site was occupied by two single-storey detached, brick dwellings located on the eastern and western portions of the respective allotments, fronting the two streets. Site vegetation mostly comprised grass, with scattered shrubs and trees mostly around the site perimeter. Historical aerial imagery indicates that a significant tree (possibly African mahogany) was removed from the centre of the site at some point between September 2021 and August 2022. Figure 1 below shows relevant site views at the time of the investigation field work.



Figure 1: View looking west across the site from Bore 2 (towards Miles Avenue).

3. Published Data

3.1 Regional Geology

The Geological Survey of Queensland's digital mapping indicates the site to be underlain by Quaternary aged floodplain alluvium consisting of a range of soil types, varying with depth and location. The natural soils encountered during the investigation comprised clays and sands, considered to be of alluvial origin and hence in broad agreement with geological mapping.

3.2 Acid Sulfate Soils

The National ASS risk mapping indicates that the site is in an area of extremely low probability of occurrence of potential and actual ASS. Site surface levels vary between approximately 23 AHD and 24 AHD. Given that the disturbance of more than 100 m^3 of soil below 5 AHD is highly unlikely, ASS sampling and laboratory testing is not triggered under the Queensland Government DSDIP State Planning Policy 2014 and the Water Quality Australia (WQA) (2018) National guidance.

4. Field Work

4.1 Methods

Field work was undertaken on 4 April 2023 and comprised the drilling of three test bores (designated as Bores 1 to 3) to 7.3 m or 7.35 m depth at the test locations shown on Drawing 1 in Appendix A.

The bores were drilled using a utility mounted drilling rig using 90 mm diameter solid flight augers. Standard penetration tests (SPTs) were performed at 1.5 m depth intervals from 1 m depth. Dynamic cone penetrometer (DCP) tests were also performed adjacent to each borehole to 1 m depth to provide supplementary information on the strength consistency / relative density of the shallow soils. At the completion of drilling and checking for groundwater, the bores were backfilled with drilled spoil, mounded at the surface and wheel rolled.

The borehole locations were set out by a geotechnical engineer from DP, who also logged the subsurface profiles in each. The UTM coordinates and surface levels at the test locations were recorded using a decimetre-accurate differential GPS.

4.2 Results

The subsurface conditions encountered in the test bores are described in the borehole logs in Appendix B. These should be read in conjunction with the notes About this Report in Appendix A and the explanatory notes in Appendix B which comment on the terminology, symbols and abbreviations; soil descriptions; and sampling, testing and excavation methods used in their preparation.

The ground conditions encountered in the boreholes are broadly characterised as alluvium comprising mostly stiff or stronger silty or sandy clays, with localised very dense clayey sand encountered at depth in one of the three bores. The subsurface conditions are further described below:

Silty CLAY	Encountered in all bores from the surface to between 0.8 m and 5.6 m depth, and below the sandy clay in Bore 2 to bore termination at 7.3 m depth. Generally stiff or stronger, but locally firm within Bore 2 from the surface to 0.1 m depth and within Bore 3 to 0.4 m depth.
Sandy CLAY	Encountered in all bores below the silty clay to bore termination in Bore 1 and to 5.4 m and 6.3 m depth in Bores 2 and 3 respectively. Ranging between stiff and hard.

Clayey SAND Very dense and encountered in Bore 3 from 6.3 m to termination at 7.35 m depth.

No free groundwater was observed in any of the bores prior to backfilling. It should be noted, however, that groundwater levels are affected by climatic conditions and soil permeability and will vary with time. Townsville is located in the tropics and usually subject to distinct wet and dry seasons, during which the groundwater levels may vary considerably.

5. Laboratory Testing

Laboratory testing comprised two suites of field moisture, Atterberg limits and linear shrinkage. The results of the laboratory testing are provided in Appendix C and are summarised in Table 1 below.

Table 1: Results Field Moisture, Atterberg Limits and Linear Shrinkage Testing

Bore	Depth (m)	Primary Description	FMC (%)	LL (%)	PL (%)	PI (%)	LS (%)
1	1.0 - 1.45	Silty CLAY	12.6	32	15	17	10.0
3	1.0 - 1.45	Silty CLAY	11.7	30	15	15	9.0

Notes to Table 1:
FMC - Field moisture content LL - Liquid Limit PL - Plastic Limit PI - Plasticity Index LS - Linear Shrinkage

6. Comments

6.1 Appreciation of Ground Conditions

The subsurface conditions encountered at the field test locations primarily comprised silty or sandy clays that were consistently stiff or stronger below 0.4 m depth. Shallower clays in Bores 1 and 3 were firm or stiff. Very dense clayey sand was encountered below 6.3 m within Bore 3 to bore termination at 7.35 m depth. No free groundwater was encountered within the bores prior to backfilling.

It is recommended that all existing vegetation, topsoil and firm clays (up to approximately 0.4 m depth) be stripped from the building and pavement footprints and replaced with ‘controlled’ engineered fill.

The presence of shallow soils with an allowable bearing capacity of less than 100 kPa triggers a ‘Class P’ classification in strict adherence to AS2870 (2011), however, a ‘Class M’ could be applied to the design of structures within the scope of AS2870 provided that all footings are supported by stiff or stronger clays below depths of approximately 0.4 m.

Upper level footings and uncased bored piles are considered suitable founding options for this site due the absence of sands and groundwater within the depth of investigation.

Further comments on design and construction practice are given in the following sections of this report.

6.2 Site Preparation and Earthworks

It is suggested that the following site preparation be carried out for near surface subgrade preparation and site platform fill placement beneath the proposed building or pavements within the development footprint:

- Remove any vegetation, roots and organic rich topsoil, which should be re-used for landscaping purposes only. Where required, remove the firm clays (encountered to depths of approximately 0.4 m depth). Such materials are not considered suitable for reuse as engineered fill at this site. The potential presence of soft spots and uncontrolled fill associated with building demolition and root ball removal should also carefully be assessed, with associated uncontrolled backfill removed and replaced under controlled conditions.
- Scarify the silty clay subgrade to 0.3 m depth and moisture condition to within 2% of optimum moisture content for standard compaction (SOMC). Leave the subgrade to cure overnight where moisture conditioning is performed.
- Compact the exposed subgrade to a target of 98% maximum dry density for standard compaction (SMDD) with a minimum of six passes of 12 t smooth drum roller, and then conduct a final test roll to detect any remaining deleterious zones, which should be excavated and replaced with compacted select fill as appropriate. Test rolling should be carefully conducted within the previous building footprint. Over-compaction of dry clay subgrade should be avoided as discussed below.
- Place approved fill as required, in layers up 300 mm thick (loose) and compact to at least 98% SMDD within 2% of SOMC. Over-compacted and dry clays (ie greater than 102% SMDD and dry of OMC) may swell significantly and soften if they allowed to become wet after compaction and therefore should be avoided.
- Promptly cover any exposed clay at subgrade level with a minimum 150 mm thick select granular fill (minimum CBR 15%) to reduce potential wetting and drying and trafficability problems.
- Undertake 'Level 1' inspection and testing as detailed in AS 3798 (2007) where new fill is to support on-ground slabs and/or pavements and/or structural components.

The site clays will be susceptible to softening in wet periods and tracked machinery may assist with access for excavation, but not compaction. Wet and soft soils must be dried or replaced.

6.3 Site Classification

The presence of shallow soils with an allowable bearing pressure of less than 100 kPa (ie firm clays) triggers a 'Class P' classification in strict adherence to AS2870 (2011). For this site, reclassification is considered feasible provided that all footings are supported by replacement controlled fill or stiff or stronger clays as consistently encountered below 0.4 m depth. It is also noted that the footprint of the proposed building is likely to be beyond the scope of AS2870 (2011) and hence the following comments are included for information purposes only.

AS 2870 (2011) provides recommended values of change in suction (Δu) and depth of design suction (H_s) for major and regional centres throughout Australia, however values are not provided for the Townsville region. Based on data published by Fox (2000) relating climatic conditions to suction, 1.2 pF

and 2.3 m were adopted for Δu and H_s respectively, based on a 'temperate' climate zone. A cracking depth of 0.9 m was used in the analysis, based on $0.4H_s$.

An I_{ss} of 1.5% per ΔpF was adopted for the clay soils based on internal DP correlations between plasticity and shrink-swell index.

Using the methods outlined in Section 2 of AS 2870, characteristic surface movements (y_s) of approximately 20 mm to 30 mm are estimated for the site in its current condition, corresponding to a 'Class M' provided that all footings are supported by engineered fill or stiff or stronger clays as indicated above.

The effect of tree-induced soil moisture change has not been assessed in the above site classification (such as removal of the existing trees or any new trees close to the building). The building designer should refer to AS 2870 in this regard.

A copy of the QBCC Publication 'A Guide to Preventing Structural Damage' is provided in Appendix D for information with respect to suggested site maintenance measures.

6.4 Footings

6.4.1 General

Upper level pad or strip footings or uncased bored piles are expected to be suitable for the support of the proposed structures. Design parameters are presented in the following report sections.

It is essential that footing excavations be inspected by experienced geotechnical personnel to ensure the design parameters adopted are suitable for the ground conditions and to ensure that there is no soft or loose material remaining at the base of the excavations or smear on the side walls. Ground conditions can vary, and adequate provision should be made throughout the project to vary foundations to suit differing ground conditions.

6.4.2 Upper Level Footings

It is suggested that an allowable bearing pressure of 100 kPa be adopted for the design of small pad and strip footings founded within 'controlled' fill or natural stiff or stronger clays as consistently encountered below 0.4 m depth.

Settlements of less than 10 mm are estimated for pad or strip footings up to 1 m and 0.6 m wide, respectively, loaded and supported as above based on the conditions encountered in Bores 1 to 3 and assuming a founding depth of at least 0.4 m.

A modulus of subgrade reaction of 2 kPa / mm to 4 kPa / mm is estimated for a stiffened raft of 35 m x 15 m in plan dimensions (estimated based on the preliminary information provided to DP at the time of reporting), provided that site preparation and earthworks is performed in accordance with Section 6.2 of this report. It is important to note that modulus of subgrade reaction is dependent upon the geometry of the loaded area and hence feedback should be sought from DP in this regard once the geometry has been confirmed.

6.4.3 Piles

The allowable values presented in Table 2 below are based on piles with an L/d ratio of at least four and at least three pile diameters penetration into the target founding layer.

Table 2: Bored Pile Geotechnical Parameters

Material	Allowable Pressure (kPa)	
	Shaft Adhesion (compression and uplift)	End Bearing
Stiff clay	20	180
Very stiff clay	25	360
Hard clay	30	720

It is recommended that the upper 1 m of soil be ignored in pile shaft adhesion calculations due to the effects of load development and seasonal moisture variation. Any portion of piles that are permanently or temporarily supported by casing should also be ignored in load carrying capacity calculations.

Where limit state methods are used to design the piles, the ultimate geotechnical strength (R_{ug}) can be calculated by multiplying the allowable factors by the adopted safety factor of 2.5, and then by a suitable geotechnical strength reduction factor (ϕ_g) to obtain the design geotechnical strength (R_{dg}). Where no pile testing is carried out, a ϕ_g value of 0.45 is suggested.

6.5 Design Subgrade CBR

Based on the material encountered, and DPs experience with similar soils in the area, a recommended CBR value of 3% is suggested for the natural low plasticity silty clay subgrade provided it is conditioned to within 2% of SOMC and compacted to at least 98% SMDD.

The above suggested design subgrade CBR value is based on the assumption that all pavement construction will incorporate appropriately designed and maintained surface and subsurface drainage, to prevent moisture ingress into the pavement materials and subgrade.

7. References

AS 2870. (2011). *Residential Slabs and Footings.* Standards Australia.

AS 3798. (2007). *Guidelines on Earthworks for Commercial and Residential Developments.* Standards Australia.

Fox, E. (2000). A Climate-Based Design Depth of Moisture Change Map of Queensland and The Use of Such Maps to Classify Sites Under AS 2870-1996. *Australian Geomechanics Volume 3, Number 4*, 53 to 60.

QBCC. (2015). *A guide to preventing structural damage.* Ref: QBCC20150210 FCTbrstructuraldamage V3: Queensland Building and Construction Commission.

8. Limitations

Douglas Partners Pty Ltd (DP) has prepared this report for this project at 8 Miles Avenue and 1265 Riverway Drive, Kelso in accordance with DP's proposal dated 3 March 2023 and acceptance received from GHD Pty Ltd on 23 March 2023. The work was carried out under a GHD Subconsultancy Agreement QA022 with agreed amendments. This report is provided for the exclusive use of GHD Pty Ltd for this project only and for the purposes as described in the report. It should not be used by or relied upon for other projects or purposes on the same or other site or by a third party. Any party so relying upon this report beyond its exclusive use and purpose as stated above, and without the express written consent of DP, does so entirely at its own risk and without recourse to DP for any loss or damage. In preparing this report DP has necessarily relied upon information provided by the client and/or their agents.

The results provided in the report are indicative of the sub-surface conditions on the site only at the specific sampling and testing locations, and then only to the depths investigated and at the time the work was carried out. Sub-surface conditions can change abruptly due to variable geological processes and also as a result of human influences. Such changes may occur after DP's field testing has been completed.

DP's advice is based upon the conditions encountered during this investigation. The accuracy of the advice provided by DP in this report may be affected by undetected variations in ground conditions across the site between and beyond the sampling and testing locations. The advice may also be limited by budget constraints imposed by others or by site accessibility.

The assessment of atypical safety hazards arising from this advice is restricted to the geotechnical components set out in this report and based on known project conditions and stated design advice and assumptions. While some recommendations for safe controls may be provided, detailed 'safety in design' assessment is outside the current scope of this report and requires additional project data and assessment.

This report must be read in conjunction with all of the attached and should be kept in its entirety without separation of individual pages or sections. DP cannot be held responsible for interpretations or conclusions made by others unless they are supported by an expressed statement, interpretation, outcome or conclusion stated in this report.

This report, or sections from this report, should not be used as part of a specification for a project, without review and agreement by DP. This is because this report has been written as advice and opinion rather than instructions for construction.

Douglas Partners Pty Ltd

Appendix A

About This Report
Drawing 1 – Site and Test Location Plan

About this Report

November 2020

Introduction

These notes have been provided to amplify DP's report in regard to classification methods, field procedures and the comments section. Not all are necessarily relevant to all reports.

DP's reports are based on information gained from limited subsurface excavations and sampling, supplemented by knowledge of local geology and experience. For this reason, they must be regarded as interpretive rather than factual documents, limited to some extent by the scope of information on which they rely.

Copyright

This report is the property of Douglas Partners Pty Ltd. The report may only be used for the purpose for which it was commissioned and in accordance with the Conditions of Engagement for the commission supplied at the time of proposal. Unauthorised use of this report in any form whatsoever is prohibited.

Borehole and Test Pit Logs

The borehole and test pit logs presented in this report are an engineering and/or geological interpretation of the subsurface conditions, and their reliability will depend to some extent on frequency of sampling and the method of drilling or excavation. Ideally, continuous undisturbed sampling or core drilling will provide the most reliable assessment, but this is not always practicable or possible to justify on economic grounds. In any case the boreholes and test pits represent only a very small sample of the total subsurface profile.

Interpretation of the information and its application to design and construction should therefore take into account the spacing of boreholes or pits, the frequency of sampling, and the possibility of other than 'straight line' variations between the test locations.

Groundwater

Where groundwater levels are measured in boreholes there are several potential problems, namely:

- In low permeability soils groundwater may enter the hole very slowly or perhaps not at all during the time the hole is left open;
- A localised, perched water table may lead to an erroneous indication of the true water table;
- Water table levels will vary from time to time with seasons or recent weather changes. They may not be the same at the time of construction as are indicated in the report; and
- The use of water or mud as a drilling fluid will mask any groundwater inflow. Water has to be blown out of the hole and drilling mud must first be washed out of the hole if water measurements are to be made.

More reliable measurements can be made by installing standpipes which are read at intervals over several days, or perhaps weeks for low permeability soils. Piezometers, sealed in a particular stratum, may be advisable in low permeability soils or where there may be interference from a perched water table.

Reports

The report has been prepared by qualified personnel, is based on the information obtained from field and laboratory testing, and has been undertaken to current engineering standards of interpretation and analysis. Where the report has been prepared for a specific design proposal, the information and interpretation may not be relevant if the design proposal is changed. If this happens, DP will be pleased to review the report and the sufficiency of the investigation work.

Every care is taken with the report as it relates to interpretation of subsurface conditions, discussion of geotechnical and environmental aspects, and recommendations or suggestions for design and construction. However, DP cannot always anticipate or assume responsibility for:

- Unexpected variations in ground conditions. The potential for this will depend partly on borehole or pit spacing and sampling frequency;
- Changes in policy or interpretations of policy by statutory authorities; or
- The actions of contractors responding to commercial pressures.

If these occur, DP will be pleased to assist with investigations or advice to resolve the matter.

continued next page

Site Anomalies

In the event that conditions encountered on site during construction appear to vary from those which were expected from the information contained in the report, DP requests that it be immediately notified. Most problems are much more readily resolved when conditions are exposed rather than at some later stage, well after the event.

Information for Contractual Purposes

Where information obtained from this report is provided for tendering purposes, it is recommended that all information, including the written report and discussion, be made available. In circumstances where the discussion or comments section is not relevant to the contractual situation, it may be appropriate to prepare a specially edited document. DP would be pleased to assist in this regard and/or to make additional report copies available for contract purposes at a nominal charge.

Site Inspection

The company will always be pleased to provide engineering inspection services for geotechnical and environmental aspects of work to which this report is related. This could range from a site visit to confirm that conditions exposed are as expected, to full time engineering presence on site.

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Notes:
1. Base image from MetroMaps (August 2022).
2. Locality image from Bing Maps Roads.
3. Test locations are approximate only and are shown with reference to existing site features.

Legend

- Bore Location and Number
- Site Boundary

0 10 20 30 40 m

Douglas Partners
Geotechnics · Environment · Groundwater

TITLE: Site and Test Location Plan
Proposed Residential Development
8 Miles Avenue and 1265 Riverway Drive, Kelso

N

OFFICE: Townsville
DRAWN BY: BSH
DATE: April 2023

CLIENT: GHD Pty Ltd	PROJECT No: 221251.00	DRAWING No: 1	REVISION: 0	SCALE: 1:500 @ A4

Appendix B

Terminology, Symbols and Abbreviations
Soil Descriptions
Sampling, Testing and Excavation Methodology
Field Work Results

Terminology, Symbols and Abbreviations

November 2020

Introduction to Terminology, Symbols and Abbreviations

Douglas Partners' reports, investigation logs, and other correspondence may use terminology which has quantitative or qualitative connotations. To remove ambiguity or uncertainty surrounding the use of such terms, the following sets of notes pages may be attached Douglas Partners' reports, depending on the work performed and conditions encountered:

- Soil Descriptions;
- Rock Descriptions; and
- Sampling, insitu testing, and drilling methodologies

In addition to these pages, the following notes generally apply to most documents.

Abbreviation Codes

Site conditions may also be presented in a number of different formats, such as investigation logs, field mapping, or as a written summary. In some of these formats textual or symbolic terminology may be presented using textual abbreviation codes or graphic symbols, and, where commonly used, these are listed alongside the terminology definition. For ease of identification in these note pages, textual codes are presented in these notes in the following style `XW`. Code usage conforms with the following guidelines:

- Textual codes are case insensitive, although herein they are generally presented in upper case; and
- Textual codes are contextual (i.e. the same or similar combinations of characters may be used in different contexts with different meanings (for example `PL` is used for plastic limit in the context of soil moisture condition, as well as in `PL(A)` for point load test result in the testing results column)).

Data Integrity Codes

Subsurface investigation data recorded by Douglas Partners is generally managed in a highly structured database environment, where records "span" between a top and bottom depth interval. Depth interval "gaps" between records are considered to introduce ambiguity, and, where appropriate, our practice guidelines may require contiguous data sets. Recording meaningful data is not always appropriate (for example assigning a "strength" to a concrete pavement) and the following codes may be used to maintain contiguity in such circumstances.

Term	Description	Abbreviation Code
Core loss	No core recovery	`KL`
Unknown	Information was not available to allow classification of the property. For example, when auguring in loose, saturated sand auger cuttings may not be returned.	`UK`
No data	Information required to allow classification of the property was not available. For example if drilling is commenced from the base of a hole predrilled by others	`ND`
Not Applicable	Derivation of the properties not appropriate or beyond the scope of the investigation. For example providing a description of the strength of a concrete pavement	`NA`

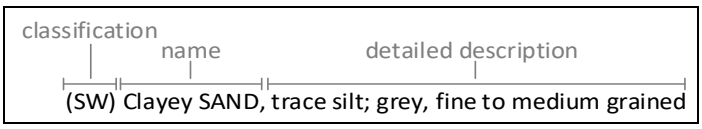
Graphic Symbols

Douglas Partners' logs contain a "graphic" column which provides a pictorial representation of the basic composition of the material. The symbols used are directly representing the material name stated in the adjacent "Description of Strata" column, and as such no specific graphic symbology legend has been provided in these notes.

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Introduction

All materials which are not considered to be "in-situ rock" are described in general accordance with the soil description model of AS 1726-2017 Part 6.1.3, and can be broken down into the following description structure:



The "classification" comprises a two character "group symbol" providing a general summary of dominant soil characteristics. The "name" summarises the particle sizes within the soil which most influence it's behaviour. The detailed description presents more information about the soil's composition, condition, structure, and origin.

Classification, naming and description of soils requires the relative proportion of particles of different sizes within the whole soil mixture to be considered.

Particle size designation and Behaviour Model

Solid particles within a soil are differentiated on the basis of size.

The engineering behaviour properties of a soil can subsequently be modelled to be either "fine grained" (also known as "cohesive" behaviour) or "coarse grained" ("non cohesive" behaviour), depending on the relative proportion of fine or coarse fractions in the soil mixture.

Particle Size Fraction	Particle Size (mm)	Behaviour Model	
		Behaviour	Approximate Dry Mass
Boulder	>200	Excluded from particle behaviour model as "oversize"	
Cobble	63 - 200		
Gravel[1]	2.36 - 63	Coarse	>65%
Sand[1]	0.075 - 2.36		
Silt	0.002 - 0.075	Fine	>35%
Clay	<0.002		

[1] – refer grain size subdivision descriptions below

The behaviour model boundaries defined above are not precise, and the material behaviour should be assumed from the name given to the material (which considers the particle fraction which dominates the behaviour, refer "component proportions" below), rather than strict observance of the proportions of particle sizes. For example, if a material is named a "Sandy CLAY", this is indicative that the material exhibits fine grained behaviour, even if the dry mass of coarse grained material may exceed 65%.

Component proportions

The relative proportion of the dry mass of each particle size fraction is assessed to be a "primary", "secondary", or "minor" component of the soil mixture, depending on its influence over the soils behaviour.

Component Proportion Designation	Definition[1]	Relative Proportion	
		In Fine Grained Soil	In Coarse Grained Soil
Primary	The component (particle size designation, refer above) which dominates the engineering behaviour of the soil	The clay/silt component with the greater proportion	The sand/gravel component with the greater proportion
Secondary	Any component which is not the primary, but is significant to the engineering properties of the soil	Any component with greater than 30% proportion	Any granular component with greater than 30%; or Any fine component with greater than 12%
Minor[2]	Present in the soil, but not significant to it's engineering properties	All other components	All other components

[1] As defined in AS1726-2017 6.1.4.4

[2] In the detailed material description, minor components are split into two further sub categories. Refer "identification of minor components" below

Composite Materials

In certain situations a lithology description may describe more than one material, for example, collectively describing a layer of interbedded sand and clay. In such a scenario, the two materials would be described independently, with the names preceded or followed by a statement describing the arrangement by which the materials co-exist. For example "INTERBEDDED Silty CLAY AND SAND".

Classification

The soil classification comprises a two character group symbol. The first symbol identifies the primary component. The second symbol identifies either the grading or presence of fines in a coarse grained soil, or the plasticity in a fine grained soil. Refer AS1726-2017 6.1.6 for further clarification.

Soil Name

For most soils the name is derived with the primary component included as the noun (in upper case), preceded by any secondary components stated in an adjective form. In this way the soil name also describes the general composition and indicates the dominant behaviour of the material.

Component[1]	Prominence in Soil Name
Primary	Noun (eg "CLAY")
Secondary	Adjective modifier (eg "Sandy")
Minor	No influence

[1] – for determination of component proportions, refer component proportions on previous page

For materials which cannot be disaggregated, or which are not comprised of rock or mineral fragments, the names "ORGANIC MATTER" or "ARTIFICIAL MATERIAL" may be used, in accordance with AS1726-2017 Table 14.

Commercial or colloquial names are not used for the soil name where a component derived name is possible (for example "Gravelly SAND" rather than "CRACKER DUST").

Materials of "fill" or "topsoil" origin are generally assigned a name derived from the primary/secondary component (where appropriate). In log descriptions this is preceded by uppercase "FILL" or "TOPSOIL". Origin uncertainty is indicated in the description by the characters `(?)`, with the degree of uncertainty described (using the terms "probably" or "possibly" in the origin column, or at the end of the description.

Identification of minor components

Minor components are identified in the soil description immediately following the soil name. The minor component fraction is usually preceded with a term indicating the relative proportion of the component.

Minor Component Proportion Term	Relative Proportion	
	In Fine Grained Soil	In Coarse Grained Soil
With	All fractions: 15-30%	Clay/silt: 5-12% sand/gravel: 15-30%
Trace	All fractions: 0-15%	Clay/silt: 0-5% sand/gravel: 0-15%

The terms "with" and "trace" generally apply only to gravel or fine particle fractions. Where cobbles/boulders are encountered in minor proportions (generally less than about 12%) the term "occasional" may be used. This term describes the sporadic distribution of the material within the confines of the investigation excavation only, and there may be considerable variation in proportion over a wider area which is difficult to factually characterize due to the relative size of the particles and the investigation methods.

Soil Composition

Plasticity

Descriptive Term	Laboratory liquid limit range	
	Silt	Clay
Non-plastic materials	Not applicable	Not applicable
Low plasticity	≤50	≤35
Medium plasticity	Not applicable	>35 and ≤50
High plasticity	>50	>50

Note, Plasticity descriptions generally describe the plasticity behaviour of the whole of the fine grained soil, not individual fine grained fractions.

Grain Size

Type		Particle size (mm)
Gravel	Coarse	19 - 63
	Medium	6.7 - 19
	Fine	2.36 – 6.7
Sand	Coarse	0.6 - 2.36
	Medium	0.21 - 0.6
	Fine	0.075 - 0.21

Grading

Grading Term	Particle size (mm)
Well	A good representation of all particle sizes
Poorly	An excess or deficiency of particular sizes within the specified range
Uniformly	Essentially of one size
Gap	A deficiency of a particular particle size with the range

Note, AS1726-2017 provides terminology for additional attributes not listed here.

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Soil Condition

Moisture

The moisture condition of soils is assessed relative to the plastic limit for fine grained soils, while for coarse grained soils it is assessed based on the appearance and feel of the material. The moisture condition of a material is considered to be independent of stratigraphy (although commonly these are related), and this data is presented in its own column on logs.

Applicability	Term	Tactile Assessment	Abbreviation code
Fine	Dry of plastic limit	Hard and friable or powdery	<PL
	Near plastic limit	Can be moulded	≈PL
	Wet of plastic limit	Water residue remains on hands when handling	>PL
	Near liquid limit	"oozes" when agitated	≈LL
	Wet of liquid limit	"oozes"	>LL
Coarse	Dry	Non-cohesive and free running	D
	Moist	Feels cool, darkened in colour, particles may stick together	M
	Wet	Feels cool, darkened in colour, particles may stick together, free water forms when handling	W

The abbreviation code NDF, meaning "not-assessable due to drilling fluid use" may also be used.

Note, observations relating to free ground water or drilling fluids are provided independent of soil moisture condition.

Consistency/Density/Compaction/Cementation/Extremely Weathered Rock

These concepts give an indication of how the material may respond to applied forces (when considered in conjunction with other attributes of the soil). This behaviour can vary independent of the composition of the material, and on logs these are described in an independent column and are generally mutually exclusive (i.e it is inappropriate to describe both consistency and compaction at the same time). The method by which the behaviour is described depends on the behaviour model and other characteristics of the soil as follows:

- In fine grained soils, the "consistency" describes the ease with which the soil can be remoulded, and is generally correlated against the materials undrained shear strength;
- In granular materials, the relative density describes how tightly packed the particles are, and is generally correlated against the density index;
- In anthropogenically modified materials the compaction of the material is described qualitatively;
- In cemented soils (both natural and anthropogenic), the cemented "strength" is described qualitatively, relative to the difficulty with which the material is disaggregated; and
- In soils of extremely weathered rock origin, the engineering behaviour may be governed by relic rock features, and expected behaviour needs to be assessed based the overall material description

Quantitative engineering performance of these materials may be determined by laboratory testing, or estimated by correlated field tests (for example penetration or shear vane testing). In some cases performance may be assessed by tactile or other subjective methods, in which case investigation logs will show the estimated value enclosed in round brackets, for example (VS).

Consistency (fine grained soils)

Consistency Term	Tactile Assessment	Undrained Shear Strength (kPa)	Abbreviation Code
Very soft	Extrudes between fingers when squeezed	<12	VS
Soft	Mouldable with light finger pressure	>12 - ≤25	S
Firm	Mouldable with strong finger pressure	>25 - ≤50	F
Stiff	Cannot be moulded by fingers	>50 - ≤100	ST
Very stiff	Indented by thumbnail	>100 - ≤200	VST
Hard	Indented by thumbnail with difficulty	>200	H
Friable	Easily crumbled or broken into small pieces by hand	-	FR

Relative Density (coarse grained soils)

Relative Density Term	Density Index	Abbreviation Code
Very loose	<15	VL
Loose	>15-≤35	L
Medium dense	>35-≤65	MD
Dense	>65-≤85	D
Very dense	>85	VD

Note, tactile assessment of relative density is difficult, and generally requires penetration testing, hence a tactile assessment guide is not provided.

Compaction (anthropogenically modified soil)

Compaction Term	Abbreviation Code
Well compacted	WC
Poorly compacted	PC
Moderately compacted	MC
Variably compacted	VC

Cementation (natural and anthropogenic)

Cementation Term	Abbreviation Code
Moderately cemented	MCE
Weakly cemented	WKCE
Cemented	CE
Strongly bound	SB
Weakly bound	WB
Unbound	UB

Extremely Weathered Rock

AS1726-2017 considers weathered rock material to be soil if the unconfined compressive strength is less than 0.6 MPa (i.e. very low strength rock). These materials may be identified as "extremely weathered rock" in reports and by the abbreviation code XWR on log sheets. This identification is not correlated to any specific qualitative or quantitative behaviour, and the engineering properties of this material must therefore be assessed according to engineering principles with reference to any relic rock structure, fabric, or texture described in the description.

Soil Origin

Term	Description	Abbreviation Code
Residual	Derived from in-situ weathering of the underlying rock	RES
Extremely weathered material	Formed from in-situ weathering of geological formations. Has strength of less than 'very low' as per as1726 but retains the structure or fabric of the parent rock.	XWM
Alluvial	Deposited by streams and rivers	ALV
Estuarine	Deposited in coastal estuaries	EST
Marine	Deposited in a marine environment	MAR
Lacustrine	Deposited in freshwater lakes	LCS
Aeolian	Carried and deposited by wind	AEO
Colluvial	Soil and rock debris transported down slopes by gravity	COL
Topsoil	Mantle of surface soil, often with high levels of organic material	TOP
Fill	Any material which has been moved by man	FILL
Littoral	Deposited on the lake or sea shore	LIT
Unidentifiable	Not able to be identified	UID

Cobbles and Boulders

The presence of particles considered to be "oversize" may be described using one of the following strategies:

- Oversize encountered in a minor proportion (when considered relative to the wider area) are noted in the soil description; or
- Where a significant proportion of oversize is encountered, the cobbles/boulders are described independent of the soil description, in a similar manner to composite soils (described above) but qualified with "MIXTURE OF".

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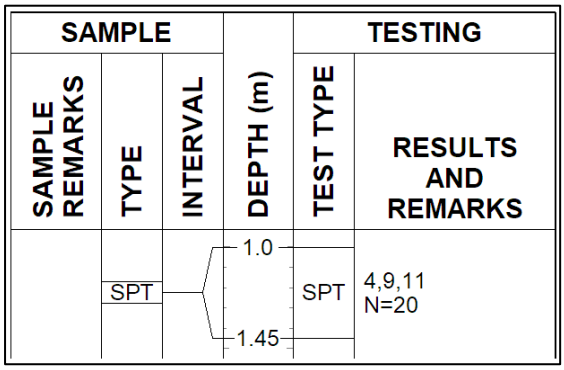
Sampling, Testing and Excavation Methodology

Terminology
Symbols
Abbreviations

November 2020

Sampling and Testing

A record of samples retained and field testing performed is usually shown on a Douglas Partners' log with samples appearing to the left of a depth scale, and selected field and laboratory testing (including results, where relevant) appearing to the right of the scale, as illustrated below:



Sampling

The type or intended purpose for which a sample was taken is indicated by the following abbreviation codes.

Sample Type	Code
Auger sample	A
Acid sulfate sample	ASS
Bulk sample	B
Core sample	C
Disturbed sample	D
Sample from SPT test	SPT
Environmental sample	E
Gas sample	G
Jar sample	J
Undisturbed tube sample	U[1]
Water sample	W
Piston sample	P
Core sample for unconfined compressive strength testing	UCS

[1] – numeric suffixes indicate tube diameter/width in mm

The above codes only indicate that a sample was retained, and not that testing was scheduled or performed.

Field and Laboratory Testing

A record that field and laboratory testing was performed is indicated by the following abbreviation codes.

Test Type	Code
Pocket penetrometer (kPa)	PP
Photo ionisation detector (ppm)	PID
Standard Penetration Test x/y =*x* blows for *y* mm penetration HB = hammer bouncing	SPT
Shear vane (kPa)	V
Unconfined compressive strength, (MPa)	UCS

Field and laboratory testing (continued)

Test Type	Code
Point load test, (MPa), axial (A), diametric (D), irregular (I)	PLT(_)
Dynamic cone penetrometer, followed by blow count penetration increment in mm (cone tip, generally in accordance with AS1289.6.3.2)	DCP/150
Perth sand penetrometer, followed by blow count penetration increment in mm (flat tip, generally in accordance with AS1289.6.3.3)	PSP/150

Groundwater Observations

▷	seepage/inflow
▽	standing or observed water level
NFGWO	no free groundwater observed
OBS	Observations obscured by drilling fluids

Drilling or Excavation Methods/Tools

The drilling/excavation methods used to perform the investigation may be shown either in a dedicated column down the left hand edge of the log, or stated in the log footer. In some circumstances abbreviation codes may be used.

Method	Abbreviation Code
Excavator/backhoe bucket	B[1]
Toothed bucket	TB[1]
Mud/blade bucket	MB[1]
Ripping tyne/ripper	RT
Rock breaker/hydraulic hammer	RB
Hand auger	HA[1]
NMLC series coring	NMLC
HMLC series coring	HMLC
NQ coring	NQ
HQ coring	HQ
PQ coring	PQ
Push tube	PT [1]
Rock roller	RR[1]
Solid flight auger. Suffixes: (TC) = tungsten carbide tip, (V) = v-shaped tip	SFA[1]
Sonic drilling	SON[1]
Vibrocore	VC[1]
Wash bore (unspecified bit type)	WB[1]
Existing exposure	X
Hand tools (unspecified)	HT
Predrilled	PD
Specialised bit (refer report)	SPEC[1]
Diatube	DT[1]
Hollow flight auger	HFA[1]
Vacuum excavation	VE

[1] – numeric suffixes indicate tool diameter/width in mm

BOREHOLE LOG

CLIENT: GHD Pty Ltd
PROJECT: Proposed Residential Development
LOCATION: 8 Miles Avenue and 1265 Riverway Drive, Kelso

SURFACE LEVEL: 23.2 AHD
COORDINATE E:471726 **N:** 7858584
DATUM/GRID: GDA94/MGA94 Zone 55K
DIP/AZIMUTH: 90°/---

LOCATION ID: 1
PROJECT No: 221251.00
DATE: 04/04/23
SHEET: 1 of 1

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	SAMPLE TYPE	SAMPLE INTERVAL	DEPTH (m)	TESTING AND REMARKS: TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	23	0.0	(CL) Silty CLAY; brown; low plasticity		ALV	H			A		0.3	DCP/100	5 10 15
						VST					0.5		
	22	0.6	(CL) Silty CLAY, trace sand; red brown; clay fraction low plasticity; sand fraction fine to medium			H					1.0		
		1							SPT			S	9,13,15 N=28
						VST					1.45		
	21	2			ALV						2		
			2.3m: mottled grey and black								2.5		
									SPT			S	2,6,8 N=14
		3				ST					2.95		
	20	3.2	(CL) Silty CLAY; brown grey; low plasticity				<PL				3		
		4									4.0		
	19				ALV				SPT			S	6,12,24 N=36
											4.45		
		5				H					5		
	18	5.6	(CL) Sandy CLAY; grey; clay fraction low plasticity; sand fraction fine to medium						SPT		5.5		
			5.8m: mottled orange						SPT		5.6	S	7,16/120 (HB)
											5.77		
	17	6			ALV						6		
		6.9											
		7	(CL) Sandy CLAY; grey mottled orange; clay fraction low plasticity; sand fraction fine to medium						SPT		7.0		
	16				ALV							S	6,30/150 (HB)
		7.3	Borehole discontinued at 7.30m depth Limit of investigation								7.3		

NOTES: (#)Soil origin is "probable" unless otherwise stated. (*)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: GT50
METHOD: 90mm diameter solid flight auger
REMARKS: Coordinates and surface level recorded by DP using dGPS

OPERATOR: Douglas Partners (TJS)
CASING: Nil

LOGGED: DRH

EXPORTED 20/04/23 20:57. TEMPLATE ID: DP_101.02.00_SOILLOG

Douglas Partners
Geotechnics | Environment | Groundwater

BOREHOLE LOG

CLIENT: GHD Pty Ltd
PROJECT: Proposed Residential Development
LOCATION: 8 Miles Avenue and 1265 Riverway Drive, Kelso

SURFACE LEVEL: 23.3 AHD
COORDINATE E:471747 **N:** 7858596
DATUM/GRID: GDA94/MGA94 Zone 55K
DIP/AZIMUTH: 90°/---

LOCATION ID: 2
PROJECT No: 221251.00
DATE: 04/04/23
SHEET: 1 of 1

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*)	DENSITY.(*)	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	23	0.0	(CL) Silty CLAY; brown; low plasticity		ALV	F	VST	=PL		A		0.3	DCP/100	5 10 15
							ST					0.5		
	22	0.8	(CL) Sandy CLAY; red brown; clay fraction low plasticity; sand fraction fine to coarse							SPT		1.0	S	13,16,30 N=46
												1.45		
	21	2			ALV		H	<PL				2		
										SPT		2.5	S	4,4,6 N=10
		3										2.95		
	20	3.3	(CL) Sandy CLAY; brown grey; clay fraction low plasticity; sand fraction fine to medium				ST							
		4			ALV			=PL		SPT		4.0	S	4,5,9 N=14
	19											4.45		
		5										5		
	18	5.4	(CL) Silty CLAY, trace sand; grey; clay fraction low plasticity; sand fraction fine							SPT		5.5	S	5,16/100 (HB)
												5.75		
		6			ALV		H	<PL				6		
	17		7.0m: mottled black and orange											
		7								SPT		7.0	S	5,18,5/0 (HB)
	16	7.3	Borehole discontinued at 7.30m depth Limit of investigation									7.3		

NOTES: (#)Soil origin is "probable" unless otherwise stated. (*)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: GT50
METHOD: 90mm diameter solid flight auger
REMARKS: Coordinates and surface level recorded by DP using dGPS

OPERATOR: Douglas Partners (TJS)
CASING: NIL

LOGGED: DRH

EXPORTED 20/04/23 20:57. TEMPLATE ID: DP_101.02.00_SOILLOG

Douglas Partners
Geotechnics | Environment | Groundwater

BOREHOLE LOG

CLIENT: GHD Pty Ltd
PROJECT: Proposed Residential Development
LOCATION: 8 Miles Avenue and 1265 Riverway Drive, Kelso

SURFACE LEVEL: 23.6 AHD
COORDINATE E:471787 **N:** 7858572
DATUM/GRID: GDA94/MGA94 Zone 55K
DIP/AZIMUTH: 90°/---

LOCATION ID: 3
PROJECT No: 221251.00
DATE: 04/04/23
SHEET: 1 of 1

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	SAMPLE TYPE	SAMPLE INTERVAL	DEPTH (m)	TESTING AND REMARKS: TEST TYPE	RESULTS AND REMARKS
No free groundwater observed	23	0.0	(CL) Silty CLAY; grey brown; low plasticity		ALV	ST F ST F ST VST	=PL		A		0.3 0.5	DCP/100	5 10 15
	22	1.0							SPT		1.0	S	4,5,8 N=13
		1.6	(CL) Silty CLAY, with sand; brown; clay fraction low plasticity; sand fraction fine to medium								1.45		
	21	2				ST					2		
		2.5							SPT		2.5	S	1,5,4 N=9
	20	3			ALV		<PL				2.95 3		
		4							SPT		4.0	S	4,9,11 N=20
	19	4.6	(CL) Sandy CLAY; grey; clay fraction low plasticity; sand fraction fine			VST					4.45		
	18	5			ALV						5		
		5.5				H			SPT		5.5	S	7,18,5/0 (HB)
		6									5.8 6		
	17	6.3	(SC) Clayey SAND; grey; fine to medium		ALV	VD	D						
		7							SPT		7.0	S	6,18,7/50 (HB)
	16	7.35	Borehole discontinued at 7.35m depth Limit of investigation								7.35		

NOTES: (#)Soil origin is "probable" unless otherwise stated. (*)Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: GT50
METHOD: 90mm diameter solid flight auger
REMARKS: Coordinates and surface level recorded by DP using dGPS

OPERATOR: Douglas Partners (TJS)
CASING: NIL

LOGGED: DRH

EXPORTED 20/04/23 20:57. TEMPLATE ID: DP_101.02.00_SOILLOG

Douglas Partners
Geotechnics / Environment / Groundwater

Appendix C

Laboratory Results

Material Test Report

Douglas Partners
Geotechnics / Environment / Groundwater
Douglas Partners Pty Ltd
Townsville Laboratory
29 Civil Road Garbutt QLD 4814
Phone: (07) 4779 9866
Email: Townsville@douglaspartners.com.au

Report Number:	**221251.00-1**
Issue Number:	1
Date Issued:	12/04/2023
Client:	GHD Pty Ltd
	GPO Box 668, Brisbane QLD 4001
Contact:	Daryl Cochrane
Project Number:	221251.00
Project Name:	Proposed Residential Development
Project Location:	8 Miles Avenue and 1265 Riverway Drive, Kelso QLD
Work Request:	3453
Sample Number:	TW-3453A
Date Sampled:	04/04/2023
Dates Tested:	05/04/2023 - 11/04/2023
Sampling Method:	Sampled by Engineering Department
	The results apply to the sample as received
Preparation Method:	In accordance with the test method
Sample Location:	**Bore 1 , Depth: 1.0 - 1.45**
Material:	Natural

Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Rachel Moss
Laboratory Manager
Laboratory Accreditation Number: 828

Atterberg Limit (AS1289 3.1.2 & 3.2.1 & 3.3.1)		Min	Max
Sample History	Oven Dried		
Preparation Method	Dry Sieve		
Liquid Limit (%)	32		
Plastic Limit (%)	15		
Plasticity Index (%)	**17**		

Linear Shrinkage (AS1289 3.4.1)		Min	Max
Moisture Condition Determined By	AS 1289.3.1.2		
Linear Shrinkage (%)	**10.0**		
Cracking Crumbling Curling	None		

Moisture Content (AS 1289 2.1.1)		Min	Max
Moisture Content (%)	12.6		

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Results relate only to the items tested/sampled.

Material Test Report

Douglas Partners
Geotechnics / Environment / Groundwater
Douglas Partners Pty Ltd
Townsville Laboratory
29 Civil Road Garbutt QLD 4814
Phone: (07) 4779 9866
Email: Townsville@douglaspartners.com.au

Report Number:	**221251.00-1**
Issue Number:	1
Date Issued:	12/04/2023
Client:	GHD Pty Ltd
	GPO Box 668, Brisbane QLD 4001
Contact:	Daryl Cochrane
Project Number:	221251.00
Project Name:	Proposed Residential Development
Project Location:	8 Miles Avenue and 1265 Riverway Drive, Kelso QLD
Work Request:	3453
Sample Number:	TW-3453B
Date Sampled:	04/04/2023
Dates Tested:	05/04/2023 - 11/04/2023
Sampling Method:	Sampled by Engineering Department
	The results apply to the sample as received
Preparation Method:	In accordance with the test method
Sample Location:	**Bore 3 , Depth: 1.0 - 1.45**
Material:	Natural

Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Rachel Moss
Laboratory Manager
Laboratory Accreditation Number: 828

Atterberg Limit (AS1289 3.1.2 & 3.2.1 & 3.3.1)		Min	Max
Sample History	Oven Dried		
Preparation Method	Dry Sieve		
Liquid Limit (%)	30		
Plastic Limit (%)	15		
Plasticity Index (%)	**15**		

Linear Shrinkage (AS1289 3.4.1)		Min	Max
Moisture Condition Determined By	AS 1289.3.1.2		
Linear Shrinkage (%)	**9.0**		
Cracking Crumbling Curling	None		

Moisture Content (AS 1289 2.1.1)		Min	Max
Moisture Content (%)	11.7		

This document shall not be reproduced except in full without approval of the laboratory.
Results relate only to the items tested/sampled.

Appendix D

‘A Guide to Preventing Structural Damage’ (QBCC (2015))

qbcc
queensland building and construction commission



A guide to preventing structural damage

Build better.

Home owners guide to planning landscaping and maintenance of foundations

Structural damage can result from movement in clay soils caused by varying moisture conditions around the perimeter of homes.

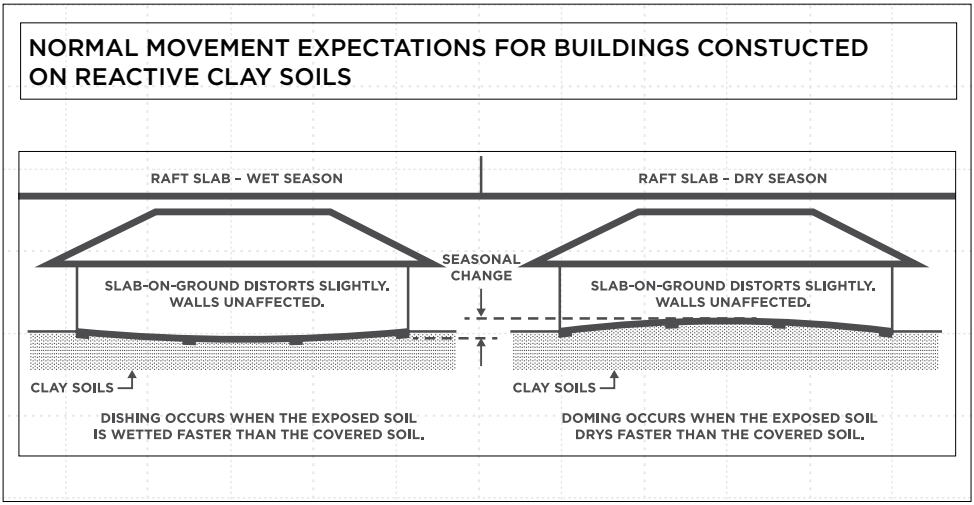
The majority of Queensland homes are situated on what are termed reactive clay soils. These soils are subject to expansion and contraction depending on seasonal weather and site conditions. Sandy sites and rocky terrain are usually not prone to this expansion and contraction.

In Queensland, engineers design footings to the **Australian Standard AS2870 – 2011 Residential slabs and footings**. Footings correctly designed to this standard are intended to accommodate the expected movements caused by seasonal volume changes in the soil (swelling when wet and shrinking when dry) - under **normal conditions**. The performance of footings under this standard requires **normal conditions** to be **maintained** around the house.

This guideline identifies **abnormal conditions** that should be avoided and/or corrected.

Dry seasons cause soils to dry out rapidly. Wet seasons cause soils to become wet quickly. This results in sudden extreme volume changes and movement in soil.

Abnormal conditions (other than seasonal changes), may include the effect of trees, poor surface drainage and/or leaking plumbing. If not allowed for in the engineer's design, these types of abnormal conditions may lead to movement and damage varying from minor to extreme.



How much can the soils under my house move?

The amount of movement that may occur depends on the site classification, which is defined under the **Australian Standard AS2870**.

The relevant classifications and expected movements under normal site conditions and seasonal influences are:

Site classification	Description of type of clay and reactivity	Expected range of movement
A	Mostly sand and rock with little or no ground movement from moisture changes.	0
S	Slightly reactive clays that do not present significant trouble. Very limited damage could be expected in the life of the building.	0 to 20mm
M	Moderately reactive clays that may cause minor movement and damage in the life of the building. Reasonable care is required in planning the site.	20 to 40mm
H **(H1 & H2)**	Highly reactive clays have potential to move more, and react to variable moisture change conditions. Some minor damage may occur in the life of the building under normal conditions. More significant damage may occur where site maintenance conditions are a problem e.g. influence of trees or leaking underground plumbing or poor drainage. Particular care is required in planning the site.	**H1** 40 to 60mm **H2** 60 to 75mm
E	Extremely reactive clays have the potential to react significantly to any variable moisture changes in the foundation clays and require significant attention to detail in planning the site works. Extreme movement and damage may occur if the site conditions and foundation maintenance requirements are not observed. Footing systems and site conditions on “E” sites require very detailed specification from an engineer.	>75mm (Note: Movements on **E** sites have been known to move up to and in excess of 100 to 150mm in SE Qld)

Is it normal to expect cracking to occur in brickwork, walls and ceilings?

Yes, damage in varying degrees can be expected in the life of the building depending on the relevant site classification.

If cracking becomes apparent the site maintenance conditions should be checked as noted under "key points to consider..."

Corrective action should be carried out immediately and may include regrading surface drainage, moving gardens and trees or repairing leaks in water supply, stormwater and/or sewer drainage.

A sound plan for a reactive clay site is to provide a consistent moisture regime around the building by installing paths and patios against the house. Locate lawns up against paths & patios. Garden beds, the most heavily watered parts of a garden, should be kept well away from the house.

If gardens must be placed in close proximity to the house, they should be sealed with plastic and contain only a few small plants. Take care not to trap water against the building if using garden edging.

Caution: Care should also be taken if placing filling against the house. Always ensure weep holes are not covered and that existing Termite Management Systems are not compromised.

Key points to consider when planning landscaping to avoid structural damage.

- Plan type and location of gardens, paths, driveways, lawns, filling and retaining walls
- Take care in selection of trees and shrubs. Do not over plant next to the house
- Keep trees with high water demand well away from buildings in reactive clay areas.
- Avoid variable conditions around the house and maintain adequate moisture/watering. Do not ***over*** water and avoid the use of unregulated sprinkler systems.
- Locate ponds and water features away from the house.
- Direct surface water away from the house. Do not allow water to be trapped or pond near the house.
- Repair leaking pipes and taps.

Note: these issues should be considered as part of planning and maintaining the home. Aim to provide a consistent moisture regime around the house. This will minimise soil moisture variations that may cause movement and result in structural damage.

Common sense guidelines for landscaping and gardens

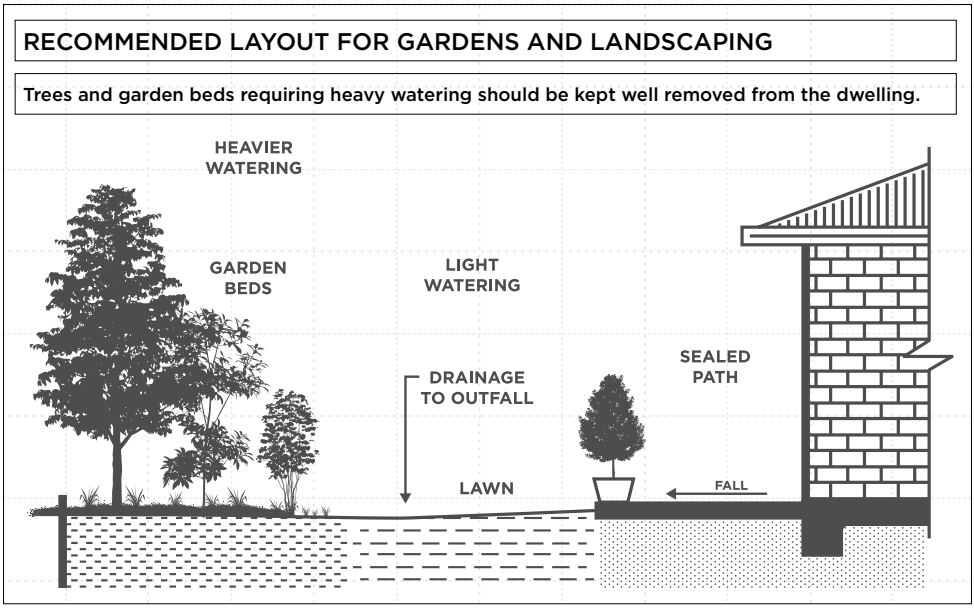
1. Gardens

Important: It is quite impractical to try to prevent gardening activities from increasing the moisture content around the foundations of your home. The only practical course is to keep such activities away from the immediate vicinity of the building and so minimise their effects.

A sound plan for a reactive clay site is to provide a consistent moisture regime around the building by installing paths and patios against the house. Locate lawns up against paths & patios. Garden beds, the most heavily watered parts of a garden, should be kept well away from the house.

If gardens must be placed in close proximity to the house, they should be sealed with plastic and contain only a few small plants. Take care not to trap water against the building if using garden edging.

Caution: Care should also be taken if placing filling against the house. Always ensure weep holes are not covered and that existing Termite Management Systems are not compromised.



2. Paths, patios and driveways

Paths should be laid hard against brickwork or footings with a fall away from the house to a stormwater discharge point.

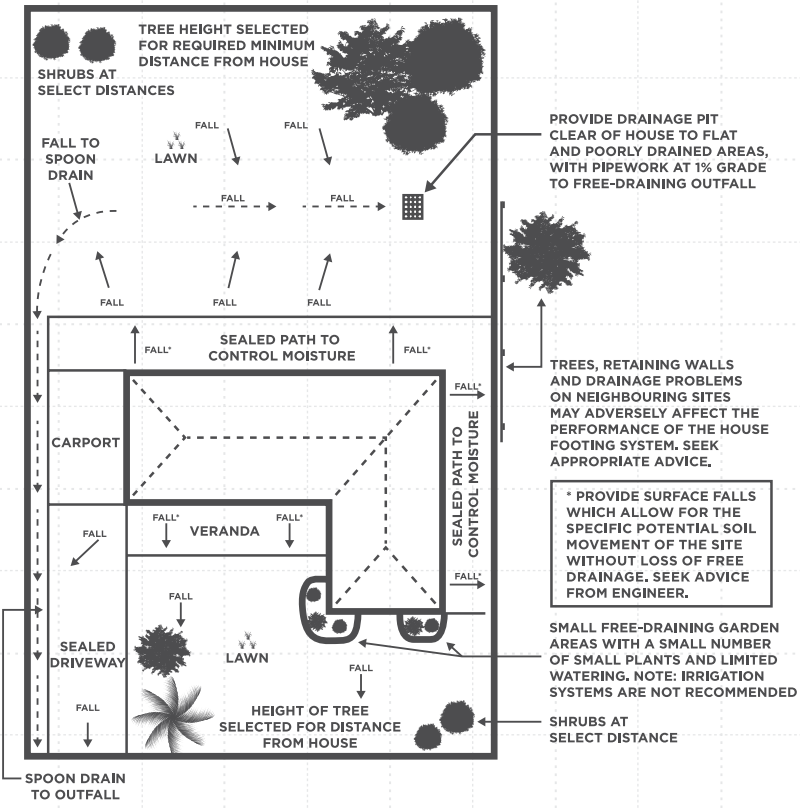
Avoid placing large expanses of concrete on one side of the house and heavily watered garden beds on the other.

The water saturated clay in the gardens will expand and swell while the soil under the concrete may not move. Structural damage can result from this unco-ordinated movement.

Concrete pavements should be constructed in a way that will not impede surface water flowing away from the building or cause water to pond adjacent to the footings causing clay foundations to swell.

On “H” & “E” site classifications, particular detail is required to prevent pavement from moving away from the building. Movement in paths could cause stress on pipes and inspection openings and/or breakages in pipes. Resulting leakages may cause movement and damage as a result of clay soils under the house swelling.

RECOMMENDED LANDSCAPING



3. Lawns

If placing lawn areas against the house, ensure that filling built up against the wall is graded away and will not allow ponding of water to occur. The filling should be impervious clay soil and not sandy loam.

REMEMBER: Do not cover weep holes.

4. Filling

Prior to preparing for gardens, lawns or filling as part of site works, care should be taken to ensure the sub-grade or ground level is graded or sloped away, especially when filling or top dressing with sandy loam. The sub-grade should consist of impervious natural site clay.

Where elevated floors exist ensure that the final finished ground level outside the house is not higher than the sub-floor area and that water cannot flow back under the house.

5. Excessive watering of gardens and lawns

The erection of a building also indirectly brings with it changes in the moisture content to the site. While it is normal to water gardens and lawns, excessive or over watering should be avoided. Consistent and adequate watering should be observed at all times.

The location of sprinkler systems next to houses should also be avoided on H and E sites.

Sprinkler systems should be as well controlled and maintained as practical, and only used in gardens and on lawns away from the building.



6. Site drainage and sloping sites

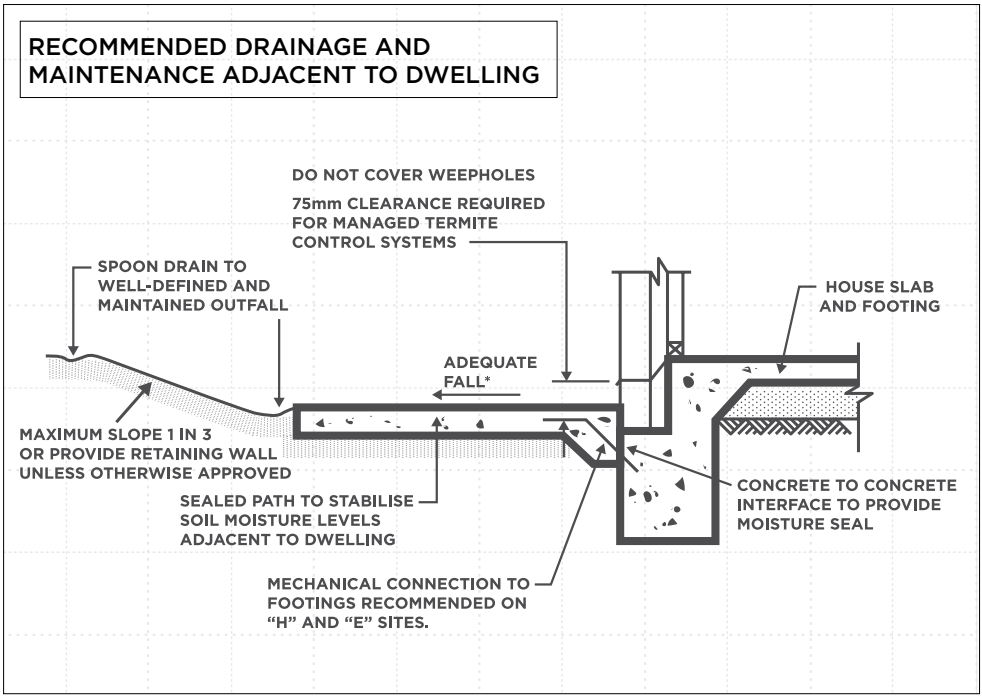
Design for site conditions, location of retaining walls, paths, swimming pools, future structures or proposed extensions etc. should all be considered when preparing the site for correct surface water flow.

If the ground slopes towards the house, paths with spoon drains should be provided.

It is also important to place drains uphill of the footings so as to direct water around the house and away from the footings. A stormwater and roof water drainage management plan should be considered and take into account water flowing from adjoining properties.

Seek advice from an engineer

1. To ascertain surface falls which allow for the specific potential soil movement of the site without loss of free drainage
2. To provide correct mechanical connection of perimeter paths of footings



7. Trees and shrubs

The roots of trees and shrubs can affect footings by removing moisture from clay soils immediately underneath the building causing subsidence as the clays shrink.

In its search for water, a tree root system can spread a lateral distance equal to the height of the tree. If in rows or grouped with other trees the roots may spread up to twice the height of the tree.

Care should be taken when selecting trees and, as a guide, the trees listed should not be planted within the distance of their mature height from the house depending on the site classification and whether they are to be planted in a line or in a group.

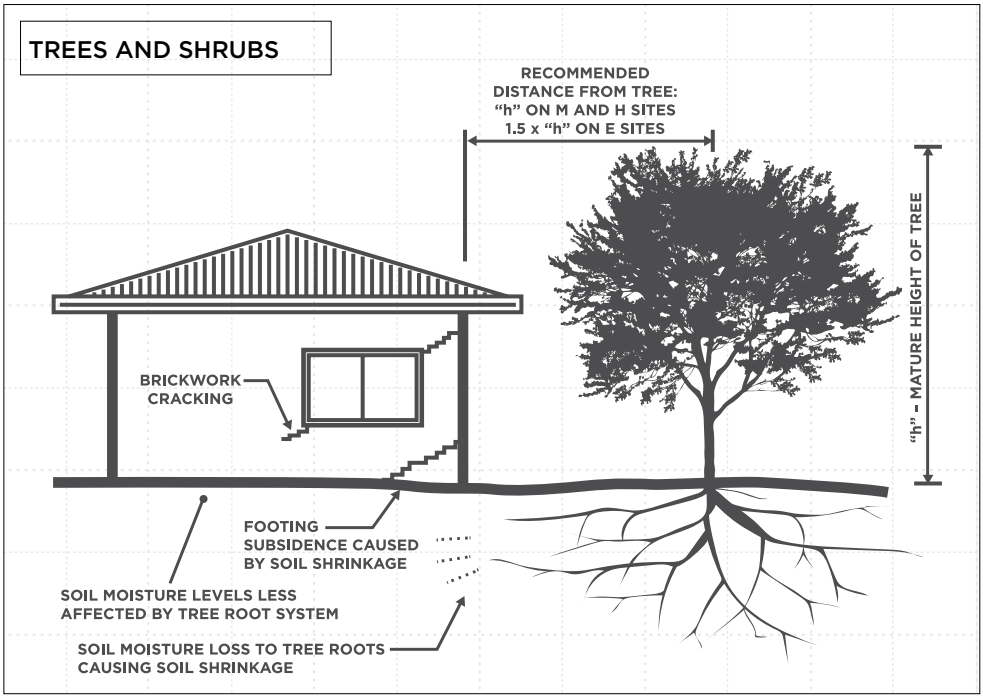
Height of Tree(h)
Distance from house (d)

d = 1 h for class **H** and **M** sites.

d = 1.5 h for class **E** sites.

d = 2 h for rows or groups of trees.

10 to 20 metres	20 to 30 metres	30 to 60 metres
Acacias	But-But	Blue Gum
Ash	Cedars	Cypress
Athel Tree	English Oak	English Elm
Candlebark	Lemon Gum	Figs
Manna Gum	Palms	Karri
Pepper tree	Planes	Pines
Willows	Sheoaks	Poplars
Yate	Silky Oak	River Gum
Yellow Gum	Spotted Gum	Sugar
	Casuarina	



Summary of owner responsibilities for houses under warranty

1. Maintain the site drainage at all times.

2. Do not alter the site drainage provided by the builder. Any changes to the site drainage should ensure that water will be directed away from the building and not pond adjacent to the footing and slab system. Care should also be taken to avoid directing water flow to adjoining properties.

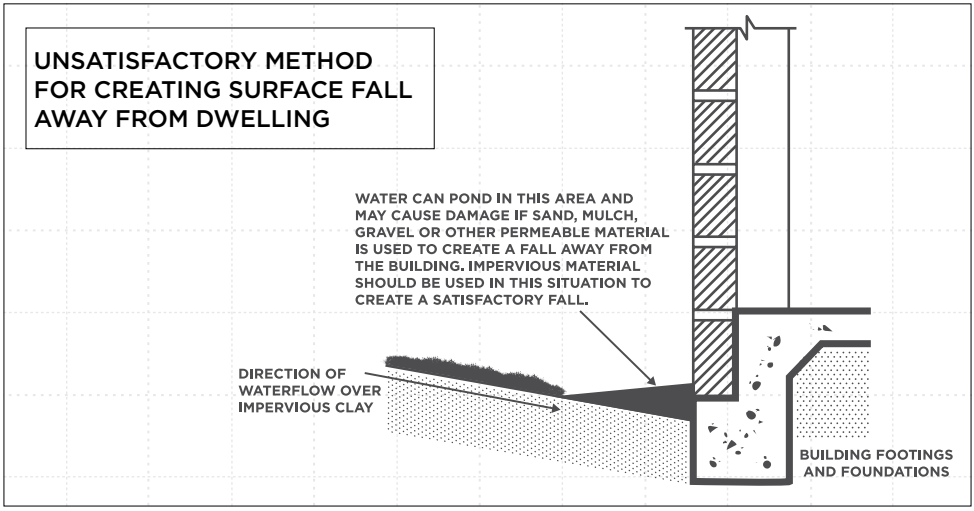
3. Where possible on reactive clay sites (Type M,H,E Classifications), avoid placing gardens or installing garden edging, gravel pavements etc next to the building. This may cause water retention and/or promote a greater variation in moisture conditions around the building.

4. Installation of sprinkler systems next to dwellings on highly and extremely reactive sites (Type H & E Classifications) should be avoided. Adequate and consistent watering only is recommended. Over watering should be avoided.

5. Do not plant trees within a distance from a building that equates to their mature height. Always plant in accordance with the requirements for the relevant site classification.

6. Regularly check and maintain plumbing, drainage and stormwater systems by immediately carrying out repairs to leakages or breakages when observed (usually displayed by seepage and/or greener lawns etc.), or when minor damage or cracking exceeding 3-5mm appears in walls or ceilings.

By observing these requirements, movement and damage which may be expected in the life of the building can be minimised and maintained within normal performance requirements.



Notes:

Note: this document has been developed to provide homeowners with general guidance on the maintenace of their homes. It does not purport to address site specific issues. Homeowners should seek professional advice from their builder or engineer when they experience movement in their home or need advice on issues which may affect their home.

Need more information?

Visit qbcc.qld.gov.au or call us on 139 333.



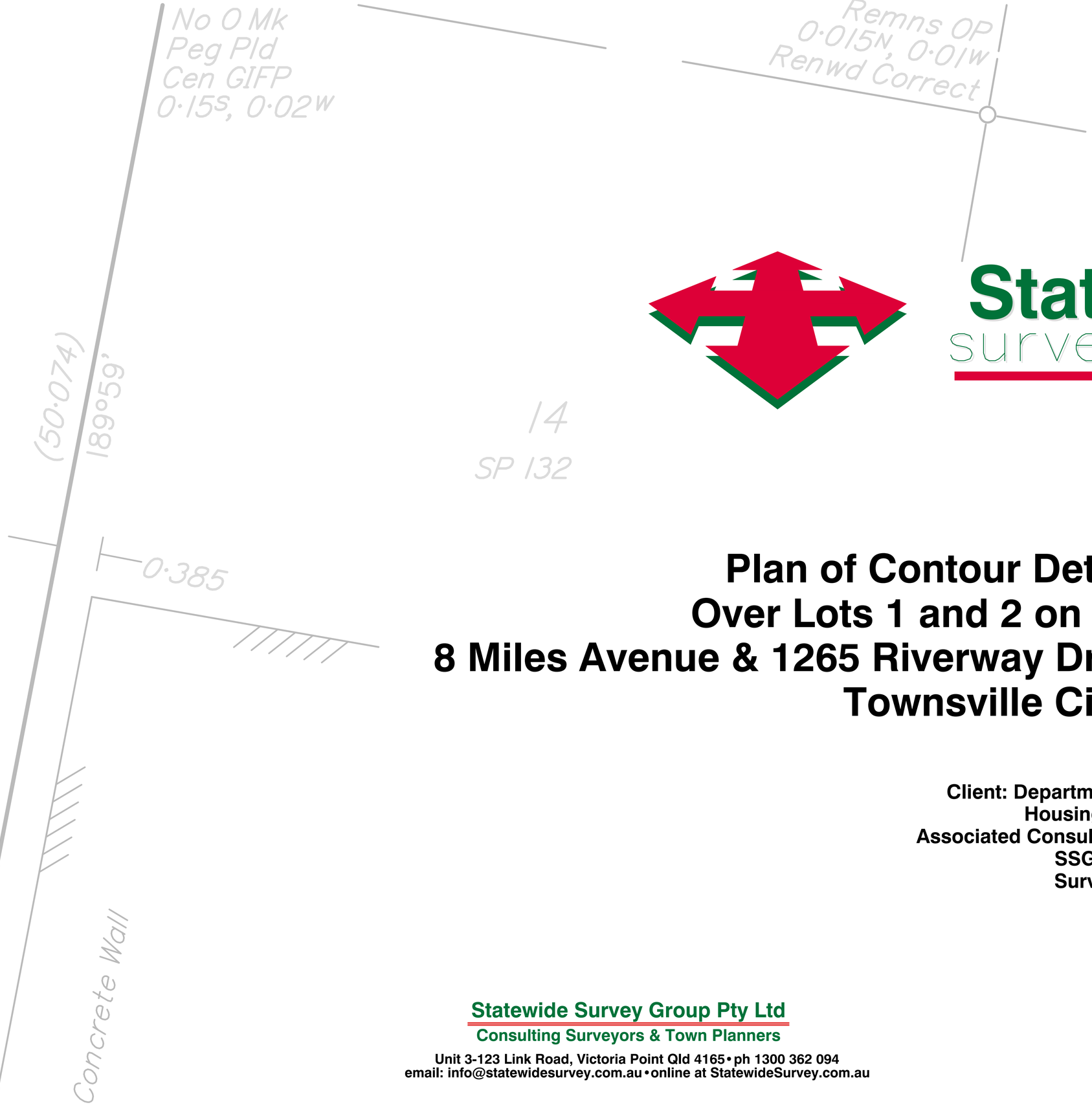
QBCC20150210_FCTbrstructuraldamageV3

qbcc | Build better.

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West End Qld 4101
GPO Box 5099,
Brisbane Qld 4001
T: 139 333
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Appendix E

Contour and Detail Survey

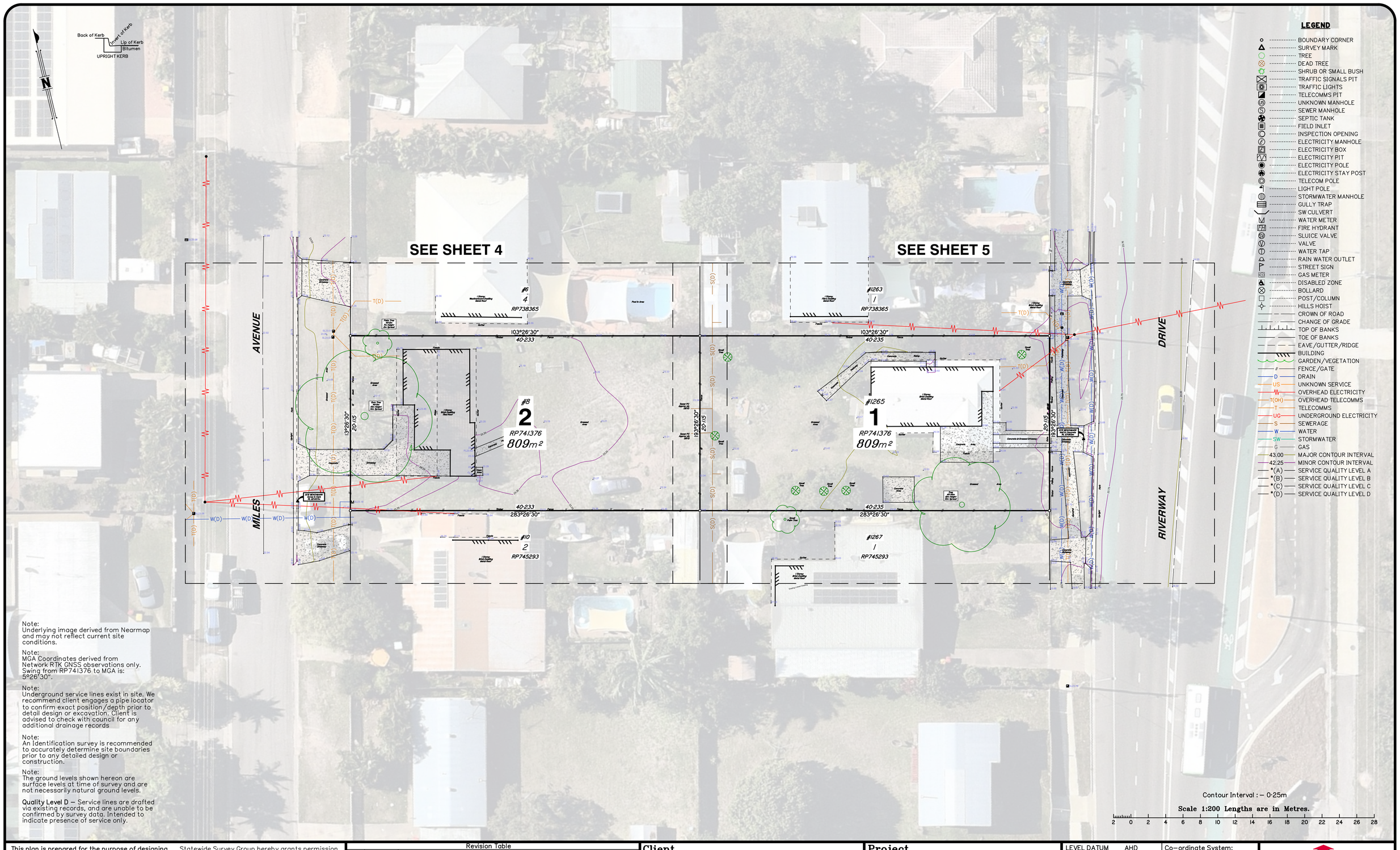


Statewide survey group

Plan of Contour Detail Survey
Over Lots 1 and 2 on RP741376
8 Miles Avenue & 1265 Riverway Drive, Kelso
Townsville City Council

Client: Department of Communities,
Housing & Digital Economy
Associated Consultants: GHD PTY LTD
SSG Ref Number: 10427
Survey Date: 08/04/2023

Statewide Survey Group Pty Ltd
Consulting Surveyors & Town Planners
Unit 3-123 Link Road, Victoria Point Qld 4165 • ph 1300 362 094
email: info@statewidesurvey.com.au • online at StatewideSurvey.com.au



LEGEND

- BOUNDARY CORNER
- SURVEY MARK
- TREE
- DEAD TREE
- SHRUB OR SMALL BUSH
- TRAFFIC SIGNALS PIT
- TRAFFIC LIGHTS
- TELECOMMS PIT
- UNKNOWN MANHOLE
- SEWER MANHOLE
- SEPTIC TANK
- FIELD INLET
- INSPECTION OPENING
- ELECTRICITY MANHOLE
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- VALVE
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- RAIN WATER OUTLET
- STREET SIGN
- GAS METER
- DISABLED ZONE
- BOLLARD
- POST/COLUMN
- HILLS HOIST
- CROWN OF ROAD
- CHANGE OF GRADE
- TOP OF BANKS
- TOE OF BANKS
- EAVE/GUTTER/RIDGE
- BUILDING
- GARDEN/VEGETATION
- FENCE/GATE
- D — DRAIN
- US — UNKNOWN SERVICE
- OVERHEAD ELECTRICITY
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- *(D) — SERVICE QUALITY LEVEL D

Note:
Underlying image derived from Nearmap and may not reflect current site conditions.

Note:
MGA Coordinates derived from Network RTK GNSS observations only. Swing from RP741376 to MGA is: 5°26'30".

Note:
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Note:
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Note:
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Quality Level D – Service lines are drafted via existing records, and are unable to be confirmed by survey data. Intended to indicate presence of service only.

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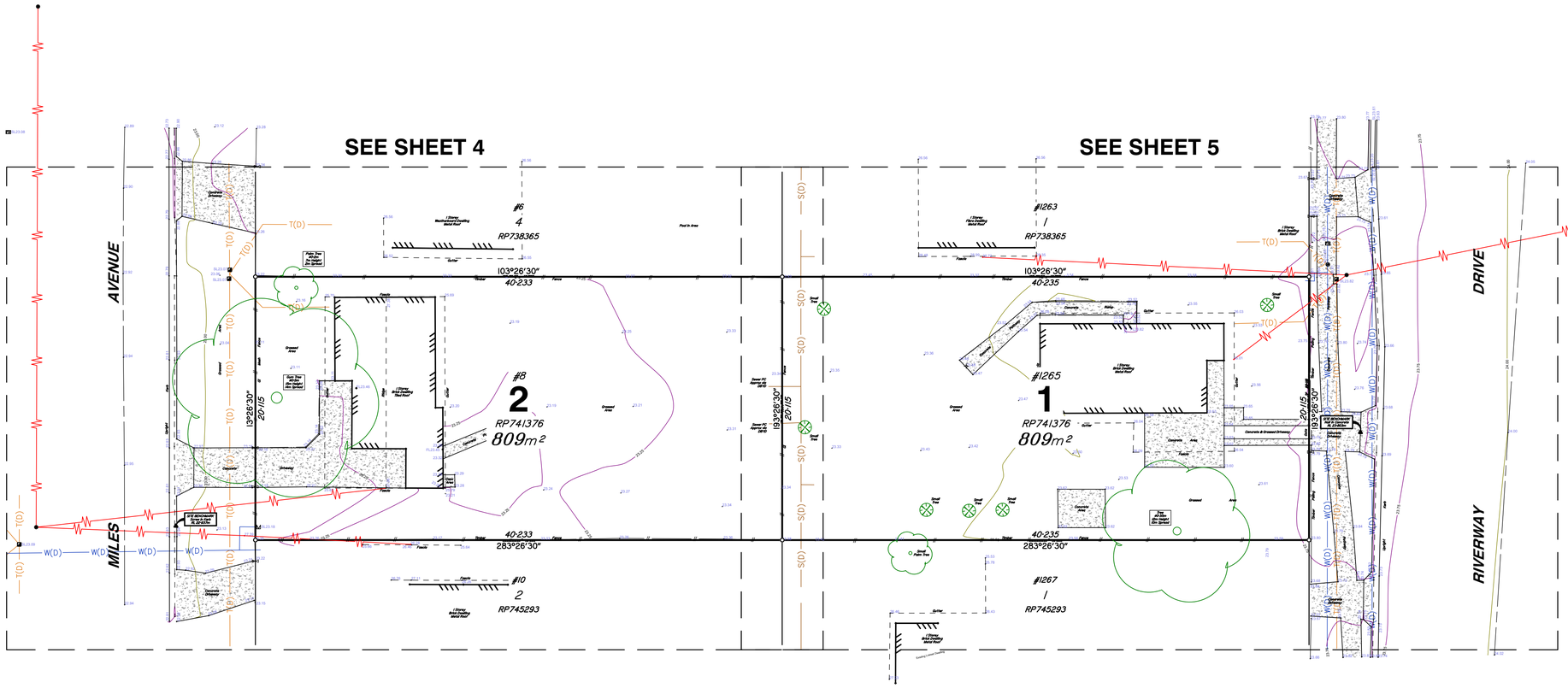
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Contour Interval : – 0·25m

Scale 1:200 Lengths are in Metres.

2 0 2 4 6 8 10 12 14 16 18 20 22 24 26 28

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N

AVENUE MILES

Concrete Driveway
Palm Tree ø0·2m 7m Height 2m Spread
1 Storey Weatherboard Dwelling Metal Roof
#6 4 RP738365
Pool in Area
#1263 / RP738365
Sewer PC Approx via DBYD
Gutter
Timber Paling Fence
103°26'30" 40·233
Fascia
Small Tree
Grassed Area
Gum Tree ø0·5m 15m Height 14m Spread
Fence
Mesh
Gl
Kerb
Upright
Area
1 Storey Brick Dwelling Tiled Roof
Ridge
#8 2 RP741376 809m²
Concrete Pathway
#1265 1 RP741376 809m²
Driveway
Conc Area
SITE BENCHMARK Screw in Kerb RL 22·937m
SL23.07
SL23.09
SL23.18
FL23.46
FL23.45
Concrete Driveway
1 Storey Brick Dwelling Metal Roof
#10 2 RP745293
#1267 / RP745293

Back of Kerb | Invert of Kerb | Lip of Kerb | Bitumen
UPRIGHT KERB

Contour Interval :– 0·25m

Scale 1:80 Lengths are in Metres.

0·80·4 0 0·8 1·6 2·4 3·2 4·0 4·8 5·6 6·4 7·2 8·0 8·8 9·6 10·4 11·2

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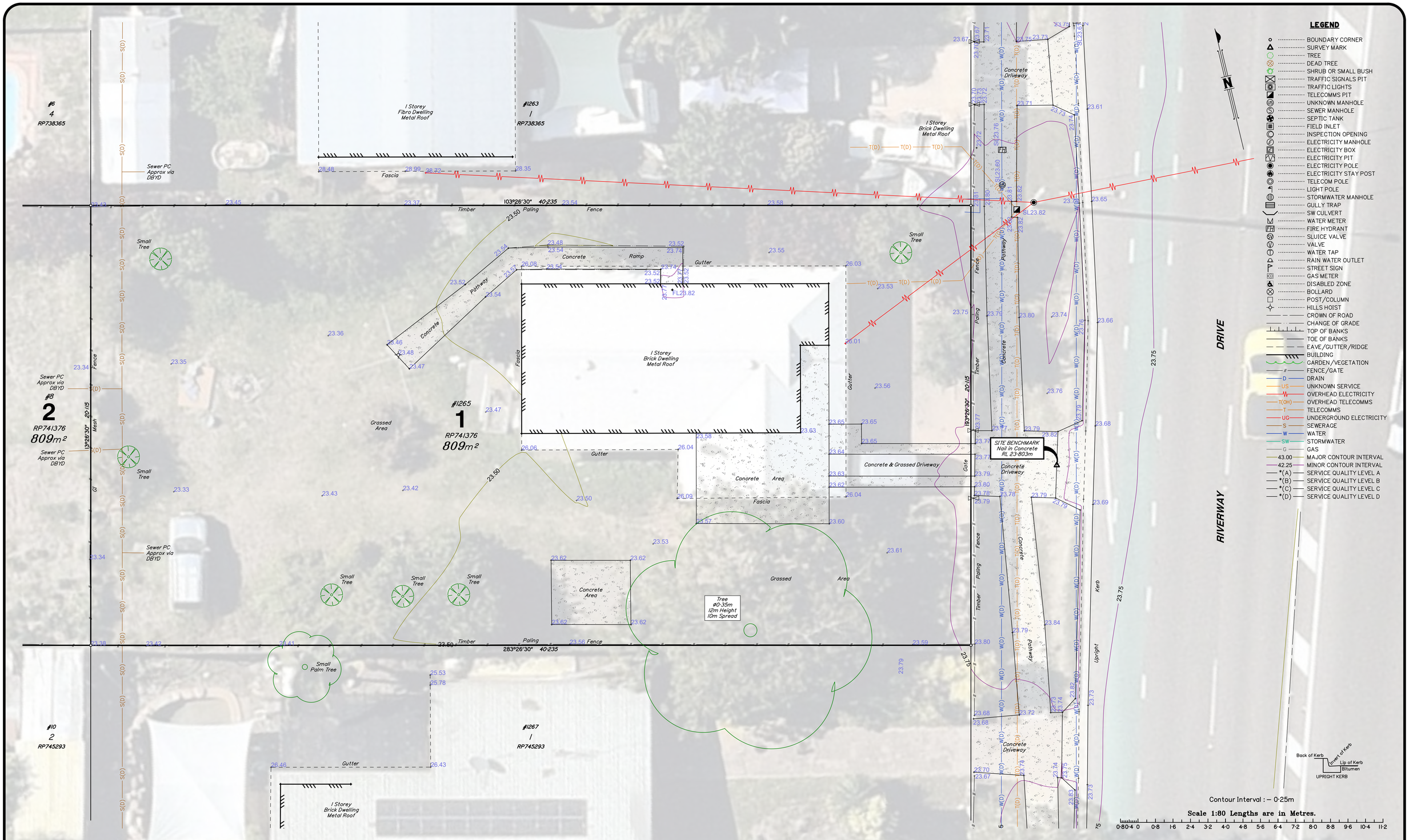
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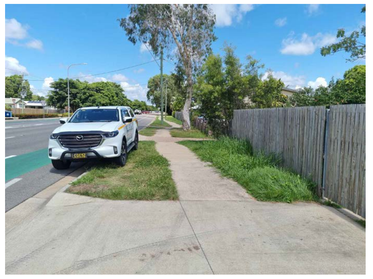
















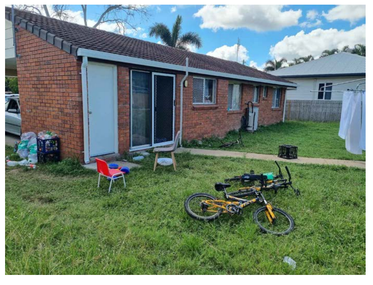












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The Power of Commitment

Town Planning Summary

Planning scheme	Townsville City Plan, Version 2022/01 effective 08 August 2022		
Zone	Low Density Residential	Precinct	N/A
Local Plan	N/A	Height	2-storeys and 8.5m or 3-storeys if 10m or more from boundary
Density	N/A		
Setbacks	**Front:** within 20% of the average front setback of adjoining buildings		
	Side: 1.5m for a wall up to 4.5m high; 2m for a wall up to 7.5m high; and 2.5m for any part of a wall over 7.5m high.		
	Rear: minimum of 6m		
Site Cover	Does not exceed 65%		
Constraints/ Overlays	Airport Environs Overlay Map OM-01.1 - Operational airspace - Airspace more than 90m above ground level; Airport Environs Overlay Map OM-01.2 - Wildlife hazard buffer zones and Public safety areas - Distance from airport runway - 13km; Development Constraints Overlay Map OM-06.1 to OM-06.2 - Flood hazard - Low hazard area and Medium hazard area Transport Road noise corridors - Categories 1 and 2		
Private Open Space	**Ground floor:** a minimum area of 35m^2 and minimum dimensions of 3m.		
	Above ground: a minimum area of 9m² for a 1-bedroom unit or 16m² for a 2 or more bedroom unit; a minimum dimension of 3m. Note: to be clear of any utilities such as air conditioning units or drying space		
Communal Open Space	Sufficient communal open space is provided to create flexible spaces suitable for a range of activities. Communal open space provides facilities including seating, landscaping and shade. Treatments such as green roofs, green walls or community gardens contribute to the attractiveness of these spaces.		
Other	• A multiple dwelling requires the following requirements under the Acceptable Outcome (AO20): The premises: 1. is located within 400m of a centre zone or public transport stop on a major road; 2. has a minimum site area of 1,000m² and 20m frontage where for a multiple dwelling; 3. has a minimum site area of 3,000m² and 20m frontage where for a residential care facility or retirement facility; and 4. is located within 400m of a park. • A landscape area with a minimum dimension of 1m is provided along the full frontage of any road frontage (excluding crossover and pedestrian access only).		
State Planning Policy	Transport Noise Corridor State-controlled road – Categories 0, 1, 2, & 3; Natural Hazards Risk and Resilience - - Flood hazard area - Level 1 - Queensland floodplain assessment overlay; Transport Infrastructure - State-controlled road; Strategic Airports and Aviation Facilities - Wildlife hazard buffer zone & Height restriction zone 90m		
State Agency Referral	☒ Transport and Main Roads ☐ Queensland Rail ☐ Environment and Science Reason: within 25m of a State Transport Corridor – State controlled road.		
Proposed Scheme Amendments	N/A		
Suggested Technical Reports	☐ Traffic Impact Assessment ☐ Environmental/Biodiversity Management Plan ☒ **Flood/Stormwater** ☐ Bushfire Management Plan ☐ Heritage Impact ☐ Koala ((☐ External/☐ QBuild by end PD))		

Note: This is not an exhaustive town planning advice and additional planning scheme requirements may need to be addressed.

Comments

- If developed as Multiple Dwellings, the proposal would likely be recommended as being **'Not Substantially Inconsistent'** with the planning scheme and will not require public notification, given it meets the locational requirements for Multiple Dwellings

Design Brief – 8 Miles Ave / 1265 Riverway Dr, KELSO

The site has been identified for a new multi-residential, two-storey public housing project.

Prequalified Design Consultant and Tender Requirements

In addition to core prequalification requirements, it is necessary that the select tender list of principal design consultants have demonstrated recent experience in low-medium density residential development in Northern Queensland.

The terms of reference for the engagement of the principal consultant should include, and is not limited to:

- All units are to comply with the *NCC 2022 Livable Housing Design requirements,* plus any additional requirements according to the designated Social Housing Design Guideline (SHDG) accessibility level.
- A preliminary **Environmentally Sustainable Design (ESD) strategy** is to be submitted at PD1 to demonstrate how the building will achieve *NCC 2022 Energy Efficiency Performance Requirements* with consideration of building orientation, massing, ventilation and sun shading.
- A **Preliminary Energy Efficiency Assessment** is to be delivered at PD3 which is to include the following:
    - NatHERS star ratings of all apartments and whole of project average.
    - Recommended project-specific energy efficiency design strategies to achieve the incoming mandatory energy efficiency requirements.
    - Identification of apartments which are underperforming and advice on how to improve the thermal performance of those units.
    - Itemised breakdown of recommendations and with consideration of likely costs in order of effectiveness to achieve the incoming mandatory energy efficiency requirements in the most cost-effective way. The breakdown is to identify:
        - whole of project and individual unit star ratings (achieved and target)
        - proposed additional measures to meet targets
        - projected additional costs.
- **Seeking of early advice to inform the PD1 submission:**
    - **from Council**:
        - encroachments / build over permissions of sewerline traversing the site
        - vehicle access, including strategies for driveway location
        - refuse collection (preference for bulk bins with wheelie bins provided for Platinum dwellings only)
    - **from Acoustic Engineer**:
        - regarding impact of the adjacent road traffic noise corridor on the design. The PD1 presentation should seek to address these concerns through layout without relying on window/door system solutions alone.
    - **from the Principal Consultants team**:
        - Compliance with the flood overlay code and potential impacts on the structural design and costing
        - Site works and the minimising of retaining walls
        - Intended strategies/spacials for inclusion of services which may be required but not limited to, fire pump room, booster and tanks, and electrical transformer.

Design Requirements

Any sketches provided in the tender package and contract documentation are to aid the design consultants' understanding of site constraints and opportunities. Unless otherwise specified, they are not to be used as a starting point for design.

Summary

a. **Yield:** Thirteen (13) dwellings.
b. **Type:** One (1) and two (2) bedroom.
c. **Accessibility:**
    a. Four (4) x one (1) bedroom dwelling, Platinum level (Ground Level)
    b. Four (4) x two (2) bedroom dwelling, General level
    c. Five (5) x one (1) bedroom dwelling, General level
d. **Carparks:** One (1) covered space per dwelling ratio, noting accessible parking requirements for Platinum dwellings
e. **Form and Planning Guidance:** Preference for a single form, walkup approach. Dwellings may be two forms with link bridge / similar at sewer line pending Council discussions. Proximity of appropriate carpark to platinum residences should be

considered. Strong preference for driveway entrance from Miles Avenue with pedestrian access to Riverway Drive. A lift is not to be included.

Additional Requirements

This development provides an opportunity to house older individuals from the Housing Register in order to address under-occupancy issues in the local area. There is also opportunity to relocate residents within the local portfolio into more appropriate accommodation with increased accessibility.

To be addressed in the initial stage of preliminary design:

- The development is to address Miles Avenue and Riverway Drive with a built form that sits sensitively within the context of the surrounding neighbourhood, its height and density provisions, common materiality and form.
- Vehicle access to Miles Avenue with pedestrian access to Riverway Drive required
- Strategies to sensitively address transport road noise impacts from Riverway Drive
- Apply good design outcomes for the movement of tenants through the site, allowing choice in order to avoid resident conflict, feeling of entrapment or other poor CPTED outcomes.

QDesign, Social housing design guidelines 'Essential Ingredients', Indicative Floor Plans and Technical Summary Sheets

Design consultants should familiarise themselves with these documents;

- The QDesign principles provide a framework for developing outcomes that respond to the specifics of place while meeting the needs of its residents.
- The Social Housing Design Guideline (SHDG) articulates the Department's ten 'essential ingredients' of good design to providing a framework for decision making during the design process.
- The Summary Sheets outline specific technical requirements to be met.
- The Indicative Floor Plans are to be used as reference and support the requirements described in the SHDG.

Document History

Version	Date	Status	Key Changes	Author
01	3/11/2023	Draft	-	SM
02	9/01/2024	Final	Revised Accessibility to upper level	SM

0171Q DEPW (QLD) GENERAL REQUIREMENTS

1 GENERAL

1.1 DESIGN

Design development

General: Develop the design beyond that documented, as required.

Design by contractor: If the contractor provides design, use only appropriately qualified persons and conform to statutory requirements.

Conflict with the documents: If it is believed that a conflict exists between statutory requirements and the documents, notify the contract administrator immediately and provide a recommendation to resolve the conflict.

1.2 PERFORMANCE

Bushfire resistance

NA

Corrosion resistance

General: Atmospheric corrosivity category as defined in AS 4312:

Galvanizing

Severe conditions: Galvanize mild steel components (including fasteners) to AS/NZS 1214 or AS/NZS 4680 as appropriate, if:

- Exposed to weather.
- Embedded in masonry.
- Exposed to or in air spaces behind the external leaf of masonry walls.
- In contact with chemically treated timber, other than copper chrome arsenate (CCA).

Noise levels

General: Install systems to operate within the noise level limits, as documented for the contract design and documented equipment performance.

Structure

General: If required, provide structures, installations and components as follows:

- Fixed accessways: To AS 1657.
- Structural design actions: To the AS/NZS 1170 series.

1.3 PRECEDENCE

General

Order of precedence:

- The requirements of other work sections of the specification override conflicting requirements of this work section.
- The requirements of work sections override conflicting requirements of their referenced documents. The requirements of the referenced documents are minimum requirements.

1.4 CROSS REFERENCES

General

Requirement: Conform to the following work section(s):

Common requirements

Requirement: Conform to the following work sections:

- *0181 Adhesives, sealants and fasteners*.
- *0182 Fire-stopping*.
- *0183 Metals and pre-finishes*.
- *0184 Termite management*.
- *0185 Timber products, finishes and treatment*.

Associated schedules: Coordinate common requirements with the following:

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- *Contract Finalization Schedule* in the appendices when applicable.

Cross referencing styles

General: Within the text, titles are cross referenced using the following styles:

- Worksection titles are indicated by *Italicised* text.
- Subsection titles are indicated by **BOLD** text.
- Clause titles are indicated by **BOLD** text.
- Subclause titles are indicated by **Bold** text.

1.5 REFERENCED DOCUMENTS

General

Contractual relationships: Responsibilities and duties of the principal, contractor and contract administrator are not altered by requirements in the documents referenced in this specification.

1.6 INTERPRETATION

Documentation conventions

Imperative mood and streamlined language: The words shall or shall be are implied where a colon is used following a keyword or within a sentence or sentence fragment.

Subject of sentences and phrases: Specification requirements are to be performed by the contractor, unless stated otherwise.

Abbreviations

General: For the purposes of this specification the following abbreviations apply:

- AS: Australian Standard.
- BCA: National Construction Code Series Volume One: Building Code of Australia Class 2 to 9 Buildings and Volume Two: Building Code of Australia Class 1 and Class 10 Buildings.
- EN: European Norm (European Standard).
- GRP: Glass Reinforced Plastic.
- IP: Ingress protection.
- NATA: National Association of Testing Authorities.
- NCC: National Construction Code.
- NZS: New Zealand Standard.
- PCA: National Construction Code Series Volume 3: Plumbing Code of Australia.
- PVC: Polyvinyl Chloride.
- PVC-U: Unplasticised Polyvinyl Chloride. Also known as UPVC.
- SDS: Safety data sheets.
- VOC: Volatile Organic Compound.
- WHS: Work Health and Safety.

Definitions

General: For the purposes of this specification, the following definitions apply:

- Access for maintenance: Includes access for maintenance, inspection, measurement, operation, adjustment, repair, replacement and other maintenance related tasks.
- Accessible, readily: Readily accessible, easily accessible, easy access and similar terms mean capable of being reached quickly and without climbing over or removing obstructions, using a movable ladder, and in any case not more than 2.0 m above the ground, floor or platform.
- Accredited Testing Laboratory:
  - . An organisation accredited by the National Association of Testing Authorities (NATA) to undertake the relevant tests; or
  - . An organisation outside Australia accredited to undertake the relevant tests by an authority recognised by NATA through a mutual recognition agreement; or
  - . An organisation recognised as being an Accredited Testing Laboratory under legislation at the time the test was undertaken.
- Approved: Approved, reviewed, directed, rejected, endorsed and similar expressions mean approved (reviewed, directed, rejected, endorsed) in writing by the Superintendent.

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- Attendance: Attendance, provide attendance and similar expressions mean give assistance for examination and testing.
- Contract administrator: Has the same meaning as architect or superintendent and is the person appointed by the owner or principal under the contract.
- Contractor: Has the same meaning as builder and is the person or organisation bound to carry out and complete the work under the contract.
- Default: Specified value, product or installation method which is to be provided unless otherwise documented.
- Design life: The period of time for which it is assumed, in the design, that an asset will be able to perform its intended purpose with only anticipated maintenance but no major repair or replacement being necessary.
- Documented: Documented, as documented and similar terms mean contained in the contract documents.
- Economic life: The period of time from the acquisition of an asset to the time when the asset, while still physically capable of fulfilling its function and with only anticipated maintenance, ceases to be the lowest cost alternative for satisfying that function.
- Electricity distributor: Any person or organisation that provides electricity from an electricity distribution system to one or more electrical installations. Includes distributor, supply authority, network operator, local network service provider, electricity retailer or electricity entity, as may be appropriate in the relevant jurisdiction.
- Fire hazard properties: Terminology to BCA A5.5.
- Geotechnical site investigation: The process of evaluating the geotechnical characteristics of the site in the context of existing or proposed construction.
- Give notice: Give notice, submit, advise, inform and similar expressions mean give notice (submit, advise, inform) in writing to the Superintendent.
- High level interface: Systems transfer information in a digital format using an open system interface.
- Hot-dip galvanized: Zinc coated to AS/NZS 4680 after fabrication with coating thickness and mass to AS/NZS 4680 Table 1.
- Ingress protection: IP, IP code, IP rating and similar expression have the same meaning as IP Code in AS 60529.
- Joints:
  . Construction joint: A joint with continuous reinforcement provided to suit construction sequence.
  . Contraction joint: An opening control joint with a bond breaking coating separating the joint surfaces to allow independent and controlled contraction of different parts or components, induced by shrinkage, temperature changes or other causes. It may include unbound dowels to assist vertical deflection control.
  . Control joint: An unreinforced joint between or within discrete elements of construction which allows for relative movement of the elements.
  . Expansion joint: A closing control joint with the joint surfaces separated by a compressible filler to allow axial movement due to thermal expansion or contraction with changes in temperature or creep. It may include unbound dowels to assist vertical deflection control.
  . Sealant joint: A joint filled with a flexible synthetic compound which adheres to surfaces within the joint to prevent the passage of dust, moisture and gases.
  . Structural control joint: A control joint (contraction, expansion and isolation) in structural elements when used with applied material and finishes.
  . Substrate joint: A joint in the substrate which includes construction joints and joints between different materials.
  . Weakened plane joint: A contraction joint created by forming a groove, extending at least one quarter the depth of the section, either by using a grooving tool, by sawing, or by inserting a pre-moulded strip.
- Local authority (local council): A body established for the purposes of local government by or under a law applying in a state or territory.
- Low level interface: Systems transfer information via terminals and voltage free contacts.

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- Manufacturer's recommendations: Recommendations, instructions, requirements, specifications (and similar expressions) provided in written or other form by the manufacturer and/or supplier relating to the suitability, use, installation, storage and/or handling of a product.
- Metallic-coated: Steel coated with zinc or aluminium-zinc alloy as follows:
  . Metallic-coated steel sheet: To AS 1397. Metal thicknesses specified are base metal thicknesses.
  . Ferrous open sections zinc coated by an in-line process: To AS/NZS 4791.
  . Ferrous hollow sections zinc coated by a continuous or specialised process: To AS/NZS 4792.
- Network Utility Operator: The entity undertaking the piped distribution of drinking water or natural gas for supply or is the operator of a sewerage system or external stormwater drainage system.
- Obtain: Obtain, seek and similar expressions mean obtain (seek) in writing from the contract administrator.
- Pipe: Includes pipe and tube.
- Practical completion or defects free completion: The requirements for these stages of completion are defined in the relevant building contract for the project.
- Principal: Principal has the same meaning as owner, client and proprietor and is the party to whom the contractor is legally bound to construct the works.
- Professional engineer: Registered Professional Engineer, Queensland (RPEQ).
- Proprietary: Identifiable by naming the manufacturer, supplier, installer, trade name, brand name, catalogue or reference number.
- Prototype: A full size mock-up of components, systems or elements to demonstrate or test construction methods, junctions and finishes, and to define the level of quality.
- Provide: Provide and similar expressions mean supply and install and include development of the design beyond that documented.
- Record drawings: Record drawings has the same meaning as as-installed drawings, as-built drawings and work-as-executed drawings.
- Referenced documents: Standards and other documents whose requirements are included in this specification by reference.
- Required: Required by the contract documents, the local or statutory authorities.
- If required: A conditional specification term for work which may be shown in the documents or is a legislative requirement.
- Sample: A physical example that illustrates workmanship, materials or equipment, and establishes standards by which the work will be judged. It includes samples and sample panels.
- Statutory authority: A public sector entity created by legislation, that is, a specific law of the Commonwealth, State or Territory.
- Superintendent: The person appointed by the Principal under the Contract to administer the Contract.
- Supply: Supply, furnish and similar expressions mean supply only.
- Tests – completion: Tests carried out on completed installations or systems and fully resolved before the date for practical completion, to demonstrate that the installation or system, including components, controls and equipment, operates correctly, safely and efficiently, and meets performance and other requirements. The superintendent may direct that completion tests be carried out after the date for practical completion.
- Tests – pre-completion: Tests carried out before completion tests, including:
  . Production: Tests carried out on a purchased item, before delivery to the site.
  . Progressive: Tests carried out during installation to demonstrate performance in conformance with this specification.
  . Site: Tests carried out on site.
  . Type: Tests carried out on an item identical with a production item, before delivery to the site.
- Tolerance: The permitted difference between the upper limit and the lower limit of dimension, value or quantity.
- Utility service provider: Includes organisations providing power, water, sewerage, gas and telecommunications services.

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- Verification: Provision of evidence or proof that a performance requirement has been met or a default exists.

1.7 CONTRACT DOCUMENTS

Services diagrammatic layouts
General: Layouts of service lines, plant and equipment shown on the drawings are diagrammatic only, except where figured dimensions are provided or calculable.

Before commencing work:

- Obtain measurements and other necessary information.
- Coordinate the design and installation in conjunction with all trades.

Levels
General: Spot levels take precedence over contour lines and ground profile lines.

Drawings and manuals for existing services
Subsurface services: Information shown on the drawings relating to underground or submerged services is accurate to the following quality level:

Warranty: No warranty is given as to the completeness or accuracy of drawings and/or manuals of existing services.

1.8 SURVEY MARKS

Check
Restrictions: Before using the survey marks provided in conformance with the contract, confirm the following:

- They are the marks shown in the contract documents.
- They have not been disturbed.
- Any levels shown in the contract documents agree with the levels of one or more existing features on the site.

1.9 SUBMISSIONS

General: Submit the following:

- Authority approvals: Notes of meetings with authorities whose requirements apply to the work and evidence that notices, fees and permits have been sought and paid, that authority connections are complete and that statutory approvals by the authorities whose requirements apply to the work have been received.
- Building penetrations: Details of the methods to maintain the required structural, fire and other properties to **EXECUTION**, **BUILDING PENETRATIONS**.
- Certification: Certification of conformance to documented requirements, including certification that the plant and equipment submitted meets all requirements of the contract documents and that each installation is operating correctly.
- Design documentation: Design data and certification of proposed work, if required and as documented.
- Electronic facility and asset management information: For the whole of the work to **EXECUTION**, **ELECTRONIC FACILITY AND ASSET MANAGEMENT INFORMATION**.
- Execution details: Execution programs, schedules and details of proposed methods and equipment. For building services include the following:
  - Embedded services: Proposed method for embedding services in concrete walls or floors or chasing into concrete or masonry walls.
  - Fixing of services: Typical details of locations, types and methods of fixing services to the building structure.
  - Inaccessible services: If services will be enclosed and not accessible after completion, submit proposals for location of service runs and fittings.
- Fire performance: Evidence of conformity to requirement for combustibility, fire hazard properties and fire-resistance of building elements.
- Marking and labelling: Samples and schedules of proposed marking and labels to **EXECUTION**, **MARKING AND LABELLING.**

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- Operation and maintenance manuals: For the whole of the work to **EXECUTION**, **OPERATION AND MAINTENANCE MANUALS**.
- Products: Products and materials data, including manufacturer's technical specifications and drawings, SDS for hazardous materials, type tests results, evidence of conformity to documented requirements, product certification, performance and rating tables, service connection requirements and installation and maintenance recommendations.
- Prototypes: Prototypes of components, systems or elements.
- Records: As-built documents, photographs, system diagrams, schedules and logbooks to **EXECUTION**, **RECORD DRAWINGS**.
- Samples: Representative of proposed products and materials and including proposals to incorporate samples into the works, if any to **EXECUTION**, **SAMPLES**.
- Shop drawings: To **EXECUTION**, **SHOP DRAWINGS**.
- Substitutions: To **PRODUCTS, GENERAL, Substitutions**.
- Tests:
  . Inspection and testing plan consistent with the construction program including details of test stages and procedures.
  . Test reports for testing performed under the contract.
- Warranties: To **EXECUTION**, **WARRANTIES**.

Contractor review: Before submissions, review each submission item, and check for coordination with other work of the contract and conformance to contract documents.

Submission times

Default timing: Make submissions at least 5 working days before ordering products or starting installation of the respective portion of the works.

General: Submit documents in a timely manner, to suit the construction program. Advise if any documents are to be returned.

Delays: Co-ordinate submissions of related items. Do not cause delays by making late or inadequate submissions.

Submission response times: Allow in the construction program for at least the following times:

- Shop drawings: 5 working days.
- Samples and prototypes: 5 working days.
- Manufacturers' or suppliers' recommendations: 5 working days.
- Product data: 5 working days.
- Product/design substitution or modification: 15 working days.

Proposed products schedules: If major products are not specified as proprietary items, submit a schedule of those proposed for use within 3 weeks of site possession.

Identification

Requirement: Identify the project, contractor, subcontractor or supplier, manufacturer, applicable product, model number and options, as appropriate and include relevant contract document references.

Non-conformance: Identify proposals that do not conform with project requirements, and characteristics which may be detrimental to successful performance of the completed work.

Errors

Requirement: If a submission contains errors, make a new or amended submission as appropriate, indicating changes made since the previous submission.

Electronic submissions

File format generally: TIFF at 400 DPI (using CCITT Group 4 compression) or PDF or alternate format as required by the Superintendent.

Transmission medium: Email or as otherwise required by the Superintendent.

Hard copy submissions

Hard copy quantity:

- Bound documents: As called for in the Annexure to the Special Conditions of Contract.
- Loose documents larger than A3: One copy the same size as the standard contract drawings.
- Loose documents up to and including A3: One copy.

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1.10 INSPECTION

Notice
Concealment: If notice of inspection is required for parts of the works that are to be concealed, give notice when the inspection can be made before concealment.

Tests: Give notice of the time and place of documented tests.

Minimum notice: As documented in the **Notices schedule**.

Light levels
Lighting levels for inspection: To AS/NZS 1680.2.4.

Attendance
General: Provide attendance for documented inspections and tests.

2 PRODUCTS

2.1 MATERIALS AND COMPONENTS

Manufacturers' or suppliers' recommendations
General: Provide and select, if no selection is given, transport, deliver, store, handle, protect, finish, adjust and prepare for use the manufactured items to the manufacturers' or suppliers' recommendations.

Proprietary items/systems/assemblies: Assemble, install or fix to substrate to the manufacturers' or suppliers' recommendations.

Project modifications: Advise of activities that supplement, or are contrary to the manufacturers' or suppliers' recommendations.

Product identification
Sealed containers: If materials or products are supplied by the manufacturer in closed or sealed containers or packages, bring the materials or products to point of use in the original containers or packages.

Other products: Marked to show the following, as applicable:

- Manufacturer's identification.
- Product brand name.
- Product type.
- Quantity.
- Product reference code and batch number.

Sources policy
Unless otherwise specified, use products manufactured in Queensland, and/or comprising materials and components manufactured in Queensland, unless no such products satisfy project requirements, in which case use products manufactured in Australia or New Zealand, unless no such suitable products exist.

Advertising
In addition to any other advertising for subcontract work and supplies, ensure advertisement in local and regional press.

Consistency
General: For each material or product use the same source or manufacturer and provide consistent type, size, quality and appearance.

Prohibited materials
General: Do not provide the following:

- Materials, exceeding the limits of those listed, in the Safe Work Australia *Hazardous Chemical Information System* (HCIS) Workplace exposure standards.

Insulation blowing agents:

- Materials that use chlorofluorocarbon (CFC) or hydrochlorofluorocarbon (HCFC) in the manufacturing process.
- A blowing agent with a global warming potential (GWP) ≥ 700.

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Substitutions

Instruction: Allow minimum 5 working days from submission of proposed alternatives for instruction from the Superintendent. If additional information is required, the Contractor shall provide this within 5 working days and shall allow a further 5 working days for instruction. If inadequate information is provided, or information is not provided in the required format, the alternative shall not be approved.

Identified proprietary items: Identification of a proprietary item does not necessarily imply exclusive preference for the identified item, but indicates the necessary properties of the item.

Alternatives: If alternatives to the documented products, methods or systems are proposed, submit sufficient information to permit evaluation of the proposed alternatives, including the following:

- Evidence that the performance is equal to or greater than that specified.
- Evidence of conformity to a cited standard.
- Samples.
- Essential technical information, in English.
- Reasons for the proposed substitutions.
- Statement of the extent of revisions to the contract documents.
- Statement of the extent of revisions to the construction program.
- Statement of cost implications including costs outside the contract.
- Statement of consequent alterations to other parts of the works.

Availability: If the documented products or systems are unavailable within the time constraints of the construction program, submit evidence.

Criteria: If the substitution is for any reason other than unavailability, submit evidence that the substitution:

- Is of net enhanced value to the principal.
- Is consistent with the contract documents and is as effective as the identified item, detail or method.

3 EXECUTION

3.1 SAMPLES

General

Incorporation of samples: Only incorporate samples in the works which have been endorsed for inclusion. Do not incorporate other samples.

Retention of samples: Keep endorsed samples in good condition on site, until the date of practical completion.

Unincorporated samples: Remove on completion.

3.2 SHOP DRAWINGS

General

Documentation: Include dimensioned drawings showing details of the fabrication and installation of structural elements, building components, services and equipment, including relationship to building structure and other services, cable type and size, and marking details.

Diagrammatic layouts: Coordinate work shown diagrammatically in the contract documents, and prepare dimensioned set-out drawings.

Services coordination: Coordinate with other building and service elements. Show adjusted positions on the shop drawings.

Space requirements: Check space and access for maintenance requirements of equipment and services indicated diagrammatically in the contract documents.

Building work drawings for building services: On dimensioned drawings show the following:

- Access doors and panels.
- Conduits to be cast in slabs.
- Holding down bolts and other anchorage and/or fixings required complete with loads to be imposed on the structure during installation and operation.
- Openings, penetrations and block-outs.
- Sleeves.

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- Plinths, kerbs and bases.
- Required external openings.

Record drawings: Amend all documented shop drawings to include changes made during the progress of the work and up to the end of the defects liability period.

3.3 OFF-SITE DISPOSAL

Removal of material

General: Dispose of building waste material off site to the requirements of the relevant authorities.

3.4 WALL CHASING

Holes and chases

General: If holes and chases are required in masonry walls, make sure structural integrity of the wall is maintained. Do not chase walls with a fire-resistance level or an acoustic rating.

Parallel chases or recesses on opposite faces of a wall: Not closer than 600 mm to each other.

Chasing blockwork: Only chase core-filled hollow blocks or solid blocks which are not documented as structural.

Concrete blockwork chasing table

Block thickness (mm)	Maximum depth of chase (mm)
190	35
140	25
90	20

3.5 FIXING

General

Suitability: If equipment is not suitable for fixing to non-structural building elements, fix directly to structure and trim around penetrations in non-structural elements.

Fasteners

General: Use proprietary fasteners capable of transmitting the loads imposed, and sufficient for the rigidity of the assembly.

3.6 SERVICES CONNECTIONS

Connections

General: Connect to utility service provider services or service points. Excavate to locate and expose connection points. Reinstate the surfaces and facilities that have been disturbed.

Utility service provider requirements

General: If the utility service provider elects to perform or supply part of the works, make the necessary arrangements. Install equipment supplied, but not installed, by the utility service provider.

3.7 SERVICES INSTALLATION

General

Fixing: If non-structural building elements are not suitable for fixing services to, fix directly to structure and trim around penetrations in non-structural elements.

Installation: Install equipment and services as follows:

- Plumb and securely fixed.
- Allow for movement in both structure and services.
- Arrange services running together, parallel to each other and adjacent building elements.

Concealment: Conceal all cables, ducts, trays and pipes except where installed in plant spaces, ceiling spaces and riser cupboards or documented to be exposed. If alternative routes are available, do not locate on external walls.

Lifting: Provide heavy items of equipment with permanent fixtures for lifting to the manufacturer's recommendations.

Suspended ground floors: Keep all parts of services suspended under ground floors at least 150 mm clear of the ground surface. Make sure services do not impede access.

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Dissimilar metals
Jointing: Join dissimilar metals with fittings of electrolytically compatible material.

Temporary capping
Pipe ends: During construction, protect open ends of pipe with metal or plastic covers or caps.

Piping
General: Install piping in straight lines at uniform grades without sags. Arrange to prevent air locks. Provide sufficient unions, flanges and isolating valves to allow removal of piping and fittings for maintenance or replacement of plant.

Spacing: Provide at least 25 mm clear between pipes and between pipes and building elements, additional to insulation.

Changes of direction: Provide as follows:

- If practicable, long radius elbows or bends and sets, and swept branch connections.
- If pipes are led up or along walls and then through to fixtures, provide elbows or short radius bends.
- Do not provide mitred fittings.

Vibration: Arrange and support piping to prevent vibration whilst permitting necessary movement. Minimise the number of joints.

Embedded pipes: Do not embed pipes that operate under pressure in concrete or surfacing material.

Valve groupings: If possible, locate valves in groups.

Pressure testing precautions: Isolate items not rated for the test pressure. Restrain pipes and equipment to prevent movement during pressure testing.

Pipe support systems
General: Provide proprietary support systems of metallic-coated steel construction.

Vertical pipes: Provide anchors and guides to maintain long pipes in position, and supports designed for the mass of the pipe and its contents.

Saddles: Provide saddle supports only on DN 25 or smaller pipes.

Dissimilar metals: If pipe and support materials are dissimilar, provide industrial grade electrically non-conductive material securely bonded to the pipe to separate them. Provide fasteners of electrolytically compatible material.

Uninsulated pipes: Clamp piping supports directly to pipes.

Insulated pipes:

- Spacers: Provide spacers at least as thick as the insulation between piping supports and pipes. Extend either side of the support by at least 20 mm.
- Spacer material: Rigid insulation material of sufficient strength to support the piping and suitable for the temperature application.

Support spacing: As follows:

- Cold and heated water pipes: To AS/NZS 3500.1 Table 5.6.4. Provide additional brackets, clips or hangers to prevent pipe movement caused by water pressure effects.
- Sanitary plumbing: To AS/NZS 3500.2 Table 10.2.1.
- Fuel gas: To AS/NZS 5601.1 Table 5.5.
- Other pipes: To AS/NZS 3500.1 Table 5.6.4.

Hanger size table

Nominal pipe size (DN)	Minimum hanger diameter for single hangers (mm)
50 maximum	9.5
65 to 90	12.7
100 to 125	15.8
150 to 200	19.0

Differential movement
General: If the geotechnical site investigation report predicts differential movements between buildings and the ground in which pipes or conduits are buried, provide control joints in the pipes or conduits, as follows:

- Arrangement: Arrange pipes and conduits to minimise the number of control joints.

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- Magnitude: Accommodate the predicted movements.

3.8 BUILDING PENETRATIONS

Penetrations

Requirement: Maintain the required structural integrity, fire performance, waterproofing performance and other properties when penetrating or fixing to the following:

- Structural building elements including external walls, fire walls, fire doors and access panels, other tested and rated assemblies or elements, floor slabs and beams.
- Membrane elements including damp-proof courses, waterproofing membranes and roof coverings. If penetrating membranes, provide a waterproof seal between the membrane and the penetrating component.

Sealing

Fire-resisting building elements: Seal penetrations with a system conforming to AS 4072.1.

Non fire-resisting building elements: Seal penetrations around conduits and sleeves. Seal around cables within sleeves. If the building element is acoustically rated, maintain the rating.

Sleeves

General: If piping, cables or conduits penetrate building elements, provide metal or PVC-U sleeves formed from pipe sections as follows:

- Movement: Arrange to permit normal pipe or conduit movement.
- Diameter (for non fire-resisting building elements): Sufficient to provide a ring shaped space around the pipe or pipe insulation of at least 12 mm.
- Ferrous surfaces: Prime paint.
- Sealing: Seal between pipes or conduits and sleeves to prevent the entry of vermin.
- Terminations:
  - Cover plates fitted: Flush with the finished building surface.
  - Fire-resisting and acoustic rated building elements: 50 mm beyond finished building surface.
  - Floors draining to floor wastes: 50 mm above finished floor.
  - Other locations: 5 mm beyond finished building surface.
  - Termite management: To AS 3660.1.
- Thickness:
  - Metal: 1 mm or greater.
  - PVC-U: 3 mm or greater.

3.9 CONCRETE PLINTHS

Construction

General: Provide concrete plinths as documented and under all equipment located on concrete floor slabs as follows:

- Surround: Galvanized steel, at least 75 mm high and 1.6 mm thick. Fix to the floor with masonry anchors. Fill with concrete.
- Height: 75 mm or greater, as documented.
- Reinforcement: Single layer of F62 fabric.
- Concrete: Grade N20.
- Finish: Steel float, flush with top edge of the surround.

3.10 PLANT AND EQUIPMENT

General

Location: Locate so failure of plant and equipment (including leaks) does not create a hazard for the building occupants and causes a minimum or no damage to the building, its finishes and contents including water sensitive equipment or finishes.

Safe tray and an overflow pipe: Provide to each tank, hot water heater and storage vessel.

3.11 ACCESS FOR MAINTENANCE

General

Requirement: Provide access for maintenance of plant and equipment.

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Standards: Conform to the relevant requirements of AS 1657, AS 1892.1, AS 2865 and AS/NZS 3666.1.

Work Health and Safety: Conform to the requirements of the applicable Work Health and Safety regulations.

Refrigerated or cooling plant: If the space accessed is a refrigerated or cooling chamber inside a duct, air handling plant or similar and of sufficient size for a person to enter, provide the following to BCA G1.2:

- An access door.
- Internal lighting with external indicator lamp.
- An alarm.

Protection from injury: Protect personnel from injury caused by contact with objects including those that are sharp, hot or protrude at low level.

Plant room flooring surfaces: R10 Slip resistance classification to AS 4586.

Trip hazards: Do not run small services including drains and conduits across floors where they may be a trip hazard.

Manufacturer's standard equipment: If necessary, modify manufacturer’s standard equipment to provide the plant access documented.

Clearances

Minimum clearances for access: Conform to the following:

- Vertical clearance: ≥ 2100 mm, vertically above horizontal floors, ground and platforms.
- Horizontal clearance: Preferably ≥ 750 mm clear, but in no case less than 600 mm between equipment or between equipment and building features including walls.
- If tools are required to operate, adjust or remove equipment, provide sufficient space so the tools can be used in their normal manner and without requiring the user to employ undue or awkward force.
- Hinged or removable components: To the manufacturer's recommendations.
- Within plant items: Conform to the preceding requirements, and not less than the clearances recommended in BS 8313.

Elevated services other than in occupied areas

Access classifications:

- Access class A: Readily accessible. Provide clear and immediate access to and around plant items. If plant or equipment is located more than 2.0 m above the ground, floor or platform, provide a platform with handrails accessible by a stair, all to AS 1657.
- Access class B: If the plant item requiring access is located more than 2.0 m above the ground, floor or platform, provide a platform with handrails accessible by a non-vertical ladder, all to AS 1657.
- Access class C: Locate plant so temporary means of access conforming to Work health and Safety regulations can be provided.

Temporary means of access: Make sure there is adequate provision in place which is safe and effective.

Areas in which access is restricted to authorised maintenance personnel: Provide access as follows:

- Instruments, gauges and indicators (including warning and indicating lights) requiring inspection at any frequency: Readily accessible.
- Access required monthly or more frequently: Access class A.
- Access required between monthly and six monthly: Access class A or B.
- Access required less frequently than six monthly: Access class A, B or C.

Other areas: Provide access as follows:

- Locate to minimise inconvenience and disruption to building occupants or damage to the building structure or finishes.
- In suspended ceilings, locate items of equipment that require inspection and/or maintenance above tiled parts. If not possible, provide access panels where located above set plaster or other inaccessible ceilings. Arrange services and plant locations to reduce the number of access panels. Coordinate with other trades to use common access panels where feasible.
- Do not locate equipment requiring access above partitions.

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- Instruments, gauges and other items requiring inspection at any frequency: Readily accessible.
- Labelling: If equipment is concealed in ceilings, provide marking to **MARKING AND LABELLING**, **Equipment concealed in ceilings**.

Facilities for equipment removal and replacement

Requirement: Provide facilities to permit removal from the building and replacement of plant and equipment, including space large enough to accommodate it and any required lifting and/or transportation equipment. Arrange plant so large and/or heavy items can be moved with the minimum changes of direction.

Removal of components: Allow sufficient space for removal and replacement of equipment components including air filters, tubes of shell and tube heat exchangers, removable heat exchanger bundles, coils and fan shafts. Provide access panels or doors large enough to permit the safe removal and replacement of components within air handling units.

Facilities for access

Equipment behind hinged doors: Provide doors opening at least 150°.

Equipment behind removable panels: Provide panels with quick release fasteners or captive metal thread screws.

Removable panels: Provide handles to permit easy and safe removal and replacement.

Insulated plant and services: If insulation must be removed to access plant and services for maintenance, arrange it to allow for removal and replacement without damage.

Piping

Requirement: Conform to the following:

- Provide access and clearance at fittings which require maintenance, inspection or servicing, including control valves and joints intended to permit pipe removal.
- Arrange piping so it does not interfere with the removal or servicing of associated equipment or valves or block access or ventilation openings.
- Preferably run piping, conduits, cable trays and ducts at high level and drop vertically to equipment.

Electrical equipment and controls

Electrical equipment: Provide clearances and access space to AS/NZS 3000.

Switchboards and electrical control equipment: Locate near the main entrance to plant space and with switchboards visible from the plant being operated.

Control panels: Locate near and visible from the plant being controlled.

3.12 VIBRATION SUPPRESSION

General

Requirement: Minimise the transmission of vibration from rotating or reciprocating equipment to other building elements.

Standard

Machinery noise and vibration: Vibration severity in Zone A to ISO 20816-1 and ISO 10816-3.

Speeds

General: If no maximum speed is prescribed, do not exceed 1500 r/min for direct driven equipment.

Connections

General: Provide flexible connections to rotating machinery and assemblies containing rotating machinery. Isolate pipes by incorporating sufficient flexibility into the pipework or by use of proprietary flexible pipe connections installed to prevent placing stress on pipes due to end reaction.

Inertia bases

General: If necessary to achieve the required level of vibration isolation, provide inertia bases having appropriate mass and to the following:

- Construction: Steel or steel-framed reinforced concrete with reinforcing bars welded between base sections. Position foundation bolts for equipment before pouring concrete.
- Supports: Support on vibration isolation mountings using height saving support brackets.

Vibration isolation mountings

General: Except for external equipment that is not connected to the structure of any building, support rotating or reciprocating equipment on mountings as follows:

- For static deflections < 15 mm: Single or double deflection neoprene in-shear mountings incorporating steel top and base plates and a tapped hole for bolting to equipment.

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- For static deflections ≥ 15 mm: Spring mountings.

Selection: Provide mountings selected to achieve 95% isolation efficiency at the normal operating speeds of the equipment.

Installation: Set and adjust vibration isolation mounting supports to give clearance for free movement of the supports.

Spring mountings: Provide freestanding laterally stable springs as follows:

- Clearances: ≥ 12 mm between springs and other members such as bolts and housing.
- High frequency isolation: 5 mm neoprene acoustic isolation pads between baseplate and support.
- Levelling: Provide bolts and lock nuts.
- Minimum travel to solid: ≥ 150% of the designated minimum static deflection.
- Ratio of mean coil diameter to compressed length at the designated minimum static deflection: ≥ 0.8:1.
- Snubbing: Snub the springs to prevent bounce at start-up.
- Vertical resilient limit stops: To prevent spring extension when unloaded, to serve as blocking during erection and which remain out of contact during normal operation.

3.13 SEISMIC RESTRAINT OF NON-STRUCTURAL COMPONENTS

General: NA

3.14 FINISHES TO BUILDING SERVICES

General

Requirement: If exposed to view (including in plant rooms), paint building services and equipment.

Surfaces painted or finished off-site: Conform to *0183 Metals and prefinishes*.

Exceptions: Do not paint chromium or nickel plating, anodised aluminium, GRP, stainless steel, non-metallic flexible materials and normally lubricated machined surfaces. Surfaces with finishes applied off-site need not be re-painted on-site provided the corrosion resistance of the finish is not less than that of the respective finish documented.

Standard: Conform to the recommendations of AS/NZS 2311 Sections 3, 6 and 7 or AS 2312.1 Sections 6, 7 and 8, as applicable.

Inaccessible surfaces: If surfaces are inaccessible after installation, complete finish before installation.

Painting systems

New unpainted interior surfaces: To AS/NZS 2311 Table 5.1.

New unpainted exterior surfaces: To AS/NZS 2311 Table 5.2.

Paint application

Coats: Apply the first coat immediately after substrate preparation and before contamination of the substrate can occur. Make sure each coat of paint or clear finish is uniform in colour, gloss, thickness and texture and free of runs, sags, blisters or other discontinuities.

Combinations: Do not combine paints from different manufacturers in a paint system.

Protection: Remove fixtures before starting to paint and refix in position undamaged when painting is complete.

Underground metal piping

Requirement: Provide corrosion protection for the following:

- Underground ferrous piping.
- Underground non-ferrous metal piping in corrosive environments.

Corrosion protection: Select from the following:

- Cathodic protection: Sacrificial anodes or impressed current. Incorporate a facility for periodic testing. Conform to the recommendations of AS 2832.1.
- Continuous wrapping using proprietary petroleum taping material.
- Impermeable flexible plastic coating.
- Sealed polyethylene sleeve.

Aggressive soils: If metallic piping or components are installed in chemically aggressive soil, provide additional protection as follows:

- Material: Continuous polyethylene sleeve to ASTM D1248 with a minimum thickness of 0.25 mm.

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- Installation: Wrap or sleeve pipes and components. Tape joints between sections of polyethylene and between polyethylene and piping.

Low VOC emitting paints
Paint types: To the recommendations of AS/NZS 2311 Table 4.2.

Repairs to finishes
Requirement: Repair damaged finishes to restore their corrosion protection, appearance and service life.

3.15 MARKING AND LABELLING

General
Requirement: Mark and label services and equipment for identification purposes as follows:

- Locations exposed to weather: Provide durable materials.
- Pipes, conduits and ducts: To AS 1345 throughout its length, including in concealed spaces.
- Cables: Label to indicate the origin and destination of the cable.

Consistency: Label and mark equipment using a consistent scheme across all services elements of the project.

Label samples and schedules
Requirement: For each item or type of item, prepare a schedule of marking and labelling, including the following:

- A description of the item or type of item for identification.
- The proposed text for marking or labelling.
- The proposed location of the marking and labelling.

Submission timing: Before marking or labelling.

Electrical accessories
Circuit identification: Label isolating switches and outlets to identify circuit origin.

Operable devices
Requirement: Mark to identify the following:

- Controls.
- Indicators, gauges, meters.
- Isolating switches.

Equipment concealed in ceilings
Location: Provide a label on the ceiling, to indicate the location of each concealed item requiring access for routine inspection, maintenance and/or operation and as follows:

- Tiled ceilings, locate the label on the ceiling grid closest to the concealed item access point.
- Flush lined ceilings, locate adjacent to closest access panel.

Concealed equipment: Items to be labelled include the following:

- Fan coil units and terminal equipment (e.g. VAV terminals).
- Fire and smoke dampers.
- Isolating valves not directly connected to items otherwise labelled.
- Motorised dampers.

Wall mounted equipment in occupied areas
Location: Provide labels on wall mounted items in occupied areas including the following:

- Services control switches.
- Temperature and humidity sensors.

Points lists
Automatic control points: Provide plasticised, fade-free points lists for each automatic control panel and include terminal numbers, point addresses, short and long descriptors in the lists. Store in a pocket on the door of the panel.

Pressure vessels
General: Mount manufacturer’s certificates in glazed frames on a wall next to the vessel.

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Valves and pumps

General: Label to associate pumps with their starters and valves. Screw fix labels to body or attach label to valve handwheels with a key ring.

Underground services

Survey: Accurately record the routes of underground cables and pipes before backfilling. Include on the record drawings.

Records: Provide digital photographic records of underground cable and pipe routes before backfilling. Include in operation and maintenance manual.

Location marking: Accurately mark the location of underground cables and pipes with route markers consisting of a marker plate set flush in a concrete base, engraved to show the direction of the line and the name of the service.

Markers: Place markers at ground level at each joint, route junction, change of direction, termination and building entry point and in straight runs at intervals of not more than 100 m.

Marker bases: 200 mm diameter x 200 mm deep, minimum concrete.

Direction marking: Show the direction of the cable and pipe run by means of direction arrows on the marker plate. Indicate distance to the next marker.

Plates: Brass, aluminium or stainless steel with black filled engraved lettering, minimum size 75 x 75 x 1 mm thick.

Plate fixing: Waterproof adhesive and 4 brass or stainless steel countersunk screws.

Marker height: Set the marker plate flush with paved surfaces, and 25 mm above other surfaces.

Marker tape: Where electric bricks or covers are not provided over underground wiring, provide a 150 mm wide yellow or orange marker tape bearing the words WARNING – electric cable buried below, laid in the trench 150 mm below ground level.

Plastic pipe: Provide a detectable marker tape with trace wire to identify the route of buried piping. Terminate with 1000 mm coil in a readily accessible location. Tag to match the record drawings.

Labels and notices

Materials: Select from the following:

- Cast metal.
- For indoor applications only, engraved two-colour laminated plastic.
- Proprietary pre-printed self-adhesive flexible plastic labels with machine printed black lettering.
- Stainless steel or brass minimum 1 mm thick with black filled engraved lettering.

Emergency functions: To AS 1319.

Colours: Generally to AS 1345 as appropriate, otherwise black lettering on white background except as follows:

- Danger, warning labels: White lettering on red background.
- Main switch and caution labels: Red lettering on white background.

Edges: If labels exceed 1.5 mm thickness, radius or bevel the edges.

Labelling text and marking: To correspond to terminology and identifying number of the respective item as shown on the record drawings and documents and in operating and maintenance manuals.

Lettering heights:

- Danger, warning and caution notices: Minimum 10 mm for main heading, minimum 5 mm for remainder.
- Equipment labels within cabinets: Minimum 5 mm.
- Equipment nameplates: Minimum 40 mm.
- Identifying labels on outside of cabinets: Minimum 5 mm.
- Isolating switches: Minimum 5 mm.
- Switchboards, main assembly designation: Minimum 25 mm.
- Switchboards, outgoing functional units: Minimum 10 mm.
- Switchboards, sub assembly designations: Minimum 15 mm.
- Valves: Minimum 20 mm.
- Self-adhesive flexible plastic labels:
  . Labels less than 2000 mm above floor: 5 mm.

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. Labels minimum 2000 mm above floor: 10 mm.
. Other locations: Minimum 5 mm.

Label locations: Locate labels so they are easily seen and are either attached to, below or next to the item being marked.

Fixing: Fix labels securely using screws, rivets, proprietary self-adhesive labels or double-sided adhesive tape and as follows:

- If labels are mounted in extruded aluminium sections, use rivets or countersunk screws to fix the extrusions.
- Use aluminium or monel rivets for aluminium labels.

Vapour barriers: Do not penetrate vapour barriers.

3.16 TACTICAL FIRE DRAWINGS

General

Requirement: Provide sets of colour coded tactical fire drawings, showing all items and systems relevant in a fire to BCA Spec E1.8.

Scale: 1:200 or larger if required to be easily read under emergency conditions.

Coordination: Agree the format, colour coding and contents of the tactical fire plans with the Local Fire Authority before beginning documentation.

Location: Provide one set of the laminated drawings fixed to the wall or supplied in a vertical plan hanger in the fire control room.

Loose set: Provide a second set of identical drawings.

Operation and maintenance manuals: Provide a set of colour coded tactical fire drawings in each copy of the operating and maintenance manual.

Inclusions

Requirement: Include the following on the tactical fire drawings:

- Legend sheet at front of set.
- Colour coding key.
- Building: As follows:
  . Floor plans.
  . Pressurised and non-pressurised fire isolated stairs and passages.
  . Smoke and fire compartments.
  . Special risk areas.
- Fire services: As follows:
  . Automatic fire detection systems.
  . Automatic suppression systems including gas flooding systems.
  . Communications including Warden Intercom Points.
  . Fire control room.
  . Fire equipment including booster connections.
  . Fire hydrants, hose reels, portable fire extinguishers.
  . Fire detection control and indicating equipment (FDCIE).
  . Fire service lifts.
  . Fire telephone and control panel.
  . Hydrant and sprinkler pumps.
  . Hydrant/hose reels.
  . Sprinkler and hydrant, suction and booster connections.
  . Sprinkler control valves.
- Electrical services: As follows:
  . Emergency power supplies.
  . Essential services switchboards.
  . Evacuation warning panel.
  . Standby power plant.

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  - . Substations/transformers.
  - . Switchboards, main switch room.
- Mechanical ventilation and air handling equipment: As follows:
  - . Air intakes, fans, ducts, shafts.
  - . Conditioners and mixing boxes.
  - . Fire dampers.
  - . General exhaust air fans, ducts, shafts, discharges.
  - . Smoke dampers.
  - . Smoke fans including exhaust fans, zone and stair pressurisation fans.
  - . Stair pressurisation systems.
  - . Supply air system.
- Mechanical ventilation and air handling equipment operation: As follows:
  - . Statement of normal condition.
  - . Condition upon fire alarm.
  - . Manual controls available.
- Hydraulic services: As follows:
  - . Gas meters.
  - . Gas supply control.
  - . Incoming water supplies and valves for the sprinkler, hydrant and fire hose reel systems.
  - . Water tank.

3.17 RECORD DRAWINGS

General

Requirement: Prepare record drawings showing the following:

- Installed locations of building elements, services, plant and equipment.
- Off-the-grid dimensions and depth if applicable.
- Any provisions for the future.

Recording, format and submission

Requirement: Record changes made during the progress of the works on a set of drawings kept on site for that specific purpose.

Drawing layout: Use the same borders and title block as the contract drawings.

Quantity and format: Conform to **SUBMISSIONS.**

Endorsement: Sign and date all record drawings.

Accuracy: If errors in, or omissions from, the record drawings are found, amend the drawings and re-issue in the quantity and format documented for **SUBMISSIONS.**

Date for submission: Refer to the **As-built documentation submissions schedule**.

Services record drawings

General: To **General** and **Recording, format and submission** and the following:

- Extensions and/or changes to existing: If a drawing shows extensions and/or alterations to existing installations, include sufficient of the existing installation to make the drawing comprehensible without reference to drawings of the original installation.
- Detention: If on-site detention tanks or pondage are provided, include the volume required on the drawing and the permitted flow rate to the connected system.
- Domestic cold water or fire mains: Show the pressure available at the initial connection point and the pressure available at the most disadvantaged location on each major section of the works.
- Stormwater: If storm water pipes are shown, include the pipe size and pipe grade together with the maximum acceptable flow and the actual design flow.

Diagrams: Provide diagrammatic drawings of each system including the following:

- Controls.
- Piping including all valves and valve identification tags.
- Principal items of equipment.

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- Single line wiring diagrams.
- Acoustic and thermal insulation.
- Access provisions and space allowances.
- Fasteners.
- Fixtures.
- Switchgear and control gear assembly circuit schedules including electrical service characteristics, controls and communications.
- Charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.

Subsurface services: Record information on underground or submerged services to the documented quality level, conforming to AS 5488.

3.18 OPERATION AND MAINTENANCE MANUALS

General

Authors and compilers: Personnel experienced in the maintenance and operation of equipment and systems installed, and with editorial ability.

Referenced documents: If referenced documents or worksections require submissions of manuals, include corresponding material in the operation and maintenance manuals.

Subdivision: By installation or system, depending on project size.

Contents of manual

Table of contents: Include a table of contents in each volume. Title to match cover.

Table of amendments: Include a table of amendments.

Directory: Include names, addresses, email addresses and telephone and facsimile numbers of principal consultant, subconsultants, contractor, subcontractors and names of responsible parties.

Record drawings: Include complete set of record drawings, full size.

Drawings and technical data: Include as necessary for the efficient operation and maintenance of the installation.

Installation description: Include a general description of the installation.

Systems descriptions and performance: Include a technical description of the systems installed including design concepts embodied, the interrelation with other systems and the building and mode of operation, presented in a clear and concise format readily understandable by the principal's staff. Identify function, normal operating characteristics, safety features and limiting conditions.

Baseline data: To AS 1851, AS 1668.1, AS 1682.2 and AS 1670.1.

Commissioning results: Include for use as baseline data for system and equipment maintenance performance.

Fire systems and equipment: Include documentation to AS 1851, including the schedule of essential functionality and performance requirements.

Digital photographic records: Include records to **MARKING AND LABELLING, Underground services**.

Equipment descriptions:

- Name, address, email address and telephone and facsimile numbers of the manufacturer and supplier of items of equipment installed, together with catalogue list numbers.
- Schedules (system by system) of equipment, stating locations, duties, performance figures and dates of manufacture. Provide a unique code number cross-referenced to the record and diagrammatic drawings and schedules, including spare parts schedule, for each item of equipment installed. Equipment schedules in tabular form including the equipment designation used on the drawings, manufacturer's name and contact details, equipment name plate data, function of item, associated system and capacity data.
- Manufacturers' technical literature for equipment installed, assembled specifically for the project, excluding irrelevant matter. Mark each product data sheet to clearly identify specific products and component parts used in the installation, and data applicable to the installation.
- Supplements to product data to illustrate relations of component parts. Include typed text as necessary.

Certificates:

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- Certificates from authorities.
- Copies of manufacturers' warranties.
- Product certification.
- Test certificates for each service installation and all equipment.
- Test reports.
- Test, balancing and commissioning reports.
- Control system testing and commissioning results.
- Warranties.

Operation procedures:

- Manufacturers' technical literature as appropriate.
- Safe starting up, running-in, operating and shutting down procedures for systems installed. Include logical step-by-step sequence of instructions for each procedure.
- Control sequences and flow diagrams for systems installed.
- Legend for colour-codes services.
- Schedules of fixed and variable equipment settings established during commissioning and maintenance.
- Procedures for seasonal changeovers.
- Warnings to operators.
- Recommendations for efficient plant operation.
- If the installation includes cooling towers, a water efficiency management plan.

Maintenance procedures:

- Detailed recommendations for periodic maintenance and procedures, including schedule of maintenance work with frequency and manufacturers' recommended tests.
- Manufacturer's technical literature as appropriate. Register with manufacturer as necessary. Retain copies delivered with equipment.
- Safe trouble-shooting, disassembly, repair and reassembly, cleaning, alignment and adjustment, balancing and checking procedures. Provide logical step-by-step sequence of instructions for each procedure.
- Schedule of spares, recommended to be held on site, for those items subject to wear or deterioration and that may involve the principal in extended deliveries when replacements are required. Include complete nomenclature and model numbers, and local sources of supply.
- Schedule of normal consumable items, local sources of supply, and expected replacement intervals up to a running time of 40 000 hours. Include lubrication schedules for equipment.
- Schedules for recording recommissioning data to identify changes in the system over time.
- Instructions for use of tools and testing equipment.
- Troubleshooting procedures.
- Emergency procedures, including telephone numbers for emergency services, and procedures for fault finding.
- Safety data sheets (SDS).
- Instructions and schedules conforming to AS 1851, AS/NZS 3666.2

Maintenance records:

- Prototype service records conforming to AS 1851 prepared to include project specific details.
- Prototype periodic maintenance records and report to AS/NZS 3666.2, AS/NZS, prepared to include project specific details.
- Hard copies: Binders to match the manuals, containing loose leaf log book pages designed for recording completion activities including operational and maintenance procedures, materials used, test results, comments for future maintenance actions and notes covering the condition of the installation. Include completed log book pages recording the operational and maintenance activities performed up to the date for practical completion.
- Number of pages: The greater of 100 pages or enough pages for the maintenance period and a further 12 months.

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Emergency information: For each type of emergency, including fire, flood, gas leak, water leak, power failure, water failure, system or sub system failure, chemical release or spill, include the following:

- Emergency instructions.
- Emergency procedures including:
  - Instructions for stopping or isolating.
  - Shutdown procedures and sequences.
  - Instructions for actions outside the property.
  - Special operating instructions relevant to the emergency.
  - Contact details relevant to the emergency.

Emergency information manual

Form of emergency information: Provide one of the following:

- An index and coloured tabs identifying emergency information for each type of emergency within the Operation and maintenance manual.
- A separate Emergency manual containing copies of emergency information from the main Operation and maintenance manual.

Format – electronic copies

Scope: Provide the same material as documented for hardcopy in electronic format.

Quantity and format: Conform to **SUBMISSIONS , Electronic submissions**.

Printing: Except for drawings required in the **RECORD DRAWINGS** clause provide material that can be legibly printed on A4 size paper.

Format – hard copies

General: A4 size loose leaf, in commercial quality, 4 ring binders with hard covers, each indexed, divided and titled. Include the following features:

- Cover: Identify each binder with typed or printed title *OPERATION AND MAINTENANCE MANUAL*, to spine. Identify title of project, volume number, volume subject matter, and date of issue.
- Dividers: Durable divider for each separate element, with typed description of system and major equipment components. Clearly print short titles under laminated plastic tabs.
- Drawings: Fold drawings to A4 size with title visible, insert in plastic sleeves (one per drawing) and accommodate them in the binders.
- Pagination: Number pages.
- Ring size: 50 mm maximum, with compressor bars.
- Text: Manufacturers' printed data, including associated diagrams, or typewritten, single-sided on bond paper, in clear concise English.

Number of copies: 3.

Date for submission

Draft submission: The earlier of the following:

- 4 weeks before the date for practical completion.

Date for submission: Refer to the **Operation and maintenance manual submissions schedule**.

3.19 ELECTRONIC FACILITY AND ASSET MANAGEMENT INFORMATION

3.20 TOOLS AND SPARE PARTS

Spare parts

General: Provide spare parts listed in the appropriate worksections.

Replacement: Replace spare parts used during the maintenance period.

Tools and spare parts schedule

Submission timing: At least 8 weeks before the date for practical completion.

Requirement: Prepare a schedule of tools, portable instruments and spare parts necessary for maintenance of the installation. For each item state the recommended quantity and the manufacturer's current price. Include the following in the prices:

- Checking receipt, marking and numbering in conformance with the spare parts schedule.
- Packaging and delivery to site.
- Painting, greasing and packing to prevent deterioration during storage.

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- Referencing equipment schedules in the operation and maintenance manuals.
- Suitable means of identifying, storing and securing the tools and instruments. Include instructions for use.

3.21 TESTING

Attendance
General: Provide attendance on tests.

Testing authorities
General: Except for site tests, have tests carried out by an Accredited Testing Laboratory.

Test instruments: Use instruments calibrated by an Accredited Testing Laboratory.

Test reports
General: Indicate observations and results of tests and conformance or non-conformance with requirements.

Notice
Inspection: Give sufficient notice for inspection to be made of the commissioning and completion testing of the installation.

Controls
General: Calibrate, set and adjust control instruments, control systems and safety controls.

Circuit protection
General: Confirm that circuit protective devices are sized and adjusted to protect installed circuits.

Completion tests
General: Test the works under the contract to demonstrate conformance with the documented performance requirements of the installation.

Functional checks: Carry out functional and operational checks on energised equipment and circuits and make final adjustments for the correct operation of safety devices and control functions.

Type test reports: Required, as evidence of conformance of proprietary equipment.

Sound pressure level measurements: Conform to the following:

- Correction for background noise: To AS/NZS 2107 Table B1.
- External: To AS 1055.
- Internal: To AS/NZS 2107.
- Measurement positions: If a test position is designated only by reference to a room or space, do not take measurements less than 1 m from the floor, ground or walls.
- Sound pressure level analysis: Measure the sound pressure level and the background sound pressure level over the full range of octave band centre frequencies from 31.5 Hz to 8 kHz at the designated positions.
- Sound pressure levels: Measure the A-weighted sound pressure levels and the A-weighted background sound pressure levels at the designated positions.

3.22 CLEANING

Final cleaning
General: Before the date for practical completion, clean throughout, including all exterior and interior surfaces except those totally and permanently concealed from view.

Labels: Remove all labels not required for maintenance.

3.23 WARRANTIES

General
Requirement: If a warranty is documented, name the principal as warrantee. Register with manufacturers as necessary. Retain copies delivered with components and equipment.

Warranty period: Start warranty periods at acceptance of installation.

Approval of installer: If installation is not by manufacturer, and product warranty is conditional on the manufacturer's approval of the installer, submit the manufacturer's written approval of the installing firm.

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3.24 PERIODIC MAINTENANCE OF SERVICES

General

Requirement: During the maintenance period, carry out periodic inspections and maintenance work as recommended by manufacturers of supplied equipment, and promptly rectify faults.

Emergencies: Attend emergency calls promptly.

Annual maintenance: Carry out recommended annual maintenance procedures before the end of the maintenance period.

Maintenance period: The greater of the defects liability period and the period documented in the **Maintenance requirements schedule**.

Maintenance program

General: Submit details of maintenance procedures and program, relating to installed plant and equipment, 6 weeks before the date for practical completion. Indicate dates of service visits. State contact telephone numbers of service operators and describe arrangements for emergency calls.

Maintenance records

General: Record in binders provided with the Operation and maintenance manuals.

Referenced documents: If referenced documents or technical worksections require that log books or records be submitted, include this material in the maintenance records.

Certificates: Include test and approval certificates.

Service visits: Record comments on the functioning of the systems, work carried out, items requiring corrective action, adjustments made and name of service operator. On completion of the visit, obtain the signature of the principal's designated representative on the record of the work undertaken.

Site control

General: Report to the principal’s designated representative on arriving at and before leaving the site.

3.25 POST-CONSTRUCTION MANDATORY INSPECTIONS AND MAINTENANCE

General

Requirement: For the duration of the defects liability period, provide inspections and maintenance of safety measures required by the following:

- AS 1851.
- Other statutory requirements applicable to the work.
- Occupancy permit or certificate of final inspection.

Records: Provide mandatory records.

Certification: Certify that mandatory inspections and maintenance have been carried out and that the respective items conform to statutory requirements.

Annual inspection: Perform an annual inspection and maintenance immediately before the end of the defects liability period.

4 SELECTIONS

4.1 SCHEDULES

Notices schedule template.

Item	Minimum notice

Warranty schedule template.

Warranty	Form	Period

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As-built documentation submissions schedule

Submission event	Required documentation	Timing
Draft as-built documentation	2 x copies of draft documentation on disk media	At least 2 weeks before Practical Completion
Final as-built documentation	2 x copies of final documentation on disk media and 3 x full-sized sets on paper	Within 2 weeks after Practical Completion
Amendments to documentation arising from changes during Defects Liability Period	2 x copies of amended final documentation on disk media to cover significant changes	Immediately after changed work is completed
	2 x copies of amended final documentation on disk media and 3 x full-sized sets on paper to cover all changes effected during Defects Liability Period	At least 2 weeks before end of Defects Liability Period

Operation and maintenance manuals submissions schedule

Submission event	Required documentation	Timing
Draft copies of manuals for whole of Works	2 x draft sets of building and services manuals* to enable the Principal's staff to become familiar with the corresponding installations - include provisional as-built drawings and preliminary performance data as applicable	8 weeks before Practical Completion
Progressive manual upgrades for services, plant & equipment	3 x revised copies of sections of manuals for services, plant or equipment put into service during construction & operated by the Principal	Within 2 weeks after acceptance of such item(s)
Revisions arising from commissioning** (for manuals for whole of Works)	2 x revised copies of relevant sections of building and services manuals	Within 2 weeks after commissioning of item(s)
	1 x copy of certificates from authorities, test certificates and warranties	Prior to Practical Completion
Final copies of manuals for whole of Works	2 x final sets as Adobe Acrobat (PDF) files on disk media and 3 x hard-copy sets - incorporate original copies of warranties, certificates, etc in bound sheet protectors - incorporate feedback from review and from training of Principal's staff - incorporate final as-built drawings and final performance data	Within 2 weeks after Practical Completion
Loose leaf amendments arising from changes during Defects Liability Period	3 x amended copies of relevant sections of hard copy manuals to cover significant changes	Immediately after changed work is completed
	2 x revised sets as Adobe Acrobat (PDF) files on disk media and 3 x hard-copy sets updated to cover all changes (as for final submission)	On or before end of Defects Liability Period

* Format as for the final manuals, with temporary insertions for items that cannot be finalised until the installation is commissioned and tested.
** Where commissioning for the whole of the Works predates Practical Completion for the whole of the Works.

4.2 MAINTENANCE

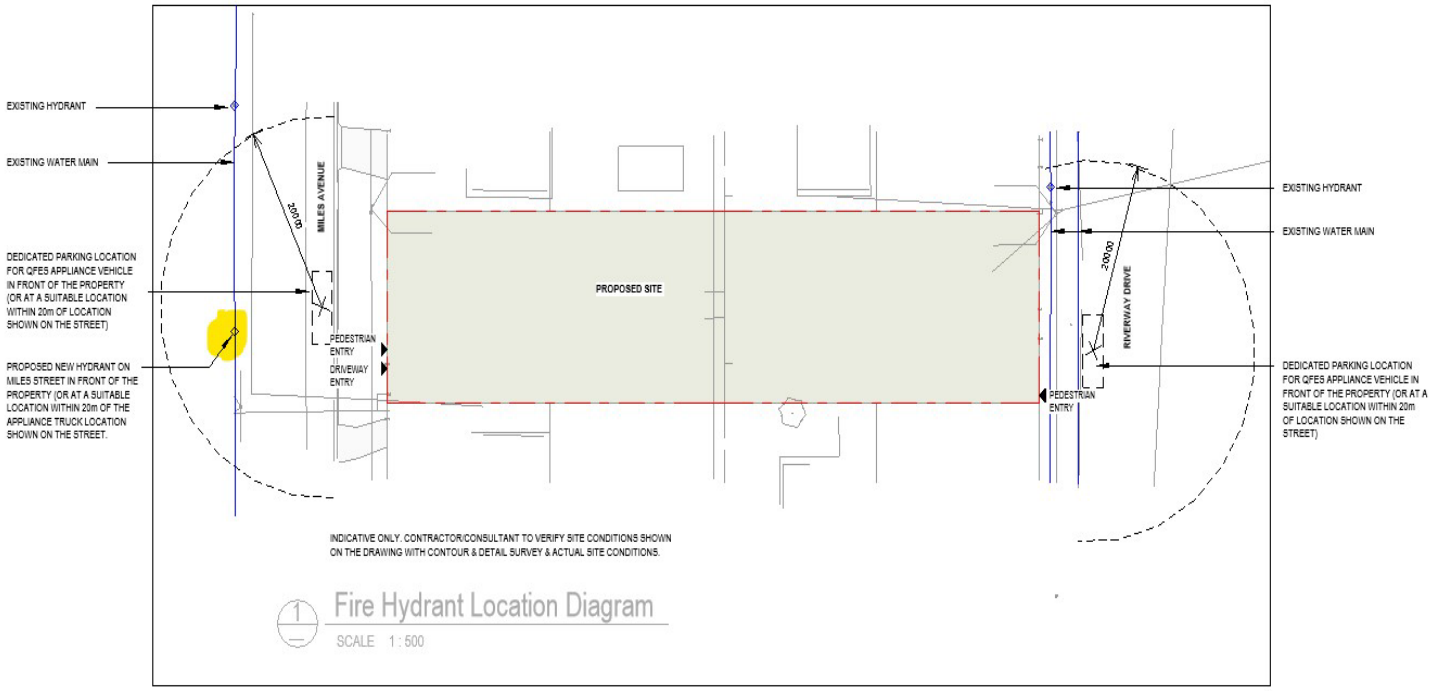
Maintenance requirements schedule template

Provision	Maintenance period (months)	Requirement

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Fire Hydrant Services

Fire hydrant maybe required, on 8 Miles Street, to ensure compliance with QFES operational Requirements, Tender to allow for the consideration, allowance and confirmation as part of CD Stage design and tender price



Refuse Bin Collection

Tender price to consider the following allowance for

- 1 x 3mtr Bulk Bin
- 2 x 1l00Ltr Bulk Bin.

As per Planning Scheme Policy SC6.4.22 Waste Management of the City Plan, for multiple dwellings with over 10 units, bulk bins are required:

Structural Engineering

Consideration for Structural Engineering consists of the following for this project.

- Project requires a build over sewer design and application.
- Attached is the Design Gust Wind Speed calculation with a Design Gust Wind Speed of 59 m/s.
- This is also classed as C2 and W50C.
- Structural Engineering Design Criteria to the following Australian Standards AS/NZS 1170.0,
- AS/NZS 1170.1, AS/NZS 1170.2 and AS 1170.4

PRELIMINARIES (AS 4300–1995)

1 GENERAL

1.1 DESCRIPTION OF THE WORKS

General description

Nothing in this clause shall limit, modify or alter the extent or description of the Works as set out in detail elsewhere in the Contract documents. Subject to the foregoing, the Works generally comprise the developed design, documentation, construction and completion of a 13 unit apartment complex, 4x1 Bedroom Platinum, 1x1 Bed Gold, 4 x2 Bed general, 4x1 Bed General, 8 Miles Ave &1265 Riverway Drive, kelso Townsville 4815.

In particular, the scope of works includes:

- The engagement of consultants to prepare Contract Documentation based on the approved Schematic Design and Construction documentation; ensure compliance with all applicable codes, standards and regulations, Housing Design Guidelines; prepare documentation suitable for Building Act Compliance and QFES (where required); and obtain all necessary approvals
- Construction of the works. The project will contain all inclusions as required by the Principal's Project Requirements.

The contractor is to allow for and provde all necessary documentation including but not limited to:

- Project Drawings, specifications and schedules of work
- Architectural drawings and specifications
- Safe Design Report/s in accordance with Workplace Health and Safety codes and regulations
- Acid Sulfate Soil Investigation and Acid Sulfate Soils Management Plan where required to comply with State Planning Policy 02/10
- Project specific Environmental Specification and Environmental Management Plan (Construction) including environmental reports in accordance with Environmental Protection Act. The Contractor shall employ the services of appropriately qualified and experienced environmental specialists to undertake the environmental management and environmental supervision of all works relating to the design, documentation, construction, training and commissioning of the facility.
- Overland flow report.
- Structural engineer's drawings and specifications
- Civil engineer's drawings, specifications and Stormwater Management Plan. Compliance with SPP Healthy Waters
- Electrical engineer's drawings and specifications. Liaise with relevant electricity distributer to arrange for electricity supply, upgrade, connection and commissioning and pay all associated costs.
- Mechanical Engineers drawings and specifications where required.
- Hydraulic consultants drawings and specifications (must liaise with QFES immediately where required)
- Energy efficiency consultants report (demonstrating energy efficiency rating in accordance with BCA requirements). A Nationwide House Energy Rating Scheme (NatHERS) assessment and rating of the potential energy efficiency of the project accommodation by appropriately accredited assessor using accredited software shall be provided to the Superintendent
- Fire Services Engineering drawings, specification and Fire Safety Management Plan where required.
- All required approvals including BCA Assessment, Local Authority Plumbing and Drainage and Operational works approvals, all Form 12's,15's and 16's, and Certificate of Classification. All of the required approvals to enable lawful occupation of the buildings. Pay all associated costs.

- Access and consent from adjoining owners for sewer and stormwater connection or upgrade works for property connection. A signed agreement letter of the mentioned access and consent form adjoining neighbour's for the described works shall be provided to the Superintendent

On completion provide all certificates and warranties as required in the annexure - General Requirements.

Location
8 Miles & 1265 Riverway Drive, Kelso, 4815 Townsville.

Real property description
Lot 1 & 3 RP727085 & RP727085

Lot size: 1618 m2
Local Government Authority: Townsville City Council
State Gov't Electorate: Thuringowa

Contract documents
The Contract documents comprise include:

- Australian Standard General Conditions of Contract AS 4300-1995 (hereinafter termed the *'General Conditions of Contract'*);
- the Special Conditions of Contract (including the completed Annexure) and any Supplementary Special Conditions of Contract, as issued by the Department of Energy and Public Works;
- the accepted Tender Form and accompanying Conditions of Tendering;
- the Principal's Project Requirements, including the project specific brief, Schematic design drawings, returnable schedules, this Preliminaries, and other documents listed in the **Schedule of Principal's Project Requirements** in the *Preliminaries Schedules*;
- the Design Documents, including drawings, specifications, technical schedules, samples, and other information required by the Contract and prepared by the Contractor or others for construction of the Works;
- any other drawings or documents issued in accordance with the Contract during the course of the Contract.

Contractor's documents
Where the Contract requires the Contractor to supply documents such as shop drawings, technical schedules, or other written information, supply them in sufficient time for examination, and revision if necessary, to occur before they are required for use.

As-built documents
Provide as-built drawings of revised floor plans and installed plant and equipment layouts (both at 1:100 scale) and installed underground services (at appropriate scales and showing key coordinate dimensions), all as specified in *General requirements* worksection.

Disclaimer on supply of electronic documentation
Electronic copies of preliminary design and services drawings forming part of the Principal's Project Requirements have been prepared by consultants engaged by the Principal for purposes associated with the Contract and remain the property of the State. Where provided by the Principal, electronic drawing and other document files represent 'information only' for the convenience of the Contractor. The Principal does not accept liability for attributes of electronic files provided for 'information only' purposes, including characteristics such as file format, document layering, completeness or accuracy.

Copyright in electronic drawing and other document files remains with the State of Queensland.

Existing work
If the Works include alterations or additions to existing work, verify the dimensions of the existing work before proceeding and notify discrepancies as required by the Contract.

1.2 CONTRACTOR'S DOCUMENTS

General
Where the Contract requires the Contractor to supply documents such as developed preliminary design drawings, construction drawings, shop drawings, specifications, technical schedules, or other written information, supply them in sufficient time for examination and revision, if necessary, before these documents are required for use.

Design to satisfy Principal
Take responsibility for the work of design consultants required under the Contract and consult with representatives of the Superintendent and Principal to ensure that developed preliminary design and construction documents accurately reflect the Principal's Project Requirements. Under Special Conditions of Contract clause 40.4A, submit proposed improvements to the preliminary design (if any) included in the Principal's Project Requirements in sufficient time to enable the Principal to give the submission proper consideration. The Superintendent shall interpret any ambiguities or discrepancies identified in the Principal's Project Requirements in accordance with General Conditions of Contract clause 8.1.

Communications during design development
The Superintendent may appoint one representative for design and documentation responsibilities and another representative for construction and administration responsibilities. Allow the Superintendent's Representatives to communicate directly with any of the Contractor's design consultants.

Contractor's design consultants
Provide a team of appropriately experienced and Queensland-registered professional consultants to prepare the design and construction documentation, including but not limited to consultants for:

- Architecture;
- Landscape architecture;
- Civil engineering;
- Structural engineering;
- Hydraulic services (including for hydraulic fire services systems as required);
- Electrical services (including for communications, data, security and fire detection/alarm systems);
- Mechanical services if required.

Contractor's design manager
Appoint an appropriately experienced Design Manager (hereinafter termed the 'Design Manager') to ensure the design and construction documents are of satisfactory standard, meet the Principal's Project Requirements, are co-ordinated with each other, and are prepared in a timely manner.

Within one week of commencement, the Design Manager shall submit an electronic (PDF) copy of a design program to the Superintendent. At fortnightly intervals thereafter, the Design Manager shall submit to the Superintendent reports on progress achieved compared to the design program. Attach to these reports electronic (PDF) copies of:

- new or revised drawings prepared to date;
- any other new or revised design and construction documents.

Design review meetings
To coincide with fortnightly design review submissions and staged documentation issues, organise fortnightly design review meetings to monitor progress on the developed preliminary design and construction documentation. The Design Manager shall provide the documents specified in the **Schedule of Contractor's documentation issues** to the Superintendent 3 days in advance of the corresponding design review meeting dates to allow time to review these documents in detail.

The Superintendent's Representatives shall attend these design review meetings for the purposes of reviewing an acceptable final set of construction documents. This may involve the Contractor's design consultants having to revise documents or undertake additional documentation to satisfy conditions of

acceptance. The Contractor shall construct the project in accordance with the final accepted set of construction documents.

The Design Manager shall:

- Ensure all relevant design consultants attend design review meetings;
- Submit the documentation nominated in the **Schedule of Contractor's documentation issues** 3 days in advance of design review meetings to assist discussions;
- Submit also 3 days in advance of design review meetings, any drawings or documents that were discussed at the previous design review meeting and required amendment;
- Submit the meeting agenda to the Superintendent 3 days before each design review meeting;
- Prepare minutes for the design review meetings and circulate the minutes within 4 days of each meeting being held, a distribution list being agreed at the first design review meeting.

Coordination of design consultants

The Design Manager shall coordinate the work of design consultants and provide and direct all necessary persons to administer, supervise, inspect and direct the work of design consultants. Ensure that work undertaken by the Design Manager and the design consultants is completed in a manner and at a rate of progress consistent with completion of the Works in accordance with the Contract.

Schedule of Contractor's documentation issues

Timing / stage	**Name of submission**	**Required electronic copies (PDF) of all specifications and schedules (A4), drawings (A3)**
End developed preliminary design	100% developed preliminary design drawings for architectural, civil, structural, hydraulics and services engineering	1 (for developed design review and direction-on-suitability purposes)
60% construction documentation	60% complete construction drawings for all Contractor's consultant disciplines	1 (for review purposes)
80% construction documentation	80% complete construction documents for all disciplines - pre-acceptance	1 (for review purposes)
Final construction documentation	100% complete and corrected construction documents for all disciplines - post-acceptance and pre-construction	1 (for direction-on-suitability and record purposes)
Construction stage	Amended documents required during construction if design is modified by Type 1 and Type 2 variations	1 (for record purposes)
Practical completion	As built documents at practical completion	1 (for record purposes)
Final certificate	Documents amended during the defects liability period and required on completion of the project	1 (for record purposes)

Suitability of documents

Pursuant to Conditions of Contract clause 8.4, the Superintendent's direction on suitability of the following documents is required for:

- Developed preliminary design documents, to include drawings, diagrammatic layouts, and schedules of building components and finishes from architectural, civil, structural, and services engineering consultants;
- Construction documents, to include drawings, technical and trade specifications, finishes schedules, and coordinated plant and equipment layouts from all consultants, including architectural, landscape, civil, structural, hydraulics, electrical, mechanical, and specialist electronic engineering;
- Services schedules;
- Shop drawings.

1.3 SELECTED SUBCONTRACTORS

- NA

1.4 WORK BY OTHERS

Work concurrent with this Contract

Others will be responsible for any activities associated with the role of Principal's Advisor, as described in the *Working with and removal of asbestos* worksection.

Associated work by the Contractor

Request the Superintendent to provide contact details of the Principal's Advisor, five days before initial contact is required, to ensure timely progress of the Works.

Cooperate with the Principal's Advisor as necessary to complete the Works.

Notify the Superintendent five days prior to the day on which it will be suitable for work by the Principal's Advisor to commence.

Notify the Superintendent immediately if completion of the Works may be delayed by an act or omission of the Principal's Advisor, and provide all supporting evidence.

The Contractor is not required to provide insurance for work completed by others.

Take responsibility for:

- including the time (which shall not be unreasonable) required for attendance by the Principal's Advisor in the Construction Program;
- confirming appropriate Work Health and Safety induction;
- providing access to temporary services and amenities including loading areas reasonably foreseen as associated with the Principal's Advisor;
- general attendance, liaison and cooperation with the Principal's Advisor as necessary to complete the work under the Contract;
- protecting the Works, including access paths, that may be damaged by the Principal's Advisor in carrying out their work;
- recording damage to the Works caused by the Principal's Advisor, and immediately notifying the Superintendent, with supporting evidence;
- notifying the Superintendent of the actual date of commencement, and completion of work by the Principal's Advisor.

1.5 PROVISIONAL ITEMS

Cross reference

Refer to the *Preliminaries Schedules* for details of provisional allowances applying to the Works. Include these provisional allowances in the Contract Sum for the purposes as specified.

1.6 STATUTORY REQUIREMENTS

Prior applications to authorities

Before entering into the Contract, the Principal has given the notices, paid the fees, and obtained the permits, approvals and other authorisations stated in the **Prior applications and approvals schedule**.

Prior applications and approvals schedule

Prior notices given and applications made	Fees paid	Permits, approvals and authorisations received
Notification to the Building and Construction Industry (Portable Long Service Leave) Authority ("QLeave") of the building and construction work described in the Contract documents	Payments required under provisions of the Building and Construction Industry (Portable Long Service Leave) Act	N/A

Contractor's responsibility to meet project requirements

Take responsibility for all aspects of the Works, to include compliance with the lawful requirements of public and other authorities applicable to the work, such as:

- Provision of necessary documentation, inspections, and certificates sufficient to obtain compliance assessment under the Building Act 1975 / Building Regulation 2006 and Plumbing and Drainage Act 2002 / Standard Plumbing and Drainage Regulation 2003 as stated in the Contractor's applications and approvals schedule;

- Compliance with provisions of the Queensland Building and Construction Commission (QBCC) Act 1991 / Queensland Building and Construction Commission Regulation 2003, including any necessary licensing, inspections, certifications and fee payments;
- Necessary notifications, applications, inspections, fee payments, certifications, and other requirements of supply authorities in regard to necessary building services infrastructure;
- Compliance with provisions of the Environmental Protection Act 1994, Planning Act 2016, Planning Regulation 2017, and subordinate regulations, codes of practice, and policies;
- Compliance with Principal Contractor provisions of the Work Health and Safety (WHS) Act 2011 / Work Health and Safety Regulation 2011 and associated codes of practice.

Contractor's applications and approvals schedule

Notices to be given and applications made	**Fees to be paid**	**Permits, approvals and authorisations to be received**
Submission of required number of copies of construction plans and specifications to the Contractor's Building Certifier	Payments required under provisions of the Building Act 1975	Building Act compliance permit with date, including with assessment conditions and stamped compliance documents
Submission of electronic copies of hydraulic plans and specifications to QBuild	Payments required (for permit only) under provisions of the Plumbing and Drainage Act 2002	Plumbing and Drainage Act compliance permit with date, including with assessment conditions and stamped compliance documents
Submission of required number of copies of stamped compliance documents to Queensland Fire and Emergency Services (QFES) as referral agency	Payments required under provisions of the Building Act 1975 and Fire and Emergency Services Act 1990	QFES approval with date, including with approval conditions and QFES stamped compliance documents

Give notice and pay fees in respect of all other statutory requirements e.g. for on-site inspections and testing on completion. Comply with provisions of relevant statutory requirements in accordance with Contract conditions. Take responsibility as the Principal Contractor under Work Health and Safety Regulation 2011.

Queensland Building and Construction Commission

Pay to the Queensland Building and Construction Commission (QBCC) an insurance premium ('the insurance premium') for construction work, as required under the Building and Construction Commission Act 1991, unless the work is excluded from being relevant building work under Part 2 of the Building and Construction Commission Regulation 2003.

Provide the Superintendent with evidence that:

- the insurance premium has been paid, and
- the construction work is compliant with the Queensland Building and Construction Board Rectification of Building Work Policy.

Take responsibility for and pay costs associated with engaging a professional engineer registered in Queensland (RPEQ) to conduct required inspections and provide certification that all structural elements are constructed in accordance with the Contract documentation.

Applications to separate utility authorities

Where applicable, apply to relevant Utility Service Providers for supply and connection to required building services, to include but not be limited to power, communications, town mains water, and disposal of sewage or trade wastes. Pay all associated fees (including those for mandatory service requirements such as meters, inspection and testing) and provide all documentation and attendance required by the Provider and/or Local Authority for approval or other purposes. Furnish the Superintendent with evidence that Utility Service Provider and/or Local Authority fees are paid and requirements met. Notify the Superintendent if any necessary building service supply or connection is included in the Principal's Project Requirements but unavailable when fees are paid.

Building Act / Plumbing and Drainage Act compliance documents

Take responsibility **and all associated costs** for obtaining the QFES-approved Building Act / Plumbing and Drainage Act compliance permits and assessment conditions from the Contractor's Building Certifier or other required compliance assessment authority. Keep one set of QFES-approved

Building Act / Plumbing and Drainage Act compliance documents on site as required by Building Regulation 2006 and satisfy all compliance assessment conditions during the course of the Works.

The compliance documents identify the “evidence of suitability” certificates required for compliance assessment. The Building Certifier may amend the list of certificates during the course of the Contract to reflect actual components and services used in the Works. Submit “evidence of suitability” certificates as they become available and issue a final consolidated set at least 2 weeks before offering the Works as practically complete. Working in association with other required compliance assessment authorities, the Building Certifier’s issuing of a code assessment summary for the Works is a condition precedent to certification of practical completion.

Construction and services inspections

Engage independent and suitably qualified **Queensland-registered professional consultants** to undertake compliance inspections required by Part 6 of Building Regulation 2006 and for issuing of design and inspection certificates. All costs associated with these requirements (including inspection and certification) will be at the contractor's expense. Arrange and pay costs for independent inspection and certification of all other building components, systems and equipment where required under the National Construction Code (NCC) or other statutory provision. Notify the Superintendent of readiness for inspections 2 weeks prior to the inspection or activity occurring. Take responsibility for liaising with the relevant compliance inspector for:

- the type and nature of inspections required;
- the staging and timing of such inspections;
- notification periods required prior to required inspections.

Fire services

Where the building contains "special fire services" (as defined in Schedule 2 of the Building Act 1975), give 48 hours minimum notice to the Superintendent and the Commissioner, Queensland Fire and Emergency Services, so that they can be inspected as required by Section 74 of the Building Act 1975 and, if necessary, tested at the following stages:

- after installation and before concealment by subsequent construction work;
- after installation and before interior finishes are applied.

Fire services documentation

Prior to requesting practical completion, prepare and submit the following printed documents to the compliance officer nominated to perform Building Act inspections:

- a list of all “fire safety installations” as defined in Schedule 2 of the Building Act 1975;
- 3 copies of as-built drawings showing the location of fire safety installations.

Furnish to the Superintendent 2 copies of the as-built drawings. Furnish separately to the Superintendent (marked for the attention of the relevant Building Act compliance officer):

- the list of all “fire safety installations”;
- 1 copy of the as-built drawings.

Supply all printed documents collated, bound and parcelled.

Approvals, certificates and plant equipment registration

In addition, to all other local statutory authorities having jurisdiction over the installations, obtain all necessary approvals, certificates, and registration from the relevant Authorities to enable operation of the plant equipment.

Refer to schedule 5 of the Work Health and Safety Regulation 2011 for requirements.

Competent person

Applications for plant equipment registration will require a 'safe to operate' statement by a competent person. This person will make a declaration that the plant equipment has been inspected and assessed as being safe to operate.

Approval for use

A person must not use the registerable plant, nor be directed to use registrable plant at the workplace, unless the plant has been registered.

Change of ownership of registered plant

Prior to Handover (co-ordinate with Principal), organise change of ownership of plant equipment, registered with Work, Health and Safety Queensland, to the Principal and/or as directed by the Superintendent.

2 HEALTH AND SAFETY

2.1 ACCREDITED AUDITOR (CONSTRUCTION)

Functions

Further to Special Conditions of Contract clause 15.2.3, functions which an Accredited Auditor (Construction) is to perform on Queensland Government building and construction projects include:

(a) Assessment of the Contractor's Work Health and Safety (WHS) management plan in relation to site construction activities being undertaken.

(b) Inspection of the Contractor's site construction activities and assessment of safety practices observed against criteria contained in the Site Inspection Report checklist.

(c) Providing the Superintendent with summary audit reports prepared after assessments / site inspections, including of any non-conformances and recommendations that:

- work should be suspended for safety reasons;
- urgent action is needed to protect work under the Contract, other property, or people.

(d) Verification when corrective action notices are finalised, including providing corresponding notices to the Superintendent.

If, in the opinion of the Accredited Auditor (Construction), corrective action notices are taking longer than is reasonable to finalise, the Superintendent shall be notified and recommendations made in accordance with (c).

Number of site inspections required:

Project duration 16-25 weeks:	1
Project duration 26-38 weeks:	2
Project duration 39 weeks and above:	2 plus one for each additional 13 weeks.

Ensure that all audit requirements are included in the contractual agreement between the Contractor and the Accredited Auditor (Construction).

Payment

Further to Special Conditions of Contract clause 15.2.4, the Principal shall reimburse the Contractor for Accredited Auditor (Construction) fees incurred in performing the functions specified above, provided always that fees shall not be reimbursed for "failed inspections".

The Contractor shall not be allowed any additional amount for profit, overheads or attendance in respect to Accredited Auditor (Construction) fees.

Reimbursement procedures shall be as follows:

(a) After paying the fees, the Contractor shall submit to the Superintendent a monthly invoice seeking reimbursement, together with evidence of the amount paid to the Accredited Auditor (Construction) and a statement of functions performed in respect of that invoice.

(b) Invoices for reimbursement of Accredited Auditor (Construction) fees shall not be included in payment claims made in accordance with Special Conditions of Contract Clause 42, but may be submitted at any time in the month.

(c) Invoices shall be addressed to QBuild and shall include:

- reference to the QBuild project number;
- allowance for GST.

Invoices shall be considered separately from, and shall be paid separately from, payment claims made in accordance with Special Conditions of Contract clause 42.

2.2 PROTECTION OF PEOPLE AND PROPERTY

Occupied premises

The Principal or persons authorized by the Principal will continue in possession and occupancy of the parts of the site and existing buildings shown on the drawings or specified herein. Access to and around the site, including for working, storage, loading / unloading, and parking purposes, is restricted to areas designated by the Superintendent.

Where work is required in close proximity to existing occupied buildings, minimise nuisance to occupants and ensure their safety. Protect occupants against weather, dust, dirt, water, noise or other nuisance by appropriate means, including use of temporary screens and barriers, erosion control and dust suppression to earthworks, and residential class silencers on all equipment exhausts.

Where overhead cranage is necessary to complete the Works, ensure the safety of crane operation by monitoring and actively enforcing the exclusion zone. Make allowance for foreseeable time and cost effects on the construction program.

Submit details of proposed methods (for information only).

Construction safety generally

Particular statutory responsibilities apply to persons commissioning construction projects, designers and principal contractors under the Work Health and Safety Act 2011, Work Health and Safety Regulation 2011, and associated Codes of Practice, to ensure a safe work environment for:

- all persons associated with the Works;
- the Principal to manage before and after taking occupancy of the completed Works.

Manage risks to health and safety by diligent application, maintenance and continuing review of control measures for hazards reported by the Designers of each element of the Works or otherwise identified during the course of the Works. Upon request and where applicable, provide the Superintendent and Principal with:

- the Designers' written safety report on hazards associated with the particular building design (where not typical of known hazards associated with designs for similar structures);
- the Contractor's WHS management plan relative to site construction activities being undertaken;
- the individual safe work method statements prepared for high risk construction activities forming part of the Works.

Safe work method statements must address all relevant aspects of the activity, including following established codes of practice for hazardous activities such as working at heights, electrical / solar system safety, and safe working with ACM, along with general WHS considerations. Where required, switch off power and test metal roofs and other metal building elements before commencement to ensure they are not 'live'. Maintain written records of all testing and inspection procedures undertaken.

Temporary barricades, hoardings and other risk control measures

Enclose all work and plant areas with temporary barricades, hoardings and other appropriate risk control measures. Provide rigid safety fencing with mesh screening around the entire perimeter of the worksite to minimum 1800mm height and maintain for the entire duration of the work. Incorporate lockable gates providing an equal level of risk control where necessary. Remove on completion and make good all affected areas.

Accidents

Promptly notify the Superintendent if any of the following occur:

- accidents involving death or personal injury;
- accidents involving loss of time;
- incidents with accident potential e.g. equipment failures or "near misses".

Protective clothing

Make available sufficient protective clothing for use by minimum 6 daytime visitors.

- Safety helmets: To AS/NZS 1801, Type 1.
- Certification: Required.
- Certification provider: An organisation accredited by the Joint Accreditation System of Australia and New Zealand (JAS-ANZ).
- High visibility safety vests: To AS/NZS 4602.1, Class D.

Hazardous materials

Notify the Superintendent immediately if any of the following are found:

- asbestos and asbestos-containing materials (see also Clauses 2.4 to 2.6);
- flammable or explosive liquids or gases;
- toxic, infective or contaminated materials;
- noxious or explosive chemicals;
- acid sulfate soils;
- tanks or other containers which have been used for storage of contaminated substances;

- any other material or substance which may be potentially deemed as toxic, infective or a hazardous contaminant.

2.3 CARE OF THE WORK AND REINSTATEMENT OF DAMAGE

General

Damage to infrastructure and services: Do not obstruct or damage existing roadways, footpaths, drains, watercourses, public utilities and other services in use on or adjacent to the site. Make good and pay all costs for rectifying any damage to existing infrastructure and services, including making temporary arrangements satisfactory to the Superintendent and relevant local or other authorities.

Damage to property: Do not interfere with or damage property which is to remain on or adjacent to the site, including adjoining property encroaching onto the site. Protect trees and other vegetation shown to be retained, or which need not be removed or damaged for construction operations. Make good and pay all costs for immediately rectifying any interference or damage to such property.

Existing services

Attend to existing services as follows:

- If the service is to be continued, repair, divert or relocate.
- If the service crosses the line of a required trench, or will lose support when the trench is excavated, provide permanent support for the existing service.
- If the service is to be abandoned, remove redundant parts and make safe.

Submit proposals for action to be taken with respect to existing services before starting work. Minimise the number and duration of interruptions.

Existing and new crossings

Existing gutter crossing(s): Arrange with the local authority for removal of the existing gutter and footpath crossing(s) as documented. Replace with kerbing, guttering and footpaths to match similar adjacent existing work, and pay all fees in connection with this work.

New gutter crossing(s): Arrange with the local authority for provision of gutter and footpath crossing(s) as documented, and pay all fees in connection with this work.

Existing fencing and retaining walls

All existing fencing and retaining walls: Inspect for condition/dilapidation to notify and seek instruction for the Works from the Superintendent. Contractor is responsible for all costs associated to repair, disposal, and/or replace fencing and retaining walls as identified and directed by Superintendent.

Adjoining property

At least 14 days before commencing work, submit to the owners and occupants of adjoining property written notice of intention to commence work and an outline description of the type and extent of work.

As part of site establishment, arrange a joint inspection with the Superintendent and the owners and occupants of adjoining properties. Arrange a similar joint inspection on completion of the Works.

Dilapidation record

At the initial inspection, prepare a detailed photographic dilapidation record of conditions existing within the adjoining properties, especially structural defects and other damage or defacement. Label each image with information sufficient to confirm location and dilapidation observed.

Provide the Superintendent, Principal and each owner and occupant of an adjoining property with one electronic (PDF) copy of the dilapidation record. Keep a hard copy on site as evidence of conditions existing before commencement.

Encroachments

Advise the Superintendent immediately and seek instructions if the Works reveal encroachments of:

- adjoining property on to the site, or
- existing site structures on to adjoining property.

and such encroachments are not otherwise identified in the Contract documents.

2.4 ASBESTOS IN CONSTRUCTION WORK

Requirement

Prohibition on use of asbestos: Asbestos in the forms of crocidolite, amosite, fibrous anthophylite, tremolite, actinolite, or chrysotile must not be used or re-used as a building product or material.

Acceptable uses: Notwithstanding the above prohibition on use, asbestos containing material (ACM) may be worked with for the purposes of sampling and analysis in the minimum quantity necessary,

and for removal, disposal, encapsulation or enclosure as specified or directed. Chrysotile products installed before 31 December 2003 and in sound condition may also continue in use in their existing positions unless otherwise specified.

Prohibition on use of chrysotile asbestos in all forms: From 31 December 2003, under the *National Model Regulations for the Control of Workplace Hazardous Substances*, chrysotile asbestos ('white asbestos') cannot be imported into Australia, nor used or sold in any new product in Australia. Ensure that chrysotile asbestos is not included in any new or relocated products incorporated into the Works.

Restriction on materials imported to the site: Imported material, including fill, soils and mulches, must be free of building waste of any kind and in particular must be free of ACM. Before placing, provide the Superintendent with written certification that all imported material is free of building waste and ACM.

Discovery of suspected or confirmed ACM (an asbestos incident)

Stop work and notify the Superintendent immediately if suspected or confirmed ACM is discovered during work such as:

- excavation or trenching;
- placing fill, soil or mulch;
- any other work external or internal to a building.

Procedure in event of an asbestos incident

Where an "asbestos incident" occurs by disturbance of ACM during the course of the Works without appropriate controls being in place:

- notify the Superintendent immediately;
- stop work on the disturbed or discovered ACM, decontaminate workers as required, and temporarily seal any enclosure around the disturbed or discovered ACM;
- do not attempt to clean up or seal disturbed or discovered ACM in any way;
- secure the area with the assistance of staff nominated by the Principal;
- restrict access to the site to persons nominated by the Superintendent (these persons shall include a Principal's Advisor, appropriately licensed Asbestos Removal Contractor, and others);
- resume work only when directed by the Superintendent.

Obtain a copy of any sampling or test result arising from the asbestos incident, and carry out appropriate and relevant measures as communicated by the Principal's Advisor. Revise the Safe Work Method Statement and provide 2 copies of the revised document to the Superintendent.

3 SITE MANAGEMENT

3.1 SETTING OUT

Certification

Provide certification from a licensed Surveyor that the Works are within the site boundaries, and within required setbacks from each site boundary, including with a drawing certifying the set out. Submit the certificate to the Superintendent within 10 working days of completion of setting out.

Take responsibility for the set out and indemnify the Principal against any liability, loss, claims or proceedings in respect of encroachment by the Works on to adjoining properties or required setbacks.

3.2 SITE MANAGEMENT GENERALLY

Contractor's site manager

Ensure attendance by a Site Manager or Site Foreman (hereinafter termed 'Site Foreman') with overall responsibility for issues that include construction safety and project coordination at all times work is being undertaken on the site. Persons in this position must have demonstrated experience in delivering similar projects in occupied premises environments and shall be separate from any leading hand, subcontractor or other representative of the Contractor.

Site security

Engage a professional security service to provide site security during after-hours work for asbestos removal or other purposes authorised under the Contract. The Contractor's security service shall:

- Provide continuous attendance and patrol the perimeter of the construction site.
- Monitor arrivals and departures of all persons and vehicles at the construction site, to confirm identity and purpose.

- Report any security issues to the Contractor and the Superintendent as soon as possible, and in a compiled form on completion of the after-hours work.

Contractor's pedestrian and vehicular access

Comply with the *Traffic Management for Construction or Maintenance Work Code of Practice 2008*. Use the designated entry point directed by the Superintendent for access and egress by Contractor's workers. No other access point is to be used without prior agreement.

Deliveries and site waste

All loading and unloading of materials must be in locations agreed with the Superintendent and subject to any time limits or clearways applicable to these locations. Ensure that materials and rubbish are not left in common areas outside the construction site. Remove site waste as it accumulates to avoid the formation of potential workplace hazards.

Fire protection services and emergency access / egress

Maintain fire protection services and emergency access when undertaking work under the Contract. Ensure that egress remains clear at all times for emergency evacuations on exit paths of travel.

Do not disconnect fire alarms, except with prior written approval from the Superintendent. Maintain fire mains and fire hydrants on adjoining sites in fully operational condition at all times.

Salvaged items

Unless otherwise nominated in the Contract, take responsibility for materials, plant, equipment and other items salvaged during work under the Contract and remove them from the site.

Trucking

Convey soils, earth, sand, loose debris, and like loose materials to or from the site in a manner that prevents dropping of materials on streets.

Ensure that the wheels, tracks and body surfaces of all vehicles and plant leaving the site are free of mud and that mud is not carried on to adjacent paved streets or other areas.

3.3 SITE MEETINGS

Pre-start meeting

After completion of the documentation stages and prior to site establishment, a meeting shall be held with relevant representatives of the Superintendent, Contractor, Principal, Design Manager and Contractor's consultant team. The purpose of the meeting is to allow the Design Manager and appropriate consultants to explain the project's concept and any items considered to be particularly important during the construction stage, including those relating to design innovation, environmental concerns, heritage listing, or necessary but potentially disruptive activities. The pre-start meeting is intended to establish the basis for good communication between all participants by:

- confirming the roles and responsibilities of all parties to the Works;
- establishing clear and effective lines of communication between the parties;
- facilitating transfer of knowledge about all aspects of the Works to and from the participants;
- supporting attention to technical and administrative communications required under the Contract;
- setting the agenda and conduct for future site meetings.

Minutes for the pre-start meeting will be taken and distributed by the Superintendent's Representative.

Site meetings

Throughout the duration of the Contract, arrange meetings at fortnightly or other agreed intervals with appropriate Subcontractors, the Superintendent, and the nominated Principal's representative. Unless otherwise directed by the Superintendent, keep minutes of such meetings and have electronic (PDF) copies forwarded to all attendees within 3 working days after each meeting.

Contacts

At the first site meeting, submit to the Superintendent the names and telephone numbers of responsible persons who may be contacted after hours during the course of the Contract.

Fortnightly and monthly reporting

Provide the Superintendent with site photographs (including sufficiently descriptive captions) of those portions of the Works under construction each fortnight to demonstrate progress. Provide a written report to the Superintendent each month which sets out:

- the true position reached on the Works;

- any deviations from the approved construction program;
- any anticipated risks or circumstances adversely affecting performance of the Works;
- a schedule of activities undertaken in the previous 2 weeks and planned for the following 2 weeks;
- a record of labour / subcontractors engaged upon the site over the previous month;
- the weather conditions experienced on site over the previous month.

3.4 MATERIALS, LABOUR AND CONSTRUCTIONAL PLANT

Site Foreman's office

Before major site operations commence, provide a secure weather-tight office for the Site Foreman with sufficient lighting, air conditioning, power, water and telecommunications services to allow the Site Foreman, Contractor, Superintendent and Principal's representative(s) to complete necessary Contract administration tasks while on site. Provide sufficient space, fitout and equipment in the office to:

- permit comfortable viewing, copying and printing of construction drawings and other documents;
- house the Building Act compliance documents in lockable drawer space;
- hold site meetings with a table and sufficient chairs for all required attendees.

Fire-fighting equipment: Provide a 4.5 kg dry chemical AB(E) class fire extinguisher to AS/NZS 1841.5.

Cost of services: Pay charges for installation, use and removal on completion.

Maintenance and access: Clean the Site Foreman's office regularly. If the office must be moved during progress of the Works, do so without charge and with minimum inconvenience. Provide access to the office at all times work is being undertaken on site.

Removal: When agreed by the Superintendent, remove the Site Foreman's office and contents on completion and make good the site.

Temporary infrastructure and services generally

Provide and maintain temporary infrastructure and services necessary for execution of work under the Contract. Install temporary infrastructure and services in accordance with the requirements of relevant authorities. Do not connect to existing services without the Superintendent's prior approval.

Pay charges in connection with installation and use of temporary services, and make them available to subcontractors. On completion, disconnect and remove temporary infrastructure and services, and make good connection points and surrounds to match the site conditions existing prior to commencement of the Works.

Temporary power

Provide an electricity service for the Works, separately metered and suitably protected by circuit breakers and earth leakage protection devices.

Temporary water

Provide sufficient water of suitable quality to enable completion of work under the Contract. Notify the Superintendent and obtain approval of the proposed methods of providing temporary water to the site, and any associated conditions of supply, prior to implementation.

Potable water: Before using water from existing reticulated potable water systems, provide a dedicated calibrated water meter. Read meters jointly with a representative of the Principal at intervals directed by the Superintendent.

Water saving measures: Comply with any water restrictions set by the relevant regional water supply authority, and the local authority having jurisdiction in the general area surrounding the site.

Take all reasonable measures to minimise the consumption and waste of water used on site. Maintain all Contractor's fittings and equipment to minimise leaks.

Attendance: Attend the site at all times that water is being used, including during all commissioning activities and the planting establishment period. Cease water consumption before leaving the site each day.

Site amenities

Provide statutory and necessary amenities and sanitary facilities for workers and other persons lawfully upon the site and remove them on completion of the Works.

Project signboard

Within 2 weeks of taking possession of the site, provide a professionally-lettered construction sign made of weatherproof materials and minimum 2.4m^2 in area in accordance with QBuild standard

construction sign detail 00000/11111A. Include the Contractor's QBCC-licensed name and number prominently displayed in black letters 50mm high in accordance with Queensland Building and Construction Commission Act 1991.

Erect the sign in a suitable location on site as approved by the Superintendent. Apart from mandatory construction safety signs, no other contractors' signs are permitted without the Superintendent's approval.

Ownership: The signboard shall remain the property of the Contractor. Maintain in good condition until practical completion, then dismantle and remove.

Note:

All major construction and infrastructure developments must acknowledge the governments investment through onsite signage.

However, there are circumstances where drawing public attention to government projects through the use of signage is not appropriate. For example, the construction of a refuge for victims fleeing domestic and family violence. The Principal Consultant, Project Manager is to confirm if site signage is required.

Temporary fencing

Where the Works include the taking down, re-erection, or maintenance of existing fencing, ensure the site is secured at all times by temporary fencing.

3.5 MATERIALS AND WORK

Building materials and components

The use of Non-Conforming Building Products and Non-Compliant Building Products (NCBPs), as defined by the Queensland Building and Construction Commission (QBCC), is not permitted.

Materials shall conform to the Standards and Codes issued by the Standards Association of Australia, unless otherwise specified.

Verify building materials and components, conform and comply with the National Construction Code (NCC) and the following, as applicable:

- Certificate of Conformity by CodeMark or WaterMark;
- Certificate of Accreditation from a State or Territory Accreditation authority;
- Certificate from an appropriately qualified person such as an engineer;
- Certificate from a product certification body accredited by JAS-ANZ;
- Report registered by a registered testing authority;
- Other documentary evidence.

Upon request by Principal, provide evidence of compliance and conformance.

For detailed information about compliance and conformity assessment, refer to:

- Queensland Building and Construction Commission (QBCC) http://www.qbcc.qld.gov.au/non-conforming-building-products/non-conforming-building-products
- The Australasian Procurement and Construction Council Guide to Procurement of Construction Products.

Items supplied by the Principal

NA

Measurement of work

For the purposes of the Contract, measure work in accordance with the Australian Standard Method of Measurement of Building Works.

Joining up

Generally: Carry out the joining of new work to existing work, and any consequent cutting away, in a manner appropriate to the materials, and make good to existing work as directed by the Superintendent.

3.6 AUSTRALIAN AND OTHER STANDARDS

Current editions

An Australian or other standard applicable to the Works should be the current Edition but may be the edition last published not later than one month prior to the closing date for tenders.

Site copies
Where reference to a standard is required to resolve differences in respect of compliance with the Contract requirements, provide a copy of the relevant Standard.

3.7 SAMPLES

Approved samples
Where samples are called for, items supplied are to be in accordance with the approved samples, or an approved alternative within a range defined by approved samples. Keep approved samples in good condition on site until Practical Completion. Where not so specified herein, provide samples upon reasonable request from the Superintendent at no additional cost to the contract.

Delay
The Contractor shall be solely responsible for the consequences of delay resulting from failure to allow adequate time for the assessment and approval of samples, or from the rejection of samples which do not comply with the Specification.

3.8 WARRANTIES

Name the Principal
Warranties or guarantees specified shall name the Principal as warrantee.

Written warranties are required:

- Where called for by the Contract Documents;
- On all Appliances and Equipment; and
- Where offered by the manufacturers.

All warranty periods shall commence from the Date of Practical Completion and remain in force for the periods specified or if not specified, for a period of twelve (12) months.

3.9 ALTERNATIVE MATERIALS OR WORK

The Contractor shall be deemed to have allowed for the materials and methods of work described in the Contract whether they are proprietary items or otherwise.

Where materials specified are not available or the method of work specified is not possible or for any other reason, the Contractor wishes to substitute an alternative material or method of work, then in each instance:

- The Contractor shall request the substitution, from the Superintendent, in writing in time to allow a response to be given within 10 days of receipt of the notice so as not to cause delay to the progress of the Works;
- The Superintendent may allow the substitution at no additional cost to the Principal or the Superintendent may issue a Variation to effect a reduction or increase in the value of the Works; and
- The Contractor shall be responsible for the suitability and performance and the fitness for purpose of the substituted material/item or method of work. The Contractor is required to supply a sample of the proposed item, and evidence that the performance is equal to or greater than that specified.

Refer to this section Clause 3.5 - Materials and Work for compliance and conformance when materials substitution is requested/required.

Claims
The Contractor shall not be entitled to compensation for any rejection of a submitted alternative, nor, unless otherwise agreed, shall adoption of an alternative be ground for any claim for additional cost damages or extension of time.

3.10 CONTRACTOR'S QUALITY ASSURANCE

No requirement
A certified quality assurance system is not a requirement of this Contract.

Hold and witness points
The Principal has no obligation in respect of hold and witness points other than those specified or required to ensure Building Act compliance.

Compliance audits
Compliance audits of the Contractor's project-wide quality system may be carried out even where the Contractor's quality system provides for regular corporate auditing by an independent assessing

organization accredited by Joint Accreditation System of Australia and New Zealand (JAS-ANZ) for the purposes of certification.

Retention of records
Retain quality records for at least 7 years from the date of the final certificate.

3.11 PROTECTION OF THE ENVIRONMENT

Statutory responsibilities
Carry out all work under the Contract and protect the site in compliance with provisions of the Environmental Protection Act 1994, Environmental Protection Policies, associated statutory legislation and this specification – refer to the *Environmental management* worksection for detailed compliance requirements.

Audits
The Superintendent may undertake auditing of the Contractor's environmental management of work under the Contract at any time to ensure compliance with statutory requirements and this specification.

Environmental harm or breaches
During the course of work under the Contract, take responsibility for any incidents or non-compliances which could constitute an environmental harm or breach under the Environmental Protection Act, including acting immediately to contain or prevent environmental harm and/or public risk from such incidents. Notify the Superintendent immediately such circumstances arise and register the incident with the Department of Environment and Heritage Protection (DEHP) where required under the Act.

Restoration costs or time
If the Superintendent determines that the Contractor by act or omission has contributed to or caused the incident or non-compliance, the Contractor must bear responsibility for the full costs and time of attending to the incident.

Sewage overflow incidents
Should sewage surcharges / discharges occur across the site or across adjacent public land for any reason, advise the Superintendent immediately and take the following remedial measures:

- ensure personal protective equipment (PPE) is worn during containment and remediation work;
- contain the spill, particularly from entering stormwater drains or natural watercourses, and barricade the affected area with temporary fencing (star pickets and barricade mesh as minimum) to prevent public access;
- clean up the site where possible, including applying lime to small affected areas to reduce risk to the public from pathogens;
- notify the relevant Utility Service Provider and any affected land owners.

These actions are to ensure the safety of the public and to protect the environment, and are mandated regardless of ownership of the infrastructure. To be effective, containment and remediation work must be undertaken immediately an overflow is detected and, in the absence of a timely response from the Contractor, may be performed by agents of the Principal at the Contractor’s cost.

3.12 MOVEMENT CONTROL IN FIRE ANT / ELECTRIC ANT INFESTED AREAS

Statutory responsibilities
Biosecurity regulations apply to performance of work within, or operation from, fire ant and electric ant movement control areas. If the site has been identified as within a gazetted movement control area, make allowance for foreseeable time and cost effects on the construction program when fulfilling Contract requirements to:

- Comply with the Plant Protection Regulation 1990 as amended, any relevant quarantine notice issued under the Plant Protection Act, and the requirements of Biosecurity Queensland (within the Department of Agriculture, Fisheries and Forestry or DAFF) and this specification.
- When required by Biosecurity Queensland, obtain site inspections and appropriate approvals, and implement all required risk management procedures for the duration of the Works, including during defects liability and planting establishment periods. Risk management procedures may include but are not limited to:
  - Training of site supervisors and construction staff in issues related to awareness, detection, reporting and management of fire ant / electric ant infestation.

. Inspecting and adequately cleaning items placed in contact with the ground, including vehicles, machinery, equipment and apparatus of any kind, prior to bringing to and leaving the site.

. Transporting, storing and handling materials to be incorporated into the Works, including waste materials, by methods that minimize the risk of fire ant / electric ant infestation.

- Immediately report any infestation of fire ants / electric ants found on the site to Biosecurity Queensland and the Superintendent.
- Movement control restrictions: Obtain 'high-risk materials' to be incorporated into the Works from suppliers with an appropriate quality assurance system which provides effective controls against possible fire ant / electric ant infestation. 'High-risk materials' include sands, gravels, aggregates, soils, imported fill, soil mixes, mulches, plants, hay, straw, grass, seeds, turf, logs, sleepers, pavers, and other materials capable of harbouring fire ants / electric ants.
- Before placing, provide the Superintendent with written certification that imported 'high-risk materials' comply with movement control restrictions.
- Incorporate warranties received from suppliers of 'high-risk materials' into the manuals specified in the clause **Operation And Maintenance Manuals** in *General requirements* worksection.

4 PROGRESS AND PROGRAMMING OF THE WORKS

4.1 ORDER OF WORK

4.2 CONSTRUCTION PROGRAM

Linked bar chart

Within 14 calendar days of notification of acceptance of the tender, provide the Superintendent with an electronic (PDF) copy of a detailed linked bar chart showing intended progress and the relationship of each activity upon each subsequent activity set against a suitable time scale. Link the beginning and end of each activity with a dependency line, identify the critical path, and make provision for entering actual progress. If the Superintendent considers the initial construction program as submitted is insufficient or otherwise unsatisfactory for the purpose, resubmit an amended linked bar chart within 7 days of being requested to do so by the Superintendent.

Revisions: If, at any time during performance of the Works, the progress for any item of work shown on the linked bar chart is less than that forecast, or the Superintendent considers that the linked bar chart does not show a satisfactory program of work, resubmit an amended program within the period required by the Superintendent to show a revised work plan.

The Principal may refuse payment upon any certificate until such linked bar chart is provided.

Within one month of notification of acceptance of the tender, provide the Superintendent with an electronic (PDF) copy of a construction program in the form of a critical path network diagram and analysis, all to a standard of presentation acceptable to the Superintendent.

- Once submitted, the details of the construction program shall not be changed without the prior permission of the Superintendent.
- Unless otherwise approved by the Superintendent, the network shall define the methods, sequences of work, and activity durations proposed by the Contractor.

Network diagram: The critical path network shall meet the following requirements:

- The program shall be time scaled with months, weeks and days clearly indicated.
- All construction programs shall be based on a normal five day working week (i.e. Monday to Friday) unless prior approval is otherwise granted by the Superintendent.
- The program shall accurately represent the Contractor's program for carrying out the work.
- The duration of each activity shall have one time estimate expressed in working days.
- In preparing the network, ensure that the total resources required for execution of work according to the program are at all times within the resources able to be provided. A schedule allocating these planned resources shall be provided against the program timescale e.g. proposed number of men per week per trade.
- Ensure that the requirements (regarding time estimates for operation) of all other parties associated with execution of the work are fully taken into account.

- As a general rule, the duration of any activity should not exceed 15 working days. Where the duration of an activity necessarily extends beyond 15 working days (e.g. procurement of materials, plant and equipment), break down such activities into sub-activities where practicable.
- Represent each activity by a description which refers to a specific portion of the Works to permit easy identification (Element, Location, Equipment, Schedule, Item, etc).
- Identify each activity node by a unique number and/or numbers.
- Draw separate activities for the work carried out by each trade in each area.
- Represent lead times for supply of information and approvals by the Principal or the Principal's agents, and persons not under the Contractor's control, separately from the site activity for the items in question. These lead times shall comply with any relevant provisions of the Contract and shall be subject to negotiation by the Superintendent at the time of submission.
- Express significant off-site activities (such as prefabrication carried out by the Contractor or Subcontractors) as separate network activities and show all associated lead times.
- Plan activities to be performed by Nominated Subcontractors into the original network on the basis of an estimation of duration and inter-relationship to other activities. Within one month of acceptance of tenders for Nominated Subcontract work, incorporate the detailed activities of the Nominated Subcontract work into the construction program.
- Notify Nominated Subcontractors of their scheduled dates for performing work as determined by the project construction program.

Time Analysis: With all critical path network analysis program submissions, produce a time analysis incorporated within the framework of the program or alternately an electronic copy of a computer-based analysis containing the following information with respect to all activities:

- Description;
- Duration;
- Early Start (E.S.);
- Early Finish (E.F.);
- Late Start (L.S.);
- Late Finish (L.F.);
- Float.

Unless shown on the program, provide a project day calendar relating dates to project working days.

Asbestos removal

Where applicable, indicate on the construction program the day on which the coordination meeting prior to starting asbestos removal will occur, and the day on which asbestos removal work will be completed and ready for issuing of a clearance certificate.

Updating

Allow the provisional number of updates of the construction program as shown in the *Preliminaries Schedules* and at the rate per update as evidenced by the tender or as otherwise agreed.

Updating of the construction program shall meet the following requirements:

- All copies of the construction program and time analysis shall be updated as requested in writing by the Superintendent. Forward updates to the Superintendent within 7 working days of the request. Adjust the number and cost of updates actually provided against the provisional items above.
- For the purpose of this Contract:
  . "STATUS" is defined as: "accurately recording the status of the work based on the percentage of activities complete on the applicable program".
  . "UPDATING" is defined as: "correcting activity sequences and adding or deleting activities, where necessary, to produce a network and analysis clearly indicative of the current job status and the intended progress".
- Review the status of the Works at 1 monthly intervals in conjunction with nominated Superintendent's representatives.
- Notwithstanding such reviews, prepare a monthly status report for submission and review by the Superintendent at the project team meeting. The status report shall contain descriptions of critical activities, current status, non-critical activities which durations have varied, Contract completion

date, program completion date, report on milestones to be achieved over the ensuing month, and items critical to maintaining the program's original status.

- Make no changes of activity duration during the course of the Works without the Superintendent's agreement.
- Outstanding claims for extension of time shall not negate the Contractor's obligation to provide an updated program.
- In the event that the Contractor does not comply with the provisions relating to updating, the Principal may arrange to have the default rectified by other persons at the Contractor's expense.

Extensions of time

Incorporate in the construction program extensions of time granted to the Contractor by adjusting the program relative to current job situation at the update immediately following granting of the extension.

Support applications for extensions of time under clause 35 of the General Conditions of Contract by data based on the updated construction program together with time analysis indicating how critical activities were or will be affected and the effect on the project completion date.

Extensions of time will be assessed on a normal 5 day working week (i.e. Monday to Friday).

The format for submission of claims for extension of time for Principal-caused delays is as follows:

STATEMENT OF FACTS AND SUPPORTING DATA REQUIRED FOR SUBMISSION OF CLAIMS FOR EXTENSIONS OF TIME FOR PRINCIPAL CAUSED DELAYS

Item		Description
A.	Claim	Identification of the Claim: description
B.	Costs	Cost of Claim: 1. Whether costs are to be claimed. 2. Amount of costs claimed.
C.	Contractual Basis for Claim	The contractual reason on which the claim is based (with references).
D.	Cause	Cause of Claim: i.e. late supply of information; variation; etc.
E.	Duration	1. Time claimed. 2. Identification of time on the program calendar.
F.	Program Effects	Effects on: 1. Critical activities. 2. The critical path. 3. Non-critical items of work. 4. Other.
G.	Graphic Presentation (to demonstrate the difference between the planned work and the actual work).	Network Diagrams detailing: 1. The original programmed activities with allowances for approved extensions of time. 2. The as-constructed details which will support the claim.
H.	Documentation	Copies of all information relating to the claim, e.g. 1. Correspondence 2. Variations 3. Site Instructions 4. Requests for Information 5. Transmittals 6. Drawings (where possible)

Item		Description
		7. Any other information i.e. background information that is relevant to the claim (e.g. relevant minutes from site meetings, etc)
I.	Mitigation	Identify what action has been taken, or is possible, to mitigate the delay, or costs of the delay.

In the absence of an agreed planning program the Superintendent is not bound to base decisions on the Contractor's program and will make decisions in a reasonable manner based on information available at the time.

4.3 COMMENCEMENT OF SITE WORK

Requirement
Verify all details, including but not limited to site boundaries, site setbacks, and Local Authority requirements, prior to commencement of the Works.

4.4 PROGRAM CHART

Requirement
Mount and display in the Site Foreman's office the bar chart or network diagram based on the construction program and keep up to date.

4.5 HANDOVER REQUIREMENTS

General
On completion, the following steps shall be finalised to the Superintendent’s satisfaction before offering the Works as practically complete:

- All required Building Act ‘evidence of suitability’ certificates* have been obtained, collated, forwarded to, and accepted by the Building Certifier and the Superintendent has received the Building Certifier’s completed code assessment summary for the Works.
- Submissions to the Building Certifier and the Superintendent have included written approvals from supply authorities responsible for testing of services installations and copies of applications for termination of temporary services supply (water / electricity / telephone / NBN / gas) when terminated.
- Information required by the Principal to allow safe and secure occupation and use of the Works has been supplied and accepted.
- Commissioning inspections and tests of installed building services and equipment systems have been satisfactorily completed and passed and the Superintendent has been provided with copies of the inspection and test results verifying that these systems are working within optimum design parameters (refer also to the *General requirements* worksection).
- Persons nominated by the Principal have satisfactorily completed training in use of the building services and equipment systems.

* Revised ‘evidence of suitability’ certificates: Events during construction may require reissuing of Form 15 / Form 16 certificates for structural, mechanical, hydraulic, emergency lighting, fire and other services systems. Other ‘evidence of suitability’ certificates are required for compliant building elements, components, finishes, equipment and services systems actually forming part of the Works. Coordinate reissuing of any revised ‘evidence of suitability’ certificates in sufficient time to prevent possible delay in issuing of the Building Certifier’s completed code assessment summary.

On completion, check and adjust all elements of the Works to the Superintendent’s satisfaction, including but not limited to:

- easing and adjusting doors, windows, hatches, locks, hardware and other moving components;
- examining and clearing drains and gutters of any debris;
- ensuring that bolts and screws are tight;
- relamping luminaires and renewing similar replaceable services components used during construction, and testing that all services are working as required.

Rectification of omissions and defects before practical completion

Further to General and Special Conditions of Contract clauses 30.1, 30.3, 30.4, 30.5, 30.6 and 42.5 and other requirements of the Contract, and before offering the Works as practically complete, the Contractor shall have:

- thoroughly inspected the Works for omissions and defects; and
- made good any omissions and defects so identified.

Assist the Superintendent and representatives of the Principal in separate and timely inspections for omissions and defects. Omissions and defects identified by the Superintendent shall be included in the list of items to be rectified before offering the Works as practically complete.

Keep detailed records of all inspections for omissions and defects in the Works, including listing when each item is identified, rectified, reinspected, and confirmed as satisfactory. Provide the Superintendent with an electronic (PDF) copy of the compiled records of all completed omissions and defects before offering the Works as practically complete.

Final cleaning

On completion, thoroughly clean all elements of the Works to the satisfaction of the Superintendent, using labour skilled in the particular cleaning operations, including but not limited to:

- cleaning windows, both inside and out on all faces;
- removing paint spots from floors, walls, windows, and other visible surfaces;
- removing render and other spots on metal sashes, box sections and other surfaces;
- dusting walls, ledges, projections, and dust-collecting surfaces of any kind;
- washing down and cleaning of walls, fixtures, fittings, and internal equipment of all kinds;
- cleaning and polishing chrome, mirrors, hardware and like fittings;
- cleaning floors, including vacuuming carpets, polishing seamless finishes, and washing concrete slab surfaces;
- cleaning ducts, cupboards, and like accessible compartments;
- cleaning the insides of switchgear and control gear assemblies;
- cleaning and necessary adjusting of switchgear, contactors and other electrical contacts.

Clean each building (or floor of each building) in sequence and lock off once cleaning is completed. If any further work is required in a cleaned area, thoroughly clean the building (or floor of the building) again. On completion of cleaning operations, check the master keying system and hand to the Superintendent a full set of keys for all locks, complete with properly-engraved individual plastic labels.

Rectification of omissions and defects after practical completion

Further to General and Special Conditions of Contract clause 37, rectify any omissions and defects remaining at the date of practical completion and/or identified during the defects liability period within:

- the timeframes directed by the Superintendent relative to risk or inconvenience to the Principal; or
- 30 days from the date of notification in all other instances.

Defects inspection and review meetings: Allow to meet with the Superintendent and representatives of the Principal at monthly intervals throughout the defects liability period for the purposes of:

- monitoring the status of omissions and defects in the Works; and
- ensuring these omissions and defects are properly rectified within the required timeframes.

Requirements at expiration of the defects liability period

Complete omissions and defects outstanding at practical completion and/or subsequently identified before expiration of the defects liability period. Additional requirements prior to issuing of a final certificate include but are not limited to:

- Submission to the Superintendent of electronic (PDF) copies of compiled records of completed omissions and defects up to and including the end of the defects liability period.
- Completion of scheduled maintenance of building components, services and equipment systems to accord with respective manufacturers' warranty or maintenance agreement conditions and which the Contract identifies as the responsibility of the Contractor.

4.6 AS-BUILT DRAWINGS

Submit as-built drawings at practical completion of size and quality standard commensurate with the contract drawings. Record accurately to scale, and on the same drawing, the sewerage, drainage, water supply, electrical, telephone and NBN services, showing:

- Depth of services, and
- Dimensions from boundaries, buildings and other obstructions.

Include on the drawings:

- A sufficient legend;
- Project no / job no;
- Real property description; and
- Address of the Works.

5 DESIGN CRITERIA

5.1 ACCEPTANCE OF DESIGN AND CONSTRUCTION

General

Design buildings and associated structures to sustain the most adverse combination of loads to which they will be subjected. Designs should also reasonably provide for the legislated objectives of:

- safety of persons to be accommodated in each building or structure in case of fire (e.g. by rapid means of egress);
- prevention and suppression of fire;
- prevention of the spread of fire;
- energy efficiency in operation;
- protection of the health and amenity of all persons to be accommodated therein.

Acceptance of design and construction must accord with the National Construction Code (NCC) Vol. 1, clause A2.2 Evidence of Suitability, except in instances where:

- Determination of the strength of sandwich panel wall and roof systems is made with reference to prototype testing as defined in AS 4100 Section 17.
- Structural components are used which are not covered by Australian Standards.

Specific evidence of suitability requirement

In the instances referenced above, provide evidence of suitability of the complete building system in one of these forms only:

- A technical assessment of fitness for purpose over the design life of the building by a Registered Testing Authority e.g. BRANZ Appraisals or approved equivalent testing assessment body.
- A current Certificate of Conformity or a current Certificate of Accreditation issued under Codemark, WaterMark, or other ABCB accepted building product certification scheme.

5.2 STRUCTURAL LOADS

Requirement

Dead and live loads: To AS/NZS 1170.

Wind loads:

- Ultimate limit state design wind speed must be shown on the drawings.
- Serviceability limit state design wind speed must be shown on the drawings.
- Internal pressure coefficients used must be those which result in the most adverse loading conditions that the building is designed to undergo on site.

Design internal walls, partitions, fixings and supports to resist a minimum lateral load of 0.5kPA from differential internal pressure. Internal partitions must not deflect more than height / 300 (i.e. Height mm/300mm = max deflection) under this pressure.

Ceiling diaphragms spanning in excess of 9 metres shall incorporate specific structural detailing.

Deflections:

- Comply with suggested serviceability limit state criteria in AS/NZS 1170.

- Where absolute values are also given, adopt the smaller. Instantaneous deflection of a floor member must not exceed 2mm when subjected to a point load of 1kN.
- Notwithstanding the above, limit deflections and foundation movement so as not to adversely affect serviceability of buildings and associated structures.

Soil Criteria: Design buildings and associated structures to remain serviceable while accommodating expected surface movements.

5.3 DURABILITY

General

Design and document the Works to remain durable and fit-for-purpose for a minimum building life expectancy of 30 years. In all instances, base design for durability on the appropriate regional atmospheric corrosivity category determined in accordance with AS/NZS 2312.

Elements located in inaccessible locations shall be durable without maintenance for the expected building life. Unless otherwise included in *General requirements* worksection or shown on the drawingsspecified or directed, structural elements located in accessible locations may be protected by systems that have a minimum life to first maintenance of greater than 15 years provided such systems can be maintained.

5.4 WORK CERTIFIED BY CONTRACTOR'S CONSULTANTS

Requirement

Arrange and pay costs for independent inspection and certification of building components, systems and equipment where required to satisfy:

- compliance assessment under the Building Act 1975 / Building Regulation 2006 and Plumbing and Drainage Act 2002 / Standard Plumbing and Drainage Regulation 2003; and
- issuing of a corresponding code assessment summary once the work is satisfactorily completed.

Insurances

Independent RPEQ engineers and other suitably qualified consultants engaged by the Contractor (Contractor's certifying consultants) shall maintain and keep maintained the following insurances:

- public liability insurance in the amount shown in the Annexure to the Special Conditions of Contract; and
- professional indemnity insurance in the amount required by the Principal relative to project cost and service required for the Works, as tabled:

Professional indemnity insurance ($M) relative to project cost and service requirement

Project value	PQC1	PQC2	PQC3	PQC4
< $2M	$1M	$1M	$1M	$2M
$2M to < $5M	$1M	$1M	$2M	$2M
$5M to < $20M	$2M	$2M	$5M	$5M
$20M to < $50M	-	$5M	$10M	$10M
$50M to < $100M	-	-	$10M	$10M
> $100M	Project specific determination applies			

Inspections

No requirement for building components, services and equipment systems to be independently inspected and certified by Contractor's certifying consultants shall prejudice, remove or extinguish the rights of the Principal, Superintendent or any Superintendent's Representative appointed by the Superintendent under the Contract to inspect, reject, certify and approve any element or part of the Works, including parts of the Works added to the Contract by instruction or by variation order.

6 PRELIMINARIES SCHEDULES

6.1 CASH FLOW FORECAST

Not Required.

6.2 SCHEDULE OF AGREED DAMAGES FOR DELAY

The following provisional items are deemed to be allowed for in the Contract sum for the purposes stated here or in the relevant sections of the specification. Rates / allowances not submitted at the time of tendering shall be calculated by reference to the formula given in the Schedule of Agreed Damages for Delay in the Tender Form.

Description of item	Provisional no. of days	Rate / day (exclusive of GST)	Provisional allowance (exclusive of GST)
Compensable delays over whole of Contract	10 working days	$……..	$…….

6.3 SCHEDULE OF PROVISIONAL QUANTITIES

NA

6.4 SCHEDULE OF PROVISIONAL SUMS

NA

6.5 SCHEDULE OF PROVISIONAL ITEMS

NA

6.6 WORK-NOT-INCLUDED SCHEDULE

Work to be undertaken on site by the Principal or the Principal's agents and not forming part of the Contract includes:

6.7 SCHEDULE OF SALVAGED ITEMS REQUIRED FOR RE-USE IN THE WORKS

NA

6.8 SCHEDULE OF SALVAGED ITEMS REQUIRED BY PRINCIPAL

NA

6.9 SCHEDULE OF ITEMS TO BE SUPPLIED BY PRINCIPAL

NA

6.10 SCHEDULE OF PRINCIPAL'S PROJECT REQUIREMENTS

The Principal's Project Requirements include but are not limited to the project specific brief, preliminary design drawings, returnable schedules, specifications, and other documents identified here or in the Annexure to the Special Conditions of Contract:

Document reference	Document title	Document location
Refer Design Brief and Guidelines and arch Docs.		

6.11 OCCUPIED PREMISES SCHEDULE

NA

6.12 SCHEDULE OF DRAWINGS

APPROVED SCHEMATIC DRAWINGS

6.13 AS BUILT DRAWINGS

Required

6.14 SITE OFFICE

Required

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1 DESCRIPTION OF THE WORKS

1.1 SCOPE

Nothing in this clause shall limit, modify or alter the extent or description of the Works as set out in detail elsewhere in the Contract documents. Subject to the foregoing, the Works generally comprise the design development, contract documentation and construction for the 16x1 and 4x1 Bed Apartments - in accordance with the Tender Documents including Principal's Project Requirements, design guideline documents, reports and reference material. Note that SD stage is completed and attached to progress to the next stage.

Appendices

List of documents included:

- Contour and Detail Survey;
- Amalgamated plan;
- Preliminary hydraulic & sewer assessment report;
- Geotechnical report;
- Town Planning summary;
- Approved Schematic Design;
- Social Housing Design Guideline 2021;
- Typical joinery Details;
- Social Housing design – technical summary 2022.
- CAD TORs

Sustainable Planning Act

The Principal will arrange for planning approval including notification to Local Government in accordance with the *Sustainable Planning Act 2009* (SPA) and provisions for "Public Housing" under Chapter 9 Part 5. The Contractor is responsible to liaise with Local Government as required during the design, documentation and construction of the Works.

Environmental requirements

The Contractor is to develop a Construction Environmental Management Plan incorporating a Soil Erosion & Sediment Control Plan, and Traffic Management Plan for submission to the Superintendent prior to commencement of works. Contractors shall also provide Waste Management and Recycling Plans for the construction phase of the project.

Best practice stormwater quality management and erosion and sediment controls are to be implemented during construction and operation to minimise potential impacts sensitive receptors.

Auditing of environmental management during the course of construction is required to ensure that the management plans are being implemented. The Contractor's internal monitoring / auditing program should be indicated in the Construction Environmental Management Plan.

The Contractor is to develop a Stormwater Management Plan and if applicable and required, an Acid Sulfate Soil Management Plan for submission to the Superintendent prior to commencement of works.

Designs should include water efficient fixtures in line with government policy. Ensure adequate provision is made in the design of the facilities for stormwater drainage, freeboard to building platforms and sanitary fixtures, and to ensure existing overland flow paths are not compromised.

If required, the Contractor is to have a Department of Agriculture, Fisheries and Forestry (DAFF) Approved Risk Management Plan for Fire Ants in place prior to commencement of the Site Works.

1.2 LOCATION

8 Miles & 1265 Riverway Drive, Kelso, Townsville, 4815

Real Property Description

Lot 1 & 3 RP727085 & RP727085

Local Government: Townsville City Council

State Government Electorate: Thuringowa

1.3 INTERPRETATIONS

Words and expressions

In accordance with QBuild 1.0 Preliminaries

Definitions and Abbreviations

In accordance with QBuild 1.0 Preliminaries.

1.4 PROJECT OBJECTIVES AND OUTCOMES

The State seeks to develop well-designed and located housing that represents value for money for the community. Projects should look "domestic" with design features and finishes avoiding any "institutional" appearance.

In principle, every dwelling should deliver a variety of qualities, including:

- Be comfortable, pleasant and safe to live in;
- Be designed to meet its residents' needs, both current and future
- Use its site well and not waste built space or land
- Look attractive, and fit into its neighbourhood
- Respect neighbours' privacy and amenity
- Overlook any adjacent street or parkland opposite to provide better "neighbourhood watch"
- Be well designed for the local climate and not rely substantially upon mechanical cooling or heating systems
- Respond sensitively and creatively to the characteristics of its site.

General Requirements

(a) Housing Standards: The project is to comply with the Housing Design Guidelines, which have been developed as a means of ensuring that new buildings meet the primary objectives of the client and that a uniform quality of accommodation is available to all public housing tenants. The Contractor and Consultants are to pay particular attention to provisions for space inclusions and maintenance.

(b) Permits and Regulations: A Town Planning permit from the Local Government is not required to be submitted by the Contractor for Department of Energy and Public Works developments.

However, the Contractor is to ensure that the scheme complies with the planning requirements of the relevant Local Government. The Department of Energy and Public Works will be responsible for submissions to local authorities to obtain Consideration–in-Principle for the project proposal. Prior to a formal submission by the Department of Energy and Public Works the Contractor shall submit to the Superintendent upon the Schematic Design Stage being deemed suitable the following: -

- Copy of the development/site plan that includes building setbacks (front, side and rear boundaries), car-parking and the location of buildings on adjoining properties;
- Copy of elevation plans (including overall streetscape elevations);
- floor plans for each unit;
- site area;
- calculation of site cover;
- calculation of gross floor area; and
- calculation of landscaping/recreation area for each unit.

(c) Fire Safety: Requirements for fire safety are to be in accordance with the Building Code of Australia (BCA), and the Contractor is to obtain written endorsement of the design from the Queensland Fire and Rescue Services (QFES) when applicable to the Building Design.

(d) Services: Provision of electricity, gas, sewerage and water is to comply with the particular Service Authority's requirements. The Contractor is to obtain legal point of connection/discharge for all services.

The Contractor shall refer to relevant site information provided in the Tender Documents, inspect the site to review existing conditions and determine points of connection for sewerage and stormwater drainage and water reticulation.

Consult with Statutory and other Authorities having jurisdiction over the project and incorporation of their requirements for all external infrastructure connection requirements. Within four (4) weeks of Letter of Acceptance the Contractor shall provide civil engineering design, documentation and seek operational works approval from local authority including application and submission for the proposed new sewer connection servicing this site,

The Contractor shall allow for all costs and approval fees for works necessary to carry out the above-mentioned approval. The approved design shall be the basis of negotiation of the grant for access and performing the works in the adjoining owner's property. The Contractor is responsible to obtain written endorsement of the adjoining owner's grant for access and performing the works. Contractor is to forward a copy of the adjoining owner's granted for access and performing the works to the Superintendent prior to construction start on site.

(e) Stormwater Connection and Control: Contractor is to refer to the Stormwater Management Plan including catchment plans and complete hydraulic calculations addressing any issues raised by the local authority including Healthy Water SPP with an electronic copy for submission to the Superintendent.

Should the Contractor change from this SWMP, then the Contractor is to obtain legal point of discharge and give particular and early attention to managing overland stormwater flow. Floor levels for individual units are to be set to eliminate the risk of stormwater entry. Site grading is to maintain site falls and avoid the creation of low points in longitudinal or cross-section.

The Contractor shall provide a drawing demonstrating the principles of the stormwater design at the Schematic Design Stage and Developed Design Stages. The stormwater plan will show all floor levels, the level and grade of all paths and paving, the fall of all ground surfaces and the intended route of overland flow clearly identifying any grates or sumps.

The Contractor shall provide the Superintendent with a Stormwater Management Plan by a RPEQ civil engineer prior to commencement of Works on site.

The Contractor is to allow for all costs associated with the provision of a Bio-Retention system if required for the storm water management and control for the site.

(a) Building over Sewer: The Contractor is responsible for obtaining Local Authority approvals, when applicable. The Contractor is to pay all cost associated with the application and approval of the design.

(b) Waste Collection: Adequate provision shall be made for storage and collection of refuse and recycling bins. The Local Government should be contacted during the building design stage to determine the necessary requirements, and their written endorsement must be obtained.

(c) Telecommunication services and future NBN shall be underground. The telecommunication network carrier shall provide one single entry point to the site for telephone cables. The Contractor shall contact the telecommunications network and NBN carrier to ascertain the requirements for reticulation including provision of cable and conduit and wiring as may be required. The Contractor is to sign up to any Optus/ Telstra mainstream plan that comes with a modem/ router, tests the connection to ensure it works, then leave the modem/ router left behind for the incoming tenants to use.

(d) The Contractor shall contact the appropriate Electricity Distributor to ascertain special requirements for electrical installations and notify the Superintendant of the proposal for the supply to the development. All electrical requirements are to be included in the tender documentation.

The Contractor is to liaise with appropriate Electricity Distributor for provision of supply to site and allow for all of the costs associated with this service (including construction cost). This work shall be carried out under the contract by direct arrangement between the Contractor and Electricity Distributor.

Permanent electricity supply may not be immediately available to the land. If a temporary supply is required for building construction, the Contractor shall allow for the arrangement and payment of all costs.

(e) Site Survey: The Consultant is responsible for identifying that the physical features shown on the site survey still exist and are located in the same positions as documented, this includes the likes of sewer manholes etc.

(f) The Superintendent will issue to the Contractor unit allocation numbers and Department Reference numbers at construction documentation stage. This table is to be suitably located on the Site Plan.

(g) All documentation prepared by the engineering services shall be reviewed and signed by Registered Professional Engineer (RPEQ) along with his registration number.

Specific Requirements: refer SD documents provided.

(a) Dwelling Unit Design: The Contractor is to provide floor plans based on and designed in strict accordance with the Design Principles for Social Housing. All interior space provisions and all exterior space provisions shall be in accordance with the above referenced design documents.

Note: the site development plan included as a reference document is for information only and the contractor may use this or part of this as a design solution at their own risk.

(b) Vehicular Access and Carparking: Carparking shall be in accordance with the Design Principals for Social Housing.

(c) Image: The dwelling and residential environment should evoke an image that is complimentary to the surrounding neighbourhood.

(d) Individuality: As far as possible, the dwellings should be individualised in regard to street numbers and letterboxes so as to be autonomous units.

(e) Recreational Space: The space around the dwelling shall be suitable for the peaceful enjoyment of its occupants, taking into account the need for privacy and security, and the active and passive recreational requirements of both children and adults.

(f) Facilities for people with disability: The Contractor shall ensure that people with disabilities are given full opportunity for access to all ground floor buildings.

The Contractor is to report on any areas of the building, which are not readily accessible to people with disabilities, giving reasons why such access is not available or required.

(g) Landscape Design: Practical landscape design should be used to minimise visual and noise intrusions and also provide protection from climatic extremes. Consideration should be given to the planting of suitably located and appropriate trees and shrubs to enhance the residential environment. However, care must be taken to ensure adequate visual surveillance of private enclosed space by occupants.

Specific requirements for its various dwelling types and the design and documentation should be consistent with Department of Housing Design Standard for Dwellings Social Housing.

(h) Security: Security planning principles should be attended to at the planning stage by incorporating in the design, an integrated set of security measures appropriate to the dwelling and its locality.

The level of risk to the dwelling and tenant security depends on several aspects:

- The dwelling - its design, materials used and consequent susceptibility to forced entry and risks of break-in.
- The immediate environment - e.g. balconies, fences, trellises, which may provide a potential means of access/camouflage to intruders.
- The orientation of the dwelling - particularly the layout of its private open spaces and outdoor lighting.

(i) Wayfinding: Adequate signage is to be provided on the site for clear directions to units for visitors. Suitable locations are to be discussed with the Superintendent.

1.5 PROJECT STAGES

The scope of the Works by the Contractor includes and is not limited to Construction Documentation, contract documentation, coordination, construction and rectification of defects for the total Works including internal planning of buildings, site planning, services, driveways/car parks and external works for the following stages:

Schematic Design (SD) – Provided in the tender documents

- Developed site and layout sketches
- Developed/dimensioned site and layout plans
- Detailed site and layout floor plans, elevations, sections, street elevations and 3D drawings.
- Developed drawings for services layout and connections by engineering disciplines
- Colour Boards.
- NatHERS NABERS Construction Documentation assessment and report demonstrating energy rating in accordance with Building Code of Australia and applicable codes and regulations

Construction Documentation (CD) - developed from Schematic Design Drawings

- Appointment, briefing, instructing and co ordination of all consultant and sub consultant disciplines including Building Certifier
- Preparation and submission of documents necessary for statutory approvals

- Preparation of documents for construction in accordance with Principal's Project Requirements and applicable codes and regulations including Building Act Compliance
- Obtain all approvals including statutory, supply authority (water, electricity, gas, telecommunications), operational works approvals and where necessary adjoining owner approvals prior to construction commencing on site
- NatHERS NABERS Construction Documentation assessment and report demonstrating energy rating in accordance with Building Code of Australia and applicable codes and regulations
- Submit to the Superintendent various management plans necessary for the execution of the Works including but not limited to; Stormwater Management Plan, Traffic Management Plan, Acid Sulfate Soil Management Plan (if applicable), Environmental Management Plan (Construction), Erosion and Sediment Control Plan, Waste Management Plan and other plans referred in the Environment Checklist and Project Environmental Management Plan included in the Principal's Project Requirements
- Submit Construction Documentation to the Superintendent including and not limited to; Building Act Compliance Assessment Review and Stamped Plans and Specifications, QFES Compliance approval documents, Local Authority Plumbing and Drainage approvals, operational works approvals and stamped plans and Form 15's and 16's.

Construction (CN)

- Construction of the Works in accordance with Construction Documentation endorsed as suitable by the Superintendent and in accordance with the General and Special Conditions of Contract
- Appointment and coordination the work of all consultants and sub consultants during construction including Building Certifier
- Obtain all approvals for all aspects as necessary during construction
- Implement various management plans necessary for the execution of the Works including but not limited to; Stormwater Management Plan, Traffic Management Plan, Acid Sulfate Soil Management Plan (if applicable) Environmental Management Plan (Construction), Erosion and Sediment Control Plan, Waste Management Plan and other plans referred in the Environment Checklist and Project Environmental Management Plan as included in the Principal's Project Requirements
- Submit to the Superintendent all Certification and Warranties in accordance with Principal's Project Requirements
- Provide information and records required by the Contractor appointed Building certifier to comply with requirements of the Building Code of Australia including Form 16's and relevant applicable codes and regulations
- Provide information and records to the Superintendent as required by the General and Special Conditions of Contract.

Post Construction (PC)

- Appointment and coordination the work of all consultants and sub consultants during construction including Building Certifier
- Provide information and records to the Superintendent as required by the General and Special Conditions of Contract.

For this stage the Contractor is responsible for aspects associated with the Defects Liability Period in accordance with the General and Special Conditions of Contract.

1.6 PROGRAM

Schedule of critical dates and milestones applicable to the Works are:

Stage/Activity	Description	Milestone
End of Schematic and Design Development	(DD) including design development 100% complete for issue to the Superintendent	1 Week from date of Letter of Acceptance Allow 2 weeks for review and feedback from the Superintendant within this 4 week period
Construction Documentation	(CD) 60% complete for issue to the Superintendent	8 Weeks from date of Letter of Acceptance
End of Construction Documentation	(CD) 100% complete for issue to the Superintendent	9 Weeks from date of Letter of Acceptance

Completion of the SPA process	SPA approval received Building Act compliance and hydraulic approval received	10 weeks from date of Letter of Acceptance Possession of site given to the Contractor 1 week after the Contractor has forwarded to the Superintendent evidence that hydraulic and Building Act approval have been obtained under BA 1975.
End of Construction	(CN) 100% complete Practical Completion	66 Weeks from date of Letter of Acceptance
Final Certificate	(PC) Post construction, Final Certificate, defects liability period 100% complete	52 Weeks from date of Practical Completion

2 STATUTORY REQUIREMENTS

2.1 PRIOR APPLICATIONS

The Principal shall notify the Local Government in accordance with the provisions of the *Sustainable Planning Act 2009* that apply to Public Housing.

The Principal has undertaken to notify the Building and Construction Industry (Portable Long Service Leave) Authority ("QLeave") of the building and construction work described in the Contract documents, and to pay all fees required under the provisions of the Building and Construction Industry (Portable Long Service Leave) Act.

2.2 NOTICES TO BE GIVEN AND FEES TO BE PAID

Give notice to authorities and pay fees in respect of all other statutory requirements e.g. for Local Authority on-site drainage inspections and comply with all relevant statutory requirements in accordance with the Contract conditions. Take responsibility as the Principal Contractor under the Work Health and Safety Act.

2.3 BUILDING ACT COMPLIANCE DOCUMENTS

In addition to requirements of the General Conditions of Contract, the Contractor shall submit the "Applicant's Copy" set of Building Act compliance assessment documents to the Superintendent for the Principal's records. Keep one set of BCA compliance assessment documents on site as required by the Building Act 1975.

Comply with and complete the detailed requirements of the Building Act 1975 compliance assessment documents as a condition precedent to certification of Practical Completion of the Works.

Authorities

Authorities' approvals: Submit to The Superintendent documents showing approval by the authorities whose requirements apply to the work.

Correspondence: Submit copies of correspondence and notes of meetings with authorities whose requirements apply to the work.

2.4 QUEENSLAND FIRE AND RESCUE SERVICE APPROVAL (WHERE REQUIRED)

The Contractor is responsible for submissions to Queensland Fire and Rescue Service (QFES) as required for Building Act Compliance Certification. The Contractor shall provide the requisite documentation to QFES and shall pay the QFES fees for this submission.

2.5 BUILDING INSPECTIONS

Inspections are required in accordance with the requirements of Part 6 of the Building Regulation 2006. These inspections shall be conducted the Building Certifier engaged by the Contractor. It will be the Contractor's responsibility to liaise with the Building Certifier in regard to all relevant matters, including:

- the type and nature of inspections required,
- the staging and timing of such inspections, and
- notification periods required prior to required inspections.

2.6 CERIFICATE OF CLASSIFICATION AT SUBSTANTIAL COMPLETION

The Contractor shall perform its work and make the necessary submissions to ensure that the Building Certifier can issue a Code Assessment Summary prior to Practical Completion. As outlined in detail in the Contract Finalisation Schedule, the necessary submissions include but are not limited to:

- Certificate of Classification
- 3 copies of "as constructed" drawings showing the location of any "Fire Safety Installations". Fire safety installations are defined in Schedule 2 of the Building Act and typically comprise one or a combination of fire extinguishers, smoke detectors, alarms and fire collars at penetrations.
- One copy of drainage clearance certificate as issued by the Local Authority.

- Design and inspection certificates for any elements that have been designed and inspected by a Registered Professional Engineers Queensland (RPEQ) or other registered professionals employed by the Contractor.
- Certificates from appropriately licensed installers to satisfy requirements of the relevant licensing authority.
- Certificates and similar evidentiary documents provided by materials suppliers to satisfy requirements of the Code Assessment process.

2.7 PLUMBING AND DRAINAGE APPROVAL

The Contractor shall submit to the relevant local government for Plumbing and Drainage Act 2002 assessment and approval. Provide approval to the Superintendent prior to the commencement of construction. The Contractor shall pay the plumbing and drainage approval fees and the Local Authority inspection fees.

2.8 PAYMENT OF FEES

Allow for payment of all fees including but not limited to; Building Certifier's fees, QFES fees, plumbing and drainage fees, Local Authority assessment and inspection, services connection fees and all operational and design fees.

3 DOCUMENTS

3.1 CONTRACT DOCUMENTS

Interpretation

The Contract documents comprise documents described in the Conditions of Tender, and include:

- Australian Standard General Conditions of Contract AS 4300 - 1995,
- Special Conditions of Contract including completed Annexure Part A, as issued by the Department of Energy and Public Works,
- E Conditions of Tender
- Special Conditions of Contract
- The documents comprising the Tender Documents that includes Principal's Project Requirements and reference Documents,
- the accepted Tender Form and accompanying information,
- any other drawings or documents issued in accordance with the Contract during the course of the Contract.

3.2 CONTRACTOR'S DOCUMENTS

Time

Where the Contract requires the Contractor to supply documents such as contract documentation, shop drawings, technical schedules, or other written information, supply them in sufficient time for examination, and revision if necessary, to occur before they are required for use.

3.3 WORK-AS-EXECUTED DRAWINGS

Requirement

Where work-as-executed drawings are called for in the Contract, prepare drawings showing the "as installed" locations of building elements, plant, equipment and the like. Show co-ordinate dimensions where applicable. Where operation and maintenance manuals are called for in the Contract, include in each manual a copy of each work as executed drawing. Unless otherwise specified, submit two copies of each drawing.

Format

Where appropriate use the same sheet size and format as the Contract Drawings. On request the Principal will supply electronic copies of the Contract Drawings as the basis for work-as-executed drawings. Electronic copies will generally be supplied as Portable Document Format (PDF) files, although other file formats may be issued upon request and at the Superintendent's sole discretion.

Drawings in manuals

Where operation and maintenance manuals are called for in the Contract, include in each manual a copy of each work as executed drawing relevant to that portion of the Works, revised to show any changes found necessary for the satisfactory operation and maintenance of plant and equipment.

3.4 DISCLAIMER ON SUPPLY OF ELECTRONIC DOCUMENTATION

Ownership of electronic information

Where provided, electronic drawing and other electronic document files have been compiled on behalf of the State of Queensland by QBuild, a commercialised business unit of the Department of Energy and Public Works, or other firm(s) engaged by QBuild for this purpose.

Copyright

Copyright in electronic drawing and other electronic document files remains with the State of Queensland.

4 DESIGN AND CONSTRUCTION DOCUMENTS

4.1 DESIGN TO SATISFY PRINCIPAL

General

Design by Contractor: If the Contractor provides design, use only appropriately qualified persons and comply with all statutory requirements.

Conflict with the documents: If it is believed that a conflict exists between statutory requirements and the documents notify the Superintendent immediately and provide a recommendation to resolve the conflict.

Requirement

While the Contractor is responsible for designing and documenting the work of all consultant disciplines required by the Contract as fit for purpose, the Contractor is to consult with the Superintendent and Superintendent's Representatives to ensure that the Design and Construction Documents reflect the Principal's Project Requirements. If required by the Conditions of Contract, variations may be approved.

4.2 DESIGN MEETINGS

Requirement

The Contractor is to organise at least two design review meetings where required, one at a stage when 60% of the Design and Construction Documents (CD) are completed and another when 100% of the Construction Documents (CD) are completed. Provide the documents specified in the Clause 4.10 "Schedule of Contractor's Documentation Issues"

The Superintendent and Superintendent's Representatives shall attend design review meetings where required with the purpose of reviewing and endorse as suitable a final set of construction documents. This may involve the Contractor's consultants having to revise documents or undertake additional documentation. The Contractor shall incorporate all comments which may arise from the design review meetings prior to re-submission to the Superintendant for his determination as to whether the submitted documents are deemed suitable. The Contractor is also required to construct the project in accordance with the Construction Documents that the Superintendent has deemed suitable.

The Contractor shall:

- Ensure its relevant design and documentation consultants attend meetings;
- Submit documentation submissions as nominated in Clause 4.10 "Schedule of Contractor's Documentation Issues" ;
- Any drawings or documents which were discussed at the previous design review meeting and that required amendment since the last meeting;
- Submit the same number of revised documents as nominated in the Clause 4.10 Schedule for that document submission;
- Submit a meeting agenda to the Superintendent at the same time that the documents are submitted for review.
- Prepare minutes for the design review meetings and circulate the minutes within 1 day following each design review meeting (a distribution list is to be made at the first design review meeting).

4.3 COMMUNICATIONS

General

Allow the Superintendent and Superintendent's Representatives to communicate directly with any of the consultants. Clause 24 of the Conditions of Contract permits the Superintendent to appoint more than one Superintendent's Representative (SR). The Superintendent may appoint one SR for Design and Documentation responsibilities and another SR for Construction and Administration responsibilities.

4.4 DESIGN MANAGER

Requirement

The Contractor shall appoint an Architect registered in the state of Queensland with previous experience in the design and construction of Department of Energy and Public Works projects to act as Principal Consultant and Design Manager on the project. The Design Manager is to ensure the Design and Construction documents are of a satisfactory standard, meet the Principal's Project Requirements, are co-ordinated with each other and are prepared in a timely manner. The Consultant is to provide a specification for the project based on the Natspec form of specification.

The Design Manager shall, within one week of commencement, submit a design program to the Superintendent. The Design Manager shall submit fortnightly reports to the Superintendent reporting on progress achieved compared to the design program. The reports shall have attached electronic copies of new or revised drawings prepared to date and electronic copies of any other new or revised Design and Construction documents.

4.5 CONSULTANTS

Requirement

The Contractor shall employ a team of appropriately experienced and qualified professional consultants to prepare the Design and Construction documentation, including but not limited to the following disciplines:

All Architectural work

All Civil works

All Structural works

All Mechanical works

All Electrical works

All Hydraulics works

All Fire Services works

All Landscaping works

All Communication / Security works

4.6 CO-ORDINATION OF CONSULTANTS

The Contractor shall be responsible for co-ordinating the work of all consultants and shall provide and direct all necessary personnel to administer, supervise, inspect, co-ordinate and control the consultants. Ensure completion of the work undertaken by the consultants in a manner and at a rate of progress consistent with completion of the Works in accordance with the Contract.

4.7 CERTIFICATION OF THE WORKS

Prior to achieving Practical Completion each consultant discipline shall certify that that part of the building works for which the consultancy is responsible has been constructed in accordance with the Construction Documentation.

4.8 DRAWINGS PROVIDED BY THE PRINCIPAL

The site development drawing attached is for reference only and may be used in whole or in part at the Contractors risk. The final documentation prepared by the Contractor's consultants shall be in accordance with the "AutoCAD Standards and Specification Requirements" available upon request.

4.9 DRAWINGS AND SPECIFICATIONS PROVIDED BY THE CONTRACTOR

The drawings and specifications outlined in the schedule below are to be provided to the Superintendent by the Contractor at the nominated times throughout the Contract. All requested Acrobat (PDF) electronic copies and electronic CAD drawings provided shall have identification of the project name, the name of document submission and the date of submission.

The contractor is to provide a full specification for the project based on the Natspec form of specification.

In addition a coloured rendered perspective drawing of the building within its streetscape context is required to be produced by the end of CD stage for internal presentation purposes.

The final CD submission shall include copy of the Schedules and Specifications. Note, the documentation requested below is in addition to the operations and maintenance manuals, and as built documentation provided by the sub-contract trades.

Generally, each submission is to be reviewed by the Superintendent with the intent of providing feedback to the Contractor and the Contractor's consultants, and eventually to provide approval of the documentation. A conditional approval may be provided, together with an issue of mark-ups and identified changes. Such identified amendments are to be corrected and submitted as part of the subsequent documentation submission.

4.10 SCHEDULE OF CONTRACTOR'S CONSTRUCTION DOCUMENTATION ISSUES

Timing / Stage	Name of Submission	Pdf	Specs & Schedules	Specs & Schedules - pdf at A4 size	Special requirements

End DD	100% Schematic Design Architectural and Services Engineering SD drawings (for design review purposes) **Note: the requirements under clause 1.4 General Requirements part (b) for submission of drawings required for the formal submission of the SPA process**	1	1	1	Colour boards A4 format
60% CD	60% complete construction drawings for all of the Contractor's consultant disciplines (for design review purposes)	1	1	1	
100% CD	100% complete Construction Documents for all disciplines - (for design review purposes) Note: A colour rendered perspective drawing of the building within its streetscape context is required to be produced by this stage for internal presentation purposes	1	1	1	1 perspective drawing
Final CD	100% complete and corrected Construction Documents for all disciplines – Superintendent deemed suitable (for record purposes)	1	1	1	CAD and/or Revit drawings, schedules & specifications in MS Word
Construct-ion stage	Amended documents during construction stage -required when design is modified by Type 1 or Type 2 variations (for record purposes)	1	1	1	CAD and/or Revit drawings, schedules & specifications in MS Word
Practical Completion	At Practical Completion (for record purposes)	1	1	1	CAD and/or Revit drawings, schedules & specifications in MS Word
Final Certificate	Documents amended during defects liability period - at Final Certificate or end of project (for record purposes)	1	1	1	CAD and/or Revit drawings, schedules & specifications in MS Word

4.11 DOCUMENTATION STANDARDS

Drawings prepared by the Contractor and its consultants shall comply with "AutoCAD Standards and Specification Requirements" available upon request.

Once a tender has been accepted, the Contractor shall be responsible for all of the production of Schematic Design and Construction Documentation" or "Working Documents". The working documents shall embody the intentions and scope of work defined in the reference documents as listed in the Table of Contents section at the front of the specification.

The contractor is to take particular note of the comments regarding design intent in the documentation. Building plan layouts forming part of the Principal's design documentation reflect the requirements and intent of the design. Detailed design, compliance, detailing of structure, waterproofing, junctions, connections and the like are the responsibility of the Contractor. Unless otherwise approved by the Principal, these specific design requirements shall be strictly adhered to. Such requirements include but are not limited to the following:

- Site and Floor Planning.
- Roof and ceiling design.
- Disabled Access requirements to AS1428.1 and Access to premises standard to extent nominated.
- Scheduled or nominated finishes and materials.
- Scheduled or nominated proprietary items or equal alternatives approved in writing by the client.
- Window sizes and locations.
- Reflected ceiling plan showing co-ordination of mechanical, structural and electrical elements and sheet layouts.
- Elevations showing materials, sheet layout cover strips and the like.
- Door Hardware.
- Joinery details.
- Fitout Details.
- Construction and waterproofing details.
- Sunshading details.
- External works details.
- Colour Boards in A4 format. Three (3) copies.
- Signage details.
- Compliance with the energy efficiency provisions of the Building Code of Australia 1975.
- Unit allocation number and Department reference numbers as issued by the Superintendent. This table is to be suitably located on the Site Plan.
- Documentation prepared by the engineering disciplines shall be reviewed and signed by Registered Professional Engineer (RPEQ) along with registration number

Project specification documentation shall be prepared using current Natspec Building specification templates (obtainable under license from Construction Information Systems Australia P/L) and additional QBuild consultant's kit specification material available from QBuild Specifications Coordinator. Unless otherwise approved by the Superintendent, the format and style of project specification material shall follow QBuild standard specification layout.

4.12 DRAWING AMENDMENTS

For drawing changes which are required after the original drawing has been completed and authorised by the Contractors Discipline Team Leader, clearly indicate the extent of the amendment either by the use of clouding (or similar), or by clearly defining the amendment in the Amendments Section of the title block and altering the drawing issue mark. When completed, the Discipline Team Leader shall authorise the amendment by signing in the appropriate location in the title block.

Identify drawings by an issue number or version number by an upper case alphabet character

4.13 SUITABILITY OF DOCUMENTS

Pursuant to clause 8.4 of the Special Conditions of Contract, the Superintendent's direction on suitability of the following documents supplied by the contractor is required:

- All Developed Design documents for Architectural, Structural and Civil Engineering consultant disciplines;

- All Construction Documents, drawings, technical and trade specifications and other Construction Documents for all consultant disciplines;
- Services schedules; and
- Shop drawings.

4.14 DESIGN AND DOCUMENTATION PROGRAM

Prepare a program showing dates for issue of drawings and other documents, dates for design review meetings, including but not limited to the following milestones:

1. 100% complete Developed Design (DD) - drawings and specifications for Architectural, Landscape, Structural, Civil Engineering, Hydraulic Services and Electrical and Mechanical Engineering consultant disciplines;
2. 60% complete Construction Documentation (CD) - drawings and specifications for all consultant disciplines for review;
3. 100% complete Construction Documentation (CD) - drawings and specifications suitable for construction for all consultant disciplines for review and assessment for suitability by the Superintendent;
4. 100% complete Final Construction Documentation (CD) - drawings and specifications for all consultant disciplines, assessed by the Superintendent as suitable for construction of the works
5. Practical Completion - amended documentation for record purposes
6. Final Certificate - amended documentation for record purposes

The Contractor is to supply construction documentation such as drawings, technical schedules, specifications, or other information, in sufficient time for examination, and revision if necessary, to occur before they are required for use.

Authorities and Adjoining Owner Approval

Authorities' and adjoining owner approvals: Submit documents showing approval by the authorities and adjoining owners whose requirements apply to the work.

Correspondence: Submit copies of correspondence and notes of meetings with authorities and adjoining owners whose requirements apply to the work.

4.15 DIMENSIONS

Existing work

If the Works include alterations or additions to existing work, verify the dimensions of the existing work before proceeding and notify discrepancies as required by the Contract.

4.16 WORK-AS-EXECUTED DRAWINGS

General

Where required by the Technical Specifications, submit work-as-executed documentation within two weeks of achieving Practical Completion, to include site plans, site services plans, floor plans; floor fitout plans, building services layouts, plant room layouts, and other drawings and details required for facilities maintenance purposes.

Detailed requirements

General: Show the 'as installed' locations of building elements. Include 'as installed' amendments to shop drawings. Show off-the-grid dimensions where applicable.

Services: Show dimensions, types and locations of plant, equipment, site and building services. Show cables, piping and ductwork in relation to permanent site features and other underground services. Include relationship to building structure and other services, and changes made during commissioning and the maintenance period. Include diagrammatic drawings of each service system showing piping and wiring, and principal items of plant and equipment.

Accuracy

Documents: Incorporate all modifications made during the progress of the work and testing period. Show any provisions for the future.

Endorsement: Sign and date all record drawings. Keep one set of shop drawings on site at all times expressly for the purpose of marking changes made during the progress of the Works.

Drawing layout

Use the same borders and title block as the contract drawings.

Drawings in manuals

Where operation and maintenance manuals are called for in the Contract, include in each manual a copy of each work-as-executed drawing relevant to that portion of the Works, revised to show any changes found necessary for the satisfactory operation and maintenance of plant and equipment.

4.17 DISCLAIMER ON SUPPLY OF ELECTRONIC DOCUMENTATION

Ownership of electronic information

Where provided, electronic drawing and other electronic document files have been compiled on behalf of the State of Queensland by QBuild, a commercialised business unit of the Department of Energy and Public Works, or other firm(s) engaged by QBuild for this purpose.

Copyright

Copyright in electronic drawing and other electronic document files remains with the State of Queensland.

4.18 CONTRACTOR'S DOCUMENTS

Compliance with disabled access requirements

The Contractor is responsible for the design and construction of facilities that comply with the requirements of AS1428.1 to the extent required by the contract documents. Typical details are provided by the Principal to help define the scope of work only. Building plan layouts forming part of the Principal's design documentation reflect the requirements of AS1428. Detailed design and compliance of handrails, tactile indicators, ramps, walkways, thresholds, doorways and general access provisions are the responsibility of the Contractor.

Time

Where the Contract requires the Contractor to supply documents such as shop drawings, technical schedules, or other written information, supply them in sufficient time for examination, and revision if necessary, to occur before they are required for use.

4.19 OPERATION AND MAINTENANCE MANUALS

General

General: *Refer to 1.0 PRELIMINARIES - Clause 16.3 Practical Completion Documents and Procedures*. Submit Operation and Maintenance manuals for installations including certification and warranty documents as per Schedule 020 General Requirements.

Dates for submissions: Refer to the **Operation and Maintenance manual submissions schedule**.

Format – electronic copies

Printing: Provide material that can be legibly printed on A4 size paper.

Scope: Provide the same material as specified for hardcopy in electronic format.

Quantity and format: Conform to **Electronic submissions.**

Number of copies: 2 x Adobe Acrobat (PDF) files on disk media

Format – hard copy

General: A4 size loose leaf, in commercial quality, 4 ring binders with hard covers, each indexed, divided and titled. Include the following features:

- Cover: Identify each binder with typed or printed title '*OPERATION AND MAINTENANCE MANUAL*', to spine. Identify title of project, volume number, volume subject matter, and date of issue.
- Dividers: Durable divider for each separate element, with typed description of system and major equipment components. Clearly print short titles under laminated plastic tabs.
- Drawings: Fold drawings to A4 size and accommodate them in the binders so that they may be unfolded without being detached from the rings. Provide with reinforced punched binder tabs.
- Pagination: Number pages.
- Ring size: 50 mm maximum, with compressor bars.
- Text: Manufacturers' printed data, including associated diagrams, or typewritten, single-sided on bond paper, in clear concise English.

Number of copies: 3.

4.20 MAINTENANCE MANUAL SCHEDULES

Operation and maintenance manuals submissions schedule

Submission event	Required documentation	Timing
Draft copies of manuals for whole of Works	2 x draft set of building and services manuals* to enable the Principal's staff to become familiar with the corresponding installations - include provisional work-as-executed drawings and preliminary performance data as applicable	8 weeks before Practical Completion
Progressive manual upgrades for services, plant & equipment	3 x revised copies of sections of manuals for services, plant or equipment put into service during construction & operated by the Principal	Within 2 weeks after acceptance of such item(s)
Revisions arising from commissioning** (for	2 x revised copies of relevant sections of building and services manuals	Within 2 weeks after commissioning of item(s)

Submission event	Required documentation	Timing
manuals for whole of Works)	1 x copy of certificates from authorities, test certificates and warranties	Prior to Practical Completion
Final copies of manuals for whole of Works	2 x final sets as Adobe Acrobat (PDF) files on disk media and 3 x hard-copy sets - incorporate original copies of warranties, certificates, etc in bound sheet protectors - incorporate feedback from review and from training of Principal's staff - incorporate final work-as-executed drawings and final performance data	Within 2 weeks after Practical Completion
Loose leaf amendments arising from changes during Defects Liability Period	3 x amended copies of relevant sections of hard copy manuals to cover significant changes	Immediately after changed work is completed
	2 x revised sets as Adobe Acrobat (PDF) files on disk media and 3 x hard-copy sets updated to cover all changes (as for final submission)	On or before end of Defects Liability Period

* Format as for the final manuals, with temporary insertions for items that cannot be finalised until the installation is commissioned and tested.
** Where commissioning for the whole of the Works predates Practical Completion for the whole of the Works.

5 MEASUREMENT OF WORK

5.1 REQUIREMENT

For the purposes of the Contract, measure work as follows:

- Building work: In accordance with the Australian Standard Method of Measurement of Building Works.
- Civil engineering work: In accordance with AS 1181, "Method of measurement of civil engineering works and associated building works".

6 PROGRAM OF WORK

6.1 CONSTRUCTION PROGRAM

In accordance with 1.0 Preliminaries Section 11.2.

Extensions of time

All extensions of time granted to the Contractor shall be incorporated in the construction program by adjustment of the program relative to current job situation at the update immediately following the granting of the extension.

Support Data: Applications for Extensions of Time under Clause 35 of the General Conditions of Contract shall be supported by data based on the updated construction program together with a time analysis indicating how critical activities were or will be affected and the effect on the Project Completion Date.

Assessment: Extensions of Time will be assessed on a normal 5 day working week (i.e. Monday to Friday).

Format: The format for submission of claims for Principal caused delays for Extension of Time is as follows:

STATEMENT OF FACTS AND SUPPORTING DATA REQUIRED FOR SUBMISSION OF CLAIMS FOR PRINCIPAL CAUSED DELAYS FOR EXTENSIONS OF TIME

Item		Description
A.	Claim	Identification of the Claim: description
B.	Costs	Cost of Claim: 1. Whether costs are to be claimed. 2. Amount of costs claimed.
C.	Contractual Basis for Claim	The contractual reason on which the claim is based (with references).
D.	Cause	Cause of Claim: i.e. late supply information; variation; etc.
E.	Duration	1. Time claimed. 2. Identification of time on the program calendar.
F.	Program Effects	Effects on: 1. Critical activities. 2. The critical path. 3. Non-critical items of work. 4. Other.
G.	Graphic Presentation	Network Diagrams detailing:

Item		Description
	(to demonstrate the difference between the planned work and the actual work).	1. The original programmed activities with allowances for approved extensions of time. 2. The as-constructed details which will support the claim.
H.	Documentation	Copies of all information relating to the claim, e.g. 1. Correspondence 2. Variations 3. Site Instructions 4. Requests for Information 5. Transmittals 6. Drawings (where possible) 7. Any other information i.e. background information that is relevant to the claim (e.g. relevant minutes from site meetings, etc.)
I.	Mitigation	Identify what action has been taken, or is possible, to mitigate the delay, or costs of the delay.

In the absence of an agreed planning program the Superintendent is not bound to base decisions on the Contractor's program and will make decisions in a reasonable manner based on information available at the time.

6.2 PROGRAM CHART

Requirement

Mount and display in the Contractor's site office the bar chart or network diagram based on the construction program and keep up to date.

6.3 SITE MEETINGS

In accordance with 1.0 Preliminaries section.

6.4 INSPECTION

Notice

Minimum notice for inspections to be made; 2 working days unless specified otherwise.

General

The Contractor is to arrange and pay all costs associated with the Building Act Compliance Inspections.

The Contractor is to notify the Superintendant, 2 working days prior to the BAC inspections in order that the Superintendants Representative may arrange attendance when the BAC inspections are taking place. Do not conceal those parts without approval.

Where inspection may be made in respect of parts of the works, do not conceal those parts without approval until after the expiry of the specified notice period.

6.5 REPORTING

Report at least monthly to the Superintendent's Representative or at other times as required by the Superintendent on:

(a) compliance with all relevant Statutory Authorities;

(b) compliance of construction with technical components of this specification;

(c) quality of materials and workmanship;

(d) all defects encountered and advice on solutions issued;

(e) progress of construction of the Works.

The reporting is to be in a digital written format as specified by the Principal.

7 SITE OFFICE

7.1 FOREMAN'S OFFICE

General

Provide, erect and maintain a satisfactory office for the Foreman, having sufficient lighting and air conditioning, a long bench for reading drawings, adequate drawer space for storing drawings and documents, adequate lockable drawer space for the Building Act compliance documents, and sufficient space at a meeting table for 12 persons. Remove on completion and make good the site.

Protective clothing

Safety helmets: Make available 10 safety helmets to AS/NZS 1801 (Type 1) for the use of visitors.

Safety vests: Make available 10 safety vests to AS/NZS 4602 for the use of visitors.

Fire fighting equipment

Provide in the Foreman's Office a Dry Chemical 4.5 kg fire extinguisher to AS 1846.

Temporary telephones
Provide temporary telephones in the Foreman's Office, including with facsimile or equivalent document transmission capability. Pay charges for installation, rental and calls. Pay charges for removal on completion.

8 ADJOINING PROPERTY

8.1 JOINT INSPECTIONS
Arrange a joint inspection with the Superintendent and the owners and occupants of adjoining properties prior to and on completion of the Works.

8.2 RECORDS
At the initial inspection, make detailed records of conditions existing within the adjoining properties, especially structural defects and other damage or defacement. Arrange for not less than two copies of each record, including drawings, written descriptions, and photographs, to be endorsed by the owners and occupants, or their representative, as evidence of conditions existing before commencement of work. Provide one endorsed copy of each record to the Superintendent. Keep the other endorsed copy on site.

8.3 NOTICE
Give notice of intention to commence work to owners and/or occupants of adjoining property, and give them an outline description of the type and extent of the work.

8.4 KNOWN ENCROACHMENTS
Do not demolish or damage adjoining property as encroachments on to the site without prior approval of the Superintendant.

8.5 REVEALED ENCROACHMENTS
Should the works reveal encroachments of adjoining property on to the site or encroachments of existing site structures on to adjoining property, and should such encroachments be not referred to in the Contract, obtain instructions immediately such encroachments are revealed.

9 HEALTH AND SAFETY

9.1 OCCUPATIONAL HEALTH AND SAFETY (OHS) AUDITOR
In accordance with 1.0 Preliminaries section.

9.2 TEMPORARY BARRICADES, HOARDINGS AND OTHER RISK CONTROL MEASURES
Requirement
In accordance with Workplace Health and Safety Regulation 2008, enclose all work and plant areas with temporary barricades, hoardings and other appropriate risk control measures. Incorporate lockable gates providing an equal level of risk control, where necessary. Remove on completion and make good all affected areas.

9.3 ACCIDENT REPORTS
In accordance with 1.0 Preliminaries section.

10 SITE INFRASTRUCTURE, BUILDINGS AND SERVICES

10.1 JOINING UP
Requirement
In accordance with 1.0 Preliminaries section.

10.2 EXISTING SERVICES
Requirement
Deal with existing services (such as drains, watercourses, public utility and other services) encountered, obstructed, or damaged in the course of performing the work under the Contract, as follows:

- If the service is to be continued: Repair, divert, relocate as required.
- If the service is to be abandoned: Cut and seal or disconnect, and make safe.

Cost
The Contract sum shall be deemed to include the cost of dealing as above with existing services:

- the existence of which was ascertainable from the appropriate authority, or from visual inspection on or adjacent to the site; or
- which are shown on the Drawings or described in the Specification.

Notification
Notify the Superintendent immediately upon the discovery of services or obstructions not shown on the Contract documents.

11 TEMPORARY INFRASTRUCTURE AND SERVICES

11.1 EXTENT

General

Provide and maintain temporary infrastructure and services necessary for execution of work under the Contract. Install such infrastructure and services in accordance with requirements of the relevant authorities. Pay charges in connection with installation and use of temporary infrastructure and services, and make them available to sub-contractors. On completion, disconnect and remove temporary infrastructure and services, and make good connection points and surrounds to match condition existing prior to commencement of the Works.

11.2 TEMPORARY STREET CROSSINGS

Requirement

In accordance with 1.0 Preliminaries section.

11.3 SIGNBOARD

Requirement

In accordance with 1.0 Preliminaries section.

Ownership

The signboard shall remain the property of the Contractor.

Subcontractors' signboards

Obtain approval from Superintendent for any Contractor's or Subcontractors' signboards.

11.4 TEMPORARY POWER

Requirement

Provide an electricity service for the works, separately metered and suitably protected by circuit breakers.

11.5 TEMPORARY WATER

Requirement

Provide sufficient water, of suitable quality where quality is not otherwise specified, to enable the completion of the work under the Contract. Notify the Superintendent of the proposed methods of providing temporary water to the Site, and the associated conditions of supply. Obtain approval of proposal, prior to implementation.

Comply with detailed Water Restrictions set by the relevant Regional Water Supply Authority, and the Local Authority having jurisdiction in the general area surrounding the site.

Take all reasonable measures to minimise the consumption and waste of water used on site. Maintain all Contractor's fittings and equipment to minimise leaks.

Maintain a log of water consumption during the Contract that includes details of sources of all water used, quantities from each source, dates on which recycled or "alternative source" water arrives on site, transporter's name and contact details when relevant, water quality if using recycled or "alternative source" water, locations where recycled or "alternative source" water is used on site, and the purposes for which recycled or "alternative source" water is used. Make the log available for inspection by the Superintendent on request.

Attendance

Attend the site at all times that water is being used, including during all commissioning activities, and planting establishment period. Cease water consumption before leaving the site each day.

Submit requests for proposed extensions of working hours, including extensions necessary to comply with Regional Water Supply Authority or Local Authority requirements. Provide evidence supporting the requests, and nominate dates on which extended working hours may be required.

11.6 SITE AMENITIES

Requirement

Provide statutory and necessary amenities and sanitary facilities for workers and other persons lawfully upon the site and remove them on completion of the Works.

12 ITEMS SUPPLIED BY PRINCIPAL

12.1 SUPPLY

In accordance with 1.0 Preliminaries section.

12.2 COSTS

If the Superintendent determines that the items are not in a condition suitable for use, then the Contractor shall be entitled to a Variation Order for any work necessary to make them suitable. Provide for all other attendant costs and charges including collection, transport to site, cutting, fabrication and insurance.

12.3 NOTICE

Give the Superintendent three weeks written notice of the date on which the items are required to be ready for collection together with verification of the quantities required to perform the work under the Contract.

12.4 VARIATIONS TO QUANTITIES SUPPLIED

Except where specified below, additional quantities of items required to complete the Works shall be supplied by the Principal on the terms stated above. Surplus unused items supplied by the Principal shall be returned to the Principal at the discretion and direction of the Superintendent and at the Principal's cost. Where additional quantities of items are required through the Contractor's fault e.g. unnecessary wastage, mistake etc., the items shall be supplied by the Principal and the Contractor shall be responsible for all costs.

13 SALVAGED ITEMS

13.1 CONTRACTOR'S PROPERTY

Unless otherwise specified, and subject to the provisions of the General Conditions of Contract, materials, plant, equipment or other things salvaged from the Works shall become the property of the Contractor and shall be removed by him from the site.

14 ENVIRONMENTAL REQUIREMENTS

14.1 GENERAL

In accordance with 1.0 Preliminaries section.

14.2 LEGISLATIVE COMPLIANCE

In accordance with 1.0 Preliminaries section.

14.3 ENVIRONMENTAL DOCUMENT REFERENCES

In accordance with 1.0 Preliminaries section.

Initial Town Planning Review has been attached, and form part of the Tender Documents.

The Contractor shall undertake its own assessment of the information provided and inputs required to ful-fill its responsibilities under the terms and provisions of the contract. Some basic issues have been identified in the above referenced assessments. The design and construction of the works shall take due regard of these findings, undertake further inputs as required and/or otherwise incorporate measures as appropriate in the proposed works.

Key aspects which are to be specifically addressed in the design and construction of the new facilities as part of the Project works include the following:

- Comply with any relevant approval conditions or requirements
- The project design must address potentially adverse effects on lighting, noise and air quality from internal and external sources, particularly with regard to sensitive receptors nearby. Effective management of lighting, noise and air quality issues is also required during construction activities
- Statutory approvals required for the development are to be identified and obtained. During the design phase, the Principal shall be advised of any approvals required for the Project. Evidence shall be provided prior to the commencement of site works that all necessary approvals have been obtained.
- Stormwater management measures, both short and long term, are to be implemented, or otherwise considered to reduce sediment loss and pollution, and to minimize impacts on water quality and hydraulic characteristics of on-site and downstream water systems.
- Soil erosion and sediment control measures will be specifically required during development activities on the site and in compliance with the *Healthy Waters State Planning Policy* and any other regulatory criteria. Performance outcomes of the State Planning Policy must be addressed including the preparation of a Stormwater Quality Management Plan and an erosion and sediment control plan prepared in accordance with the *State Planning Policy 4/10 Guideline, Healthy Waters.*
- Ensure adequate provision is made in the design of the facilities for provision of stormwater drainage, freeboard to building platforms and sanitary fixtures, and to ensure existing overland flow paths are not compromised.
- Provision for water conservation measures are to be included in the design. Refer to Design Standards for details.
- Results of geotechnical investigation to be reviewed to determine specific control requirements for siteworks and stormwater systems on site and to manage any soil erosion, dispersive soils, seepage and/or drainage issues.
- Any environmental weeds identified on the site are to be removed in accordance with statutory requirements.

The Contractor shall liaise with the Principal's Representative in respect to any information or approvals relevant to the above requirements in undertaking its works under the Contract.

14.4 ENVIRONMENTAL MANAGEMENT REQUIREMENTS

In accordance with 1.0 Preliminaries section.

The environmental responsibilities to be fulfilled in the Works shall include, but not be limited to the following requirements:

- Take due regard of existing site conditions and report findings to ensure environmental impacts are minimized, and future servicing and stormwater overland paths are not compromised.
- Implement the recommendations of the **Environmental Checklist Report, Site Management Plan** and other relevant reports previously referenced, as applicable in respect to the proposed engineering facility.

If off-site disposal of material is required, a suitably qualified and experienced Contamination Consultant is to be engaged (refer to Clauses below).

Details of nominated personnel to be appointed on the works shall be included as part of the Tender submission.

- The Environmental Management Plan shall additionally include:
  - . A detailed **Erosion and Sediment Control Plan** to specifically address soil erosion controls and stormwater management during the works until full stabilization or rehabilitation is completed and acceptable to the Principal's Representative and/or Superintendent. The Erosion and Sediment Control Plan shall be developed in accordance with *State Planning Policy 4/10 Healthy Waters.*
  - . Contamination Management Plan conforming to the requirements of the Site Management Plan and the Project Brief.

14.5 DESIGN REQUIREMENTS

The design shall include, to an appropriate extent, environmental best management practice elements to ensure protection of the environment and achievement of sustainability goals. The design shall take full account of any environmental issues identified in the Environmental Checklist Report and Consultancy reports. The development of the design documentation shall ensure due provision is made for requirements as necessary of environmentally related activities or elements and any requirements or conditions of any associated statutory or legislative approvals. During the design phase, the Principal shall be advised of any statutory approvals required for the Project. Evidence shall be provided prior to the commencement of site works that all necessary approvals have been obtained.

In addition, due provision should be considered for, but not limited to, the following:

- Limit the potential for soil erosion with suitable planning and design measures. A site stormwater quality management plan is to be prepared in accordance with *State Planning Policy 4/10 Healthy Waters.*
- Consideration of air and noise impacts from known generators and construction activities (i.e. buffers, building design etc). Adequate air quality investigations are to be conducted during the preliminary design phase. The investigation is to include a review of available air quality reports and predict emissions from the engineering building to determine requirements for air quality controls and/or treatment in relation to air quality goals, statutory requirements and possible nuisance to internal and external receptors. Refer mechanical documentation for additional requirements.
- Construction requirements i.e. provision for contractor's facilities, storage areas, stockpiles, stormwater controls, temporary site access points etc.
- Design is to minimize disturbance of vegetation on the site, where practicable.
- Water conservation measures, including provision of water efficient devices/fixtures/apparatus/appliances and the use of endemic species in open grasses and landscaped areas to minimize irrigation requirements (refer landscape and hydraulic documentation).
- Design of an adequate water reuse system. Refer to Hydraulic and Architectural documentation for details.
- Provision for overland flow paths and drainage to building perimeters (i.e. no ponding areas or inundation).
- Develop an Environmental Management Plan for the design, construction and operational phases of the Works.
- Treatment of dry weather flows and first flush discharges from stormwater systems prior to entry into existing watercourses or purpose-built discharge systems.
- Waste management.
- Contamination and other hazardous materials. The removal of potentially contaminated material from the site is to be minimised.

14.6 SPECIFICATION REQUIREMENTS

Environmental specifications shall be prepared and included with all contract documentation issued for the works as appropriate. The items and elements listed under Environmental Controls should at least be included in each Trade Package with due regard to the type and scope of work involved. Due provision shall be made in the preparation of design documentation of the works and any future provisions or expansions for optimising earthwork areas, location of spoil stockpiles, storage areas, erosion and sediment control provisions (short and long term), stormwater provisions, temporary access, other temporary infrastructure and related treatments.

Natspec Specification format shall be adopted in preparing documentation for the works unless otherwise approved by the Principal. Specifications shall be developed as required, amended or qualified as necessary to meet the requirements of the Project. The requirements of the following sections shall be specifically included in specifications.

14.7 CONSTRUCTION REQUIREMENTS

General requirements

The Environmental Management Plan employed by the Contractor shall undertake the responsibilities for the necessary environmental management and environmental supervision in support of the Contractor's work activities.

The Contractor shall be responsible for the ongoing maintenance of the erosion controls and rehabilitation works until completion of its works under the Contract, including as necessary, maintenance during the defects liability period until revegetation is fully established and control measures are no longer necessary and are removed. Works are to be conducted in accordance with *State Planning Policy 4/10 Healthy Waters*.

14.8 COMMISSIONING REQUIREMENTS

In accordance with 1.0 Preliminaries section.

15 DESIGN CRITERIA

15.1 WORK CERTIFIED BY CONTRACTOR'S CONSULTANTS

Requirement

Arrange and pay all costs for independent inspection and certification of building components, systems and equipment where nominated in respective specification work sections, including:

- *Groundworks*,
- *Roadworks*,
- *Concrete*,
- *Structural Steel*,
- *Structural Timber*,
- *Windows and Glazing*,
- *Fire-Stopping*,
- *Termite Treatment*,
- *Brickwork and Blockwork*,
- *Roof Safety Systems*,
- *Sanitary Plumbing*, *Water Services* and *Drainage*,
- *Light Steel Framing*,
- *Piling*,
- *Roofing and Wall Cladding*,
- *Overhead Doors*,
- *Suspended Ceilings*,
- *Metalwork (external and required elements only),*
- *Vertical Transportation*
- *Electrical, Mechanical and Fire Services Systems as required.*

Insurances

Independent engineers and other consultants engaged by the Contractor (Contractor's Certifying Consultants) shall maintain and keep maintained the following insurances:

- public liability insurance in the amount shown in Conditions of Contract Annexure Part A; and

- professional indemnity insurance in the amount of $10,000,000.00.

Inspections
No requirement for building components, systems and equipment to be independently inspected and certified by Contractor's Certifying Consultants shall prejudice, remove or extinguish the rights of the Principal, Superintendent or any Superintendent's Representative appointed by the Superintendent under the Contract to inspect, reject, certify and approve any element or part of the Works, including parts of the Works added to the Contract by instruction or by variation order.

16 PRELIMINARIES SCHEDULES

Requirement: In accordance with 1.0 Preliminaries section.

17 AS CONSTRUCTED SUBMISSIONS SCHEDLUE

17.1 WORK AS CONSTRUCTED DOCUMENTATION SUBMISSIONS SCHEDULE

Submission event	Required documentation	Timing
Draft work-as-executed documentation	2 x copies of draft documentation on disk media	At least 2 weeks before Practical Completion
Final work-as-executed documentation	2 x copies of final documentation on disk media and 3 x full-sized sets on paper	Within 2 weeks after Practical Completion
Amendments to documentation arising from changes during Defects Liability Period	2 x copies of amended final documentation on disk media to cover significant changes	Immediately after changed work is completed
	2 x copies of amended final documentation on disk media and 3 x full-sized sets on paper to cover all changes effected during Defects Liability Period	At least 2 weeks before end of Defects Liability Period

17.2 OPERATIONS AND MAINTENANCE MANUALS SUBMISSIONS SCHEDULE

Submission event	Required documentation	Timing
Draft copies of manuals for whole of Works	2 x draft sets of building and services manuals* to enable the Principal's staff to become familiar with the corresponding installations - include provisional work-as-executed drawings and preliminary performance data as applicable	8 weeks before Practical Completion
Progressive manual upgrades for services, plant & equipment	3 x revised copies of sections of manuals for services, plant or equipment put into service during construction & operated by the Principal	Within 2 weeks after acceptance of such item(s)
Revisions arising from commissioning** (for manuals for whole of Works)	2 x revised copies of relevant sections of building and services manuals	Within 2 weeks after commissioning of item(s)
	1 x copy of certificates from authorities, test certificates and warranties	Prior to Practical Completion
Final copies of manuals for whole of Works	2 x final sets as Adobe Acrobat (PDF) files on disk media and 3 x hard-copy sets - incorporate original copies of warranties, certificates, etc in bound sheet protectors - incorporate feedback from review and from training of Principal's staff - incorporate final work-as-executed drawings and final performance data	Within 2 weeks after Practical Completion
Loose leaf amendments arising from changes during Defects Liability Period	3 x amended copies of relevant sections of hard copy manuals to cover significant changes	Immediately after changed work is completed
	2 x revised sets as Adobe Acrobat (PDF) files on disk media and 3 x hard-copy sets updated to cover all changes (as for final submission)	On or before end of Defects Liability Period

* Format as for the final manuals, with temporary insertions for items that cannot be finalised until the installation is commissioned and tested.
** Where commissioning for the whole of the Works predates Practical Completion for the whole of the Works.

SOCIAL HOUSING CONSTRUCTION PROGRAMME
8 Miles Avenue and 1265 Riverway Drive, KELSO QLD 4815 - SCHEMATIC DESIGN
13 DWELLINGS - 4x1 BED PLATINUM, 1x1 BED GOLD, 4x2 BED GENERAL, 4x1 BED GENERAL

QBUILD PROJECT NUMBER: 93378
8 MILES AVENUE & 1265 RIVERWAY DRIVE, KELSO

REAL PROPERTY DESCRIPTION

Lot 1 & 2 on RP741376
LOCAL AUTHORITY: TOWNSVILLE CITY COUNCIL (TCC)
PLANNING SCHEME: TOWNSVILLE CITY PLAN 2014 (V 2022/02)
SITE AREA: 1618m² (COMBINED)

DESIGNED TO - NCC 2022
- SHDG: TECHNICAL SUMMARY SHEETS - MARCH 2024
- Type C Construction

SHDG TSS NON-COMPLIANCES AS ACCEPTED BY SHDO:

1. BIKE PARKING NOT PROVIDED.
2. UNIT 1 & UNIT 2: CLERANCE BETWEEN LOUNGE AND DINING TABLE IS LESS THAN 1200.

STORMWATER MANAGEMENT:

1. THE CONTRACTOR SHALL REFER TO THE SITE-BASED STORMWATER MANAGEMENT REPORT PREPARED BY LCJ ENGINEERS, REFERENCE NUMBER: DPWA 166/AC/DN, FOR REFERENCE ONLY. STORMWATER MANAGEMENT SHALL BE DESIGNED TO A SITE-BASED STORMWATER MANAGEMENT PLAN PROVIDED BY THE CONTRACTORS CIVIL ENGINEER AND CONSTRUCT ACCORDINGLY.

ENERGY EFFICIENCY ASSESSMENT:

1. THE CONTRACTOR SHALL REFER TO THE SITE-BASED PRELIMINARY ENERGY EFFICIENCY ASSESSMENT PREPARED BY ACCELERATE SUSTAINABILITY ASSESSMENTS ,FOR REFERENCE ONLY.

ACOUSTIC REPORT:

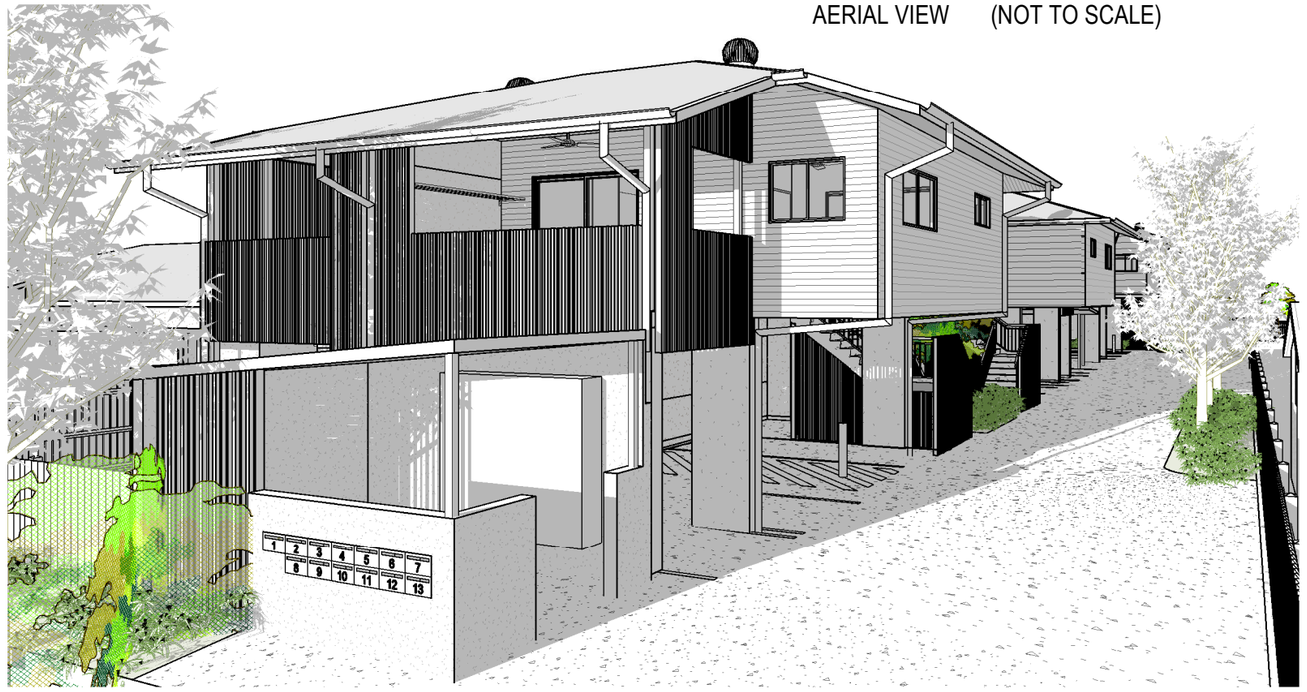
1. THE CONTRACTOR SHALL REFER TO THE SITE-BASED ACOUSTIC REPORT PREPARED BY WSP, FOR REFERENCE ONLY.

ARCHITECTURAL SCHEDULE

SHEET NO.	DRAWING NO.	DRAWING TITLE
1	A00.01	COVER SHEET
	I0427-300	CONTOUR SURVEY (FULL SITE)
	I0427-300	CONTOUR SURVEY (LOT 2 RP741376)
	I0427-300	CONTOUR SURVEY (LOT 1 RP741376)
2	A00.02	PLANNING DIAGRAMS
3	A00.03	EXISTING SITE
4	A01.01	DEMOLITION PLAN
5	A02.01	EXTERNAL WORKS PLAN - SHEET 1
6	A02.02	EXTERNAL WORKS PLAN - SHEET 2
7	A02.03	EXTERNAL WORKS PLAN - SHEET 3
8	A02.04	FIRST FLOOR PLAN
9	A02.05	UNIT PLANS - SHEET 1
10	A02.06	UNIT PLANS - SHEET 2
11	A02.07	UNIT PLANS - SHEET 3
12	A02.08	UNIT PLANS - SHEET 4
13	A02.09	UNIT PLANS - SHEET 5
14	A02.10	UNIT PLANS - SHEET 6
15	A03.01	ROOF PLAN
16	A04.01	ELEVATIONS - SHEET 1
17	A04.02	ELEVATIONS - SHEET 2
18	A05.01	SECTIONS
19	A06.01	3D VIEWS
20	A06.02	ESD STRATEGY
21	A07.01	WINDOW & SLIDING DOOR SCHEDULE
22	A08.01	FIRE HYDRANT DIAGRAM



AERIAL VIEW (NOT TO SCALE)



3D VIEW - ENTRANCE FROM MILES AVENUE (NOT TO SCALE)



STREET ELEVATION - RIVERWAY DRIVE (NOT TO SCALE)



STREET ELEVATION - MILES AVENUE (NOT TO SCALE)

SD-3

DRAWING INDEX SYSTEM
FOR QBUILD USE ONLY

- ☐ CEILING PLANS
- ☐ CONSTRUCTION DETAILS
- ☐ ELEVATIONS
- ☐ EXTERNAL WORKS
- ☐ FITOUTS
- ☐ FLOOR PLANS
- ☐ FURNITURE & EQUIPMENT
- ☐ HYDRAULICS
- ☐ MASTER PLAN
- ☐ MISC DETAILS
- ☐ PLAY STRUCTURES
- ☐ ROOF PLANS
- ☐ SECTIONS
- ☐ SETOUT PLAN
- ☐ SITE PLAN
- ☒ STANDARDS / OTHER

AMENDMENTS

ISSUE	DATE	SUBJECT	AUTHORISED
A	25/06/2024	PD3 - FOR REVIEW	RB
B	29/07/2024	PD3 - FOR REVIEW	AG
A	30/10/2024	SD1 - FOR REVIEW	AG
A	15/01/2025	SD2 - FOR REVIEW	AG
A	10/02/2025	SD3 - FOR REVIEW	AG
B	21/02/2025	SD3	AG

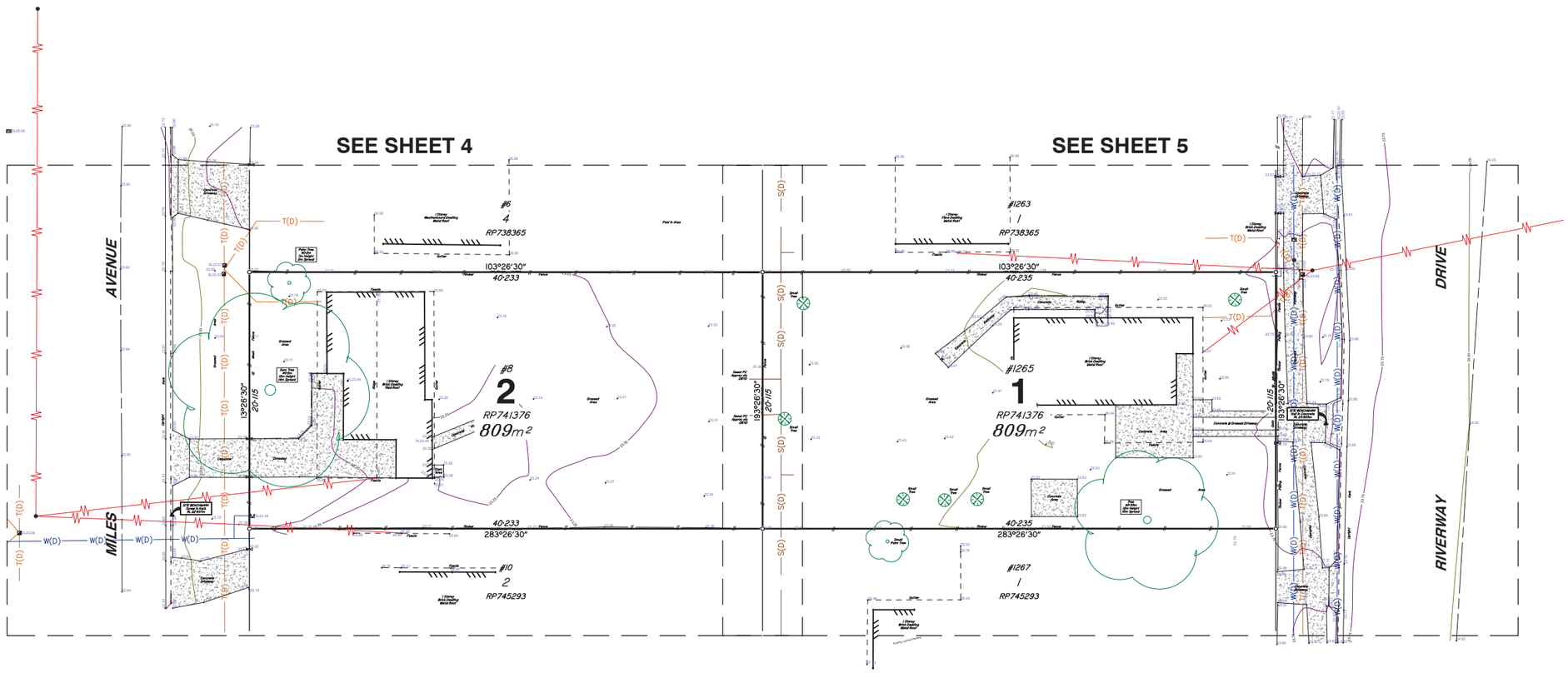
Queensland Government
Department of Housing and Public Works

ST	30/01/24	DRAWN / DATE
RB / AG	30/01/24	DISCIPLINE TEAM LEADER / DATE
		AUTHORISED FOR ISSUE / DATE

Social Housing Construction Program
8 MILES AVENUE & 1265 RIVERWAY DRIVE, KELSO
4X1 BED PLATINUM & 1X1 BED GOLD
4X2 BED GENERAL & 4X1 BED GENERAL
COVER SHEET

SCALE	As indicated
AT	A3 SIZE
MASTER SITE NUMBER	58908
CLIENT REFERENCE NUMBER	23961
DRAWING NUMBER	93378/SD/A00.01
ISSUE	B
SHEET NO	1





LEGEND

- BOUNDARY CORNER
- SURVEY MARK
- TREE
- DEAD TREE
- SHRUB OR SMALL BUSH
- TRAFFIC SIGNALS PIT
- TRAFFIC LIGHTS
- TELECOMMS PIT
- UNKNOWN MANHOLE
- SEWER MANHOLE
- SEPTIC TANK
- FIELD INLET
- INSPECTION OPENING
- ELECTRICITY MANHOLE
- ELECTRICITY BOX
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- OVERHEAD ELECTRICITY
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- UG — UNDERGROUND ELECTRICITY
- S — SEWERAGE
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- G — GAS
- 43.00 — MAJOR CONTOUR INTERVAL
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- *(A) — SERVICE QUALITY LEVEL A
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- *(D) — SERVICE QUALITY LEVEL D

Note:
MGA Coordinates derived from Network RTK GNSS observations only. Swing from RP741376 to MGA is: 5°26'30".

Note:
Underground service lines exist in site. We recommend client engages a pipe locator to confirm exact position/depth prior to detail design or excavation. Client is advised to check with council for any additional drainage records

Note:
An Identification survey is recommended to accurately determine site boundaries prior to any detailed design or construction.

Note:
The ground levels shown hereon are surface levels at time of survey and are not necessarily natural ground levels.

Quality Level D – Service lines are drafted via existing records, and are unable to be confirmed by survey data. Intended to indicate presence of service only.

Contour Interval : – 0·25m

Scale 1:200 Lengths are in Metres.

2 0 2 4 6 8 10 12 14 16 18 20 22 24 26 28

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Cadastral Surveyor Date 11/05/2023

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Revision Table

Rev:	Date:	Description
A	11/05/23	Original issue of plan.

Client
Queensland Government
Department of Communnities, Housing & Digital Economy

Associated Consultants
GHD

Project
Plan of Contour Detail Survey
Over Lots 1 & 2 on RP741376
8 Miles Avenue & 1265 Riverway Drive

KELSO
Townsville City Council

LEVEL DATUM	AHD	Co-ordinate System:	
ORIGIN	PSM no. 160964 RL 23·237m	MGA2020 Zone 56	
		SCALE	1:200 @ A1
Date	08/04/23		
Surveyed	BT	Magnet Drawing Ref (.mjo):	
Drawn	JTK	10427–300 JTK 04052023	
Checked	MS	Reduced	BT
SSG REF NO.	10427–23	REVISION A	SHEET 3 OF 6
PLAN NO.	10427–300		

Statewide survey group
ABN 77 088 374 869
CONSULTING SURVEYORS AND TOWN PLANNERS
3/123 Link Road Victoria Point, QLD 4165
Email: info@statewidesurvey.com.au
Phone: 1300 362 094

LEGEND

- BOUNDARY CORNER
- SURVEY MARK
- TREE
- DEAD TREE
- SHRUB OR SMALL BUSH
- TRAFFIC SIGNALS PIT
- TRAFFIC LIGHTS
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- *(D) SERVICE QUALITY LEVEL D

N

MILES AVENUE

Concrete Driveway
Palm Tree ø0·2m 7m Height 2m Spread
1 Storey Weatherboard Dwelling Metal Roof
#6 4 RP738365
Pool in Area
#1263 / RP738365
Sewer PC Approx via DBYD
Gutter
Timber Paling Fence
103°26'30" 40·233
Fascia
Small Tree
Grassed Area
Gum Tree ø0·5m 15m Height 14m Spread
1 Storey Brick Dwelling Tiled Roof
Ridge
Gutter
#8 2 RP741376 809m²
Concrete Pathway
Conc Area
Driveway
Fence
Mesh Gl
Kerb
Upright
Area
Grassed
#1265 1 RP741376 809m²
SITE BENCHMARK Screw in Kerb RL 22·937m
SL23.07
SL23.09
SL23.18
283°26'30" 40·233
#10 2 RP745293
1 Storey Brick Dwelling Metal Roof
#1267 / RP745293

Back of Kerb, Invert of Kerb, Lip of Kerb, Bitumen
UPRIGHT KERB

Contour Interval :– 0·25m

Scale 1:80 Lengths are in Metres.

0·8 0·4 0 0·8 1·6 2·4 3·2 4·0 4·8 5·6 6·4 7·2 8·0 8·8 9·6 10·4 11·2

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Cadastral Surveyor Date 11/05/2023

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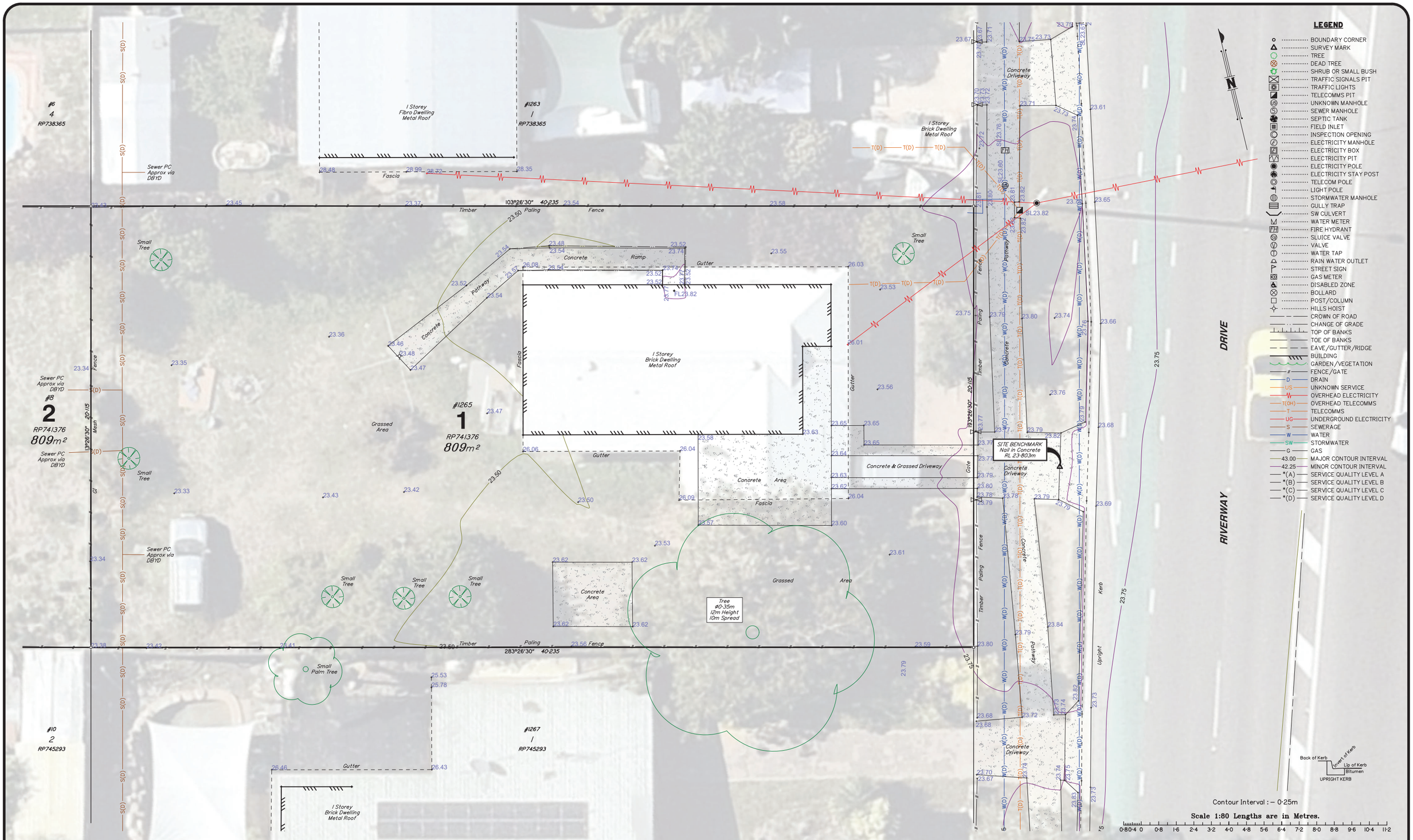
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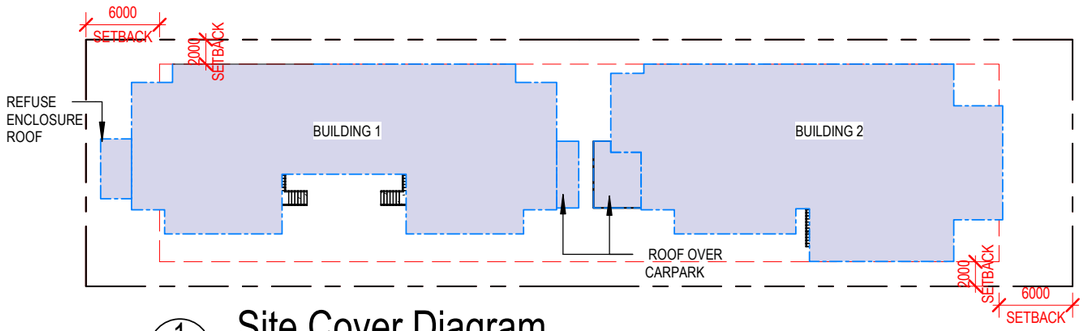
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SSG REF NO. 10427-23 | REVISION A | SHEET 5 OF 6

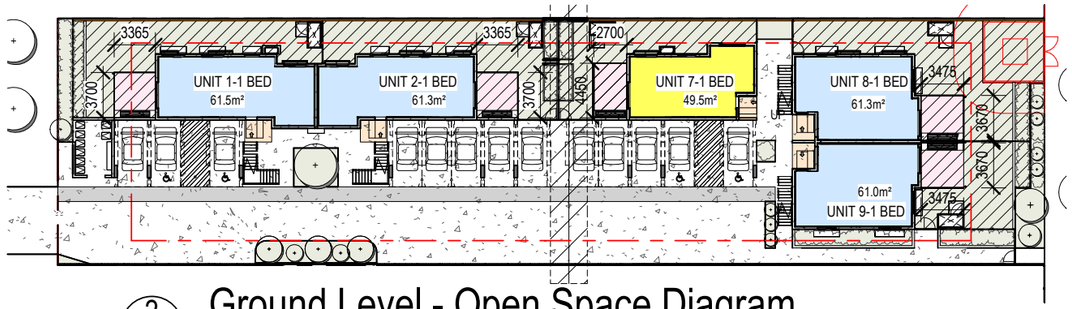
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ABN 77 088 374 869
CONSULTING SURVEYORS AND TOWN PLANNERS
3/123 Link Road Victoria Point, QLD 4165
Email: info@statewidesurvey.com.au
Phone: 1300 362 094



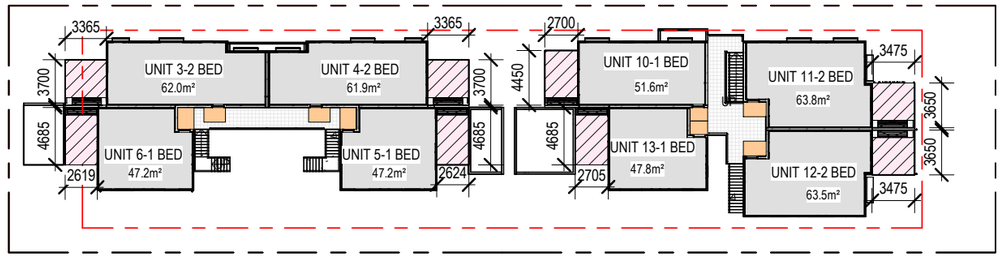
1 Site Cover Diagram

SCALE 1 : 500



2 Ground Level - Open Space Diagram

SCALE 1 : 500



3 Level 1 - Open Space Diagram

SCALE 1 : 500

TOWN PLANNING

ZONE : LOW DENSITY RESIDENTIAL ZONE

	REQUIREMENTS	PROVIDED	
MAX. BUILDING HEIGHT	8.5m (2 STOREYS)	8.1m (2 STOREYS)	not-comply
SITE COVER (TO OMP)	MAX. 65% of 1618m² (1051.7m²)	54.1% 875.9m²	comply
SETBACKS (TO OMP - SHOWN DASHED IN RED)			
FRONT (MILES AVENUE)	6.0m		not - comply
SIDE	2.0m		not - comply
REAR (RIVERWAY DRIVE)	6.0m		not - comply
LANDSCAPING	N/A		42.8m²
COMMUNUAL OPEN SPACE (COS)	N/A		N/A

PRIVATE OPEN SPACE (POS)	EACH DWELLING, HAS A PRIVATE AND FUNCTIONAL OUTDOOR LIVING AREA THAT HAS A MINIMUM DIMENSION OF NOT LESS THAN 2.4 METRES	
	DESIGNED TO SHDG 2024 V1	
REFUSE COLLECTION STRATEGY	SHDG REQUIREMENTS	
	GENERAL WASTE	RECYCLABLES
9X1 BEDROOM	80L/DWELLING/WEEK	40L/DWELLING/WEEK
4X2 BEDROOM	120L/DWELLING/WEEK	60L/DWELLING/WEEK
TOTAL	1200L	600L
BINS PROVIDED	5 x 240L (WHEELIE BIN)	3 x 240L (RECYCLE BIN)

THE SUBJECT SITE IS IMPACTED BY FLOODING.THE PROPOSED DEVELOPMENT WILL BE REQUIRED TO ACHIEVE A MINIMUM HABITABLE FLOOR LEVEL OF 23.68m.

SPACE	NO. BEDS	TYPE	FECA	UCA (patio)	GFA	PORCH	PRIVATE OPEN SPACE
UNIT 1	1	Platinum	61.5m²	10.4m²	80.9m²	4.1m²	95.1m²
UNIT 2	1	Platinum	61.3m²	10.4m²	80.9m²	4.1m²	91.8m²
UNIT 3	2	General	62.0m²	10.4m²	78.3m²	2.1m²	10.4m²
UNIT 4	2	General	61.9m²	10.4m²	78.1m²	2.1m²	10.4m²
UNIT 5	1	General	47.2m²	10.6m²	63.9m²	2.4m²	10.6m²
UNIT 6	1	General	47.2m²	10.6m²	63.9m²	2.4m²	10.6m²
UNIT 7	1	Gold	49.5m²	10.4m²	68.2m²	2.9m²	71.9m²
UNIT 8	1	Platinum	61.3m²	10.5m²	82.4m²	3.8m²	125.6m²
UNIT 9	1	Platinum	61.0m²	10.5m²	82.4m²	3.8m²	65.3m²
UNIT 10	1	General	51.6m²	10.4m²	66.8m²	1.6m²	10.4m²
UNIT 11	2	General	63.8m²	10.5m²	79.8m²	2.2m²	10.5m²
UNIT 12	2	General	63.5m²	10.5m²	79.8m²	2.2m²	10.5m²
UNIT 13	1	General	47.8m²	10.9m²	63.2m²	1.6m²	10.9m²
TOTAL	17	-	739.6m²	136.5m²	968.6m²	35.3m²	534.0m²

"Method of measurement"

FECA and UCA do not include external wall thickness

GFA = FECA + UCA + wall thickness

POS includes UCA (patio) to Units

SD-3

DRAWING INDEX SYSTEM
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- ☐ CEILING PLANS
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- ☐ EXTERNAL WORKS
- ☐ FITOUTS
- ☐ FLOOR PLANS
- ☐ FURNITURE & EQUIPMENT
- ☐ HYDRAULICS
- ☐ MASTER PLAN
- ☐ MISC DETAILS
- ☐ PLAY STRUCTURES
- ☐ ROOF PLANS
- ☐ SECTIONS
- ☐ SETOUT PLAN
- ☐ SITE PLAN
- ☒ STANDARDS / OTHER

AMENDMENTS

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B	21/02/2025	SD3	AG

Queensland Government
Department of Housing and Public Works

ST	30/01/24
DRAWN	DATE
RB / AG	30/01/24
DISCIPLINE TEAM LEADER	DATE
AUTHORISED FOR ISSUE	DATE

Social Housing Construction Program

8 MILES AVENUE & 1265 RIVERWAY DRIVE, KELSO

4X1 BED PLATINUM & 1X1 BED GOLD

4X2 BED GENERAL & 4X1 BED GENERAL

PLANNING DIAGRAMS

SCALE	As indicated
AT	A3 SIZE
MASTER SITE NUMBER	58908
CLIENT REFERENCE NUMBER	23961
DRAWING NUMBER	93378/SD/A00.02
ISSUE	B
SHEET NO	2



SIDE NEIGHBOUR DRIVEWAY AND HOUSE (VIEW FROM MILES AVENUE)



EXISTING GUM TREE AND MESH FENCE (VIEW FROM MILES AVENUE)



EXISTING DWELLING AND DRIVEWAY (VIEW FROM MILES AVENUE)



EXISTING TREE AND MESH FENCE (VIEW FROM RIVERWAY DRIVE)



SIDE BOUNDARY FENCE (VIEW TOWARDS FENCE ADJACENT TO 1267 RIVERWAY DRIVE, KELSO)



SIDE BOUNDARY FENCE (VIEW LOOKING NORTH TOWARDS EXISTING BRICK DWELLING)



EXISTING FOOTPATH AND BOUNDARY FENCE (VIEW FROM RIVERWAY DRIVE)



EXISTING CONCRETE FOOTPATH (VIEW FROM RIVERWAY DRIVE)

SD-3

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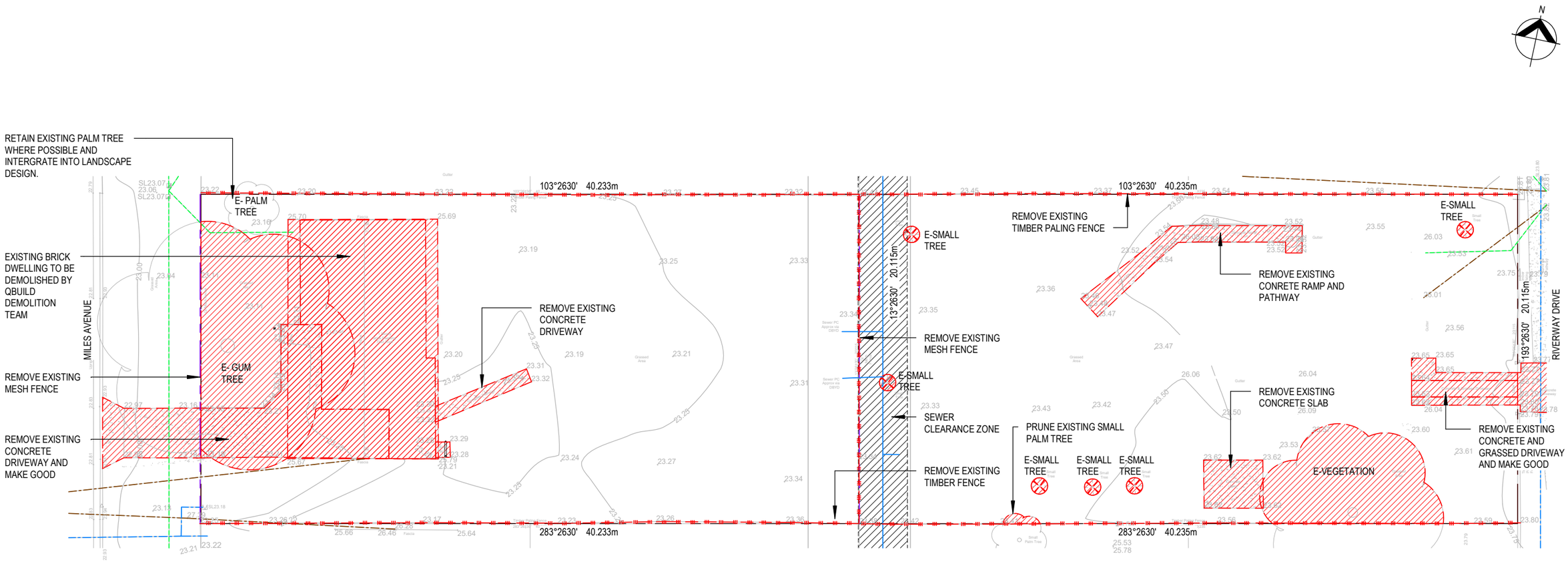
Queensland Government
Department of **Housing and Public Works**

ST — DRAWN — 22/04/24 DATE
RB / AG — DISCIPLINE TEAM LEADER — 22/04/24 DATE
AUTHORISED FOR ISSUE — DATE

Social Housing Construction Program

8 MILES AVENUE & 1265 RIVERWAY DRIVE, KELSO
4X1 BED PLATINUM & 1X1 BED GOLD
4X2 BED GENERAL & 4X1 BED GENERAL
EXISTING SITE

SCALE AT A3 SIZE
MASTER SITE NUMBER 58908
CLIENT REFERENCE NUMBER 23961
DRAWING NUMBER 93378/SD/A00.03
ISSUE B
SHEET NO 3



1 Demolition Plan

SCALE 1 : 250

LEGEND

- MESH FENCE
- WATER
- ELECTRICITY
- PROPERTY BOUNDARY
- TELSTRA
- TIMBER PALING FENCE
- REMOVE TREE / VEGETATION
- E- EXISTING

DEMOLITION AND SITE CLEARANCE NOTES

- INDICATIVE ONLY - CONTRACTOR/CONSULTANT TO VERIFY SITE CONDITIONS SHOWN ON THIS DRAWING WITH CONTOUR AND DETAIL SURVEY AND ACTUAL SITE CONDITIONS

- ALLOW FOR REMOVAL OF ALL VEGETATION, SHRUBS AND TREES UNLESS OTHERWISE DIRECTED BY SR. OTHERWISE TO BE RETAINED OR PRUNED, LOCATION OF TREES TO BE CONFIRMED ON SITE AT TIME OF CONSTRUCTION.

- TERMINATE AND CAP OFF EXISTING ELECTRICAL SERVICES TO THE SATISFACTION OF THE SUPPLYING AUTHORITIES.

- REMOVE SURPLUS GULLY / MANHOLES, GRATING AND TRENCHES.

- REINSTATE ALL DISTURBANCE TO ALL PROPERTIES AND AREAS, LIAISE WITH LOCAL AUTHORITY AND ADJACENT PROPERTY OWNERS AS NECESSARY, INCLUDING PREVENTATIVE MEASURES.

- REMOVE ANY REMAINING STRUCTURES ON SITE. CONTRACTOR TO ENSURE ANY REMAINING FOOTINGS AND OTHER DEBRIS ARE REMOVED FROM SITE PRIOR TO COMMENCEMENT OF NEW CONSTRUCTION WORK.

-ALLOW FOR REMOVAL OF ALL EXISTING FENCING ON SITE AND PROVIDE NEW FENCING AS SHOWN ON EXTERNAL WORKS PLAN

- REMOVE ALL DEMOLISHED MATERIALS AND DISPOSE OFF SITE (REFER MANAGEMENT OF FIRE ANTS IN SPECIFICATION)

- REINSTATE ANY KERBS, PATHS, CROSSOVERS TO STREET FRONTAGES TO SATISFY THE SUPPLYING AUTHORITIES.

SD-3

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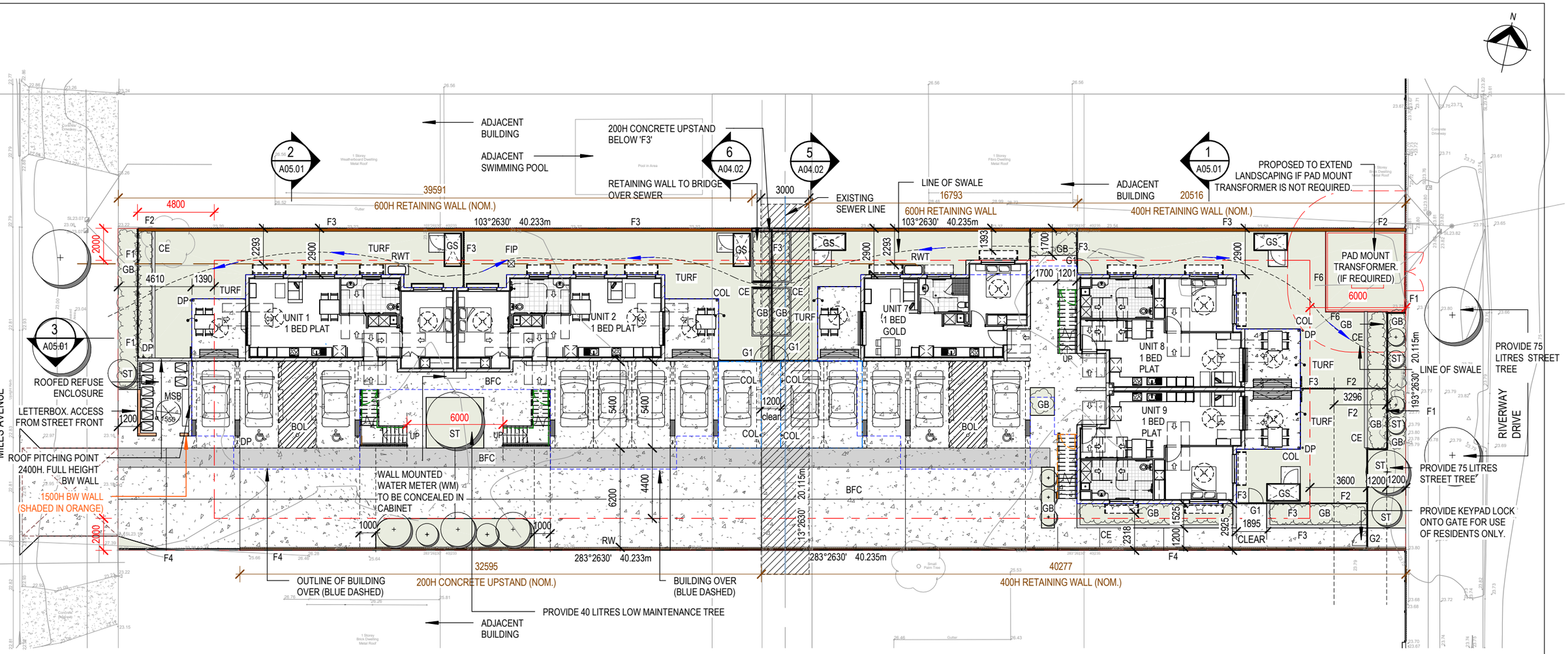
Queensland Government
Department of Housing and Public Works

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Social Housing Construction Program

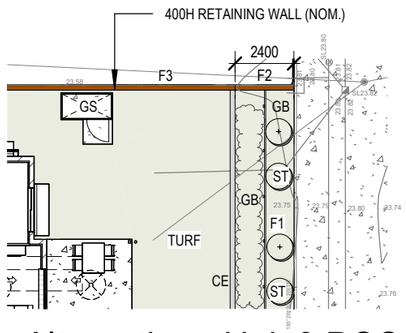
8 MILES AVENUE & 1265 RIVERWAY DRIVE, KELSO
4X1 BED PLATINUM & 1X1 BED GOLD
4X2 BED GENERAL & 4X1 BED GENERAL
DEMOLITION PLAN

SCALE	As indicated
AT	A3 SIZE
MASTER SITE NUMBER	58908
CLIENT REFERENCE NUMBER	23961
DRAWING NUMBER	93378/SD/A01.01
ISSUE	B
SHEET NO	4



1 — External Works Plan

SCALE 1 : 250



2 — Alternative - Unit 8 POS

SCALE 1 : 250 IF PAD MOUNT TRANSFORMER (PMT) NOT REQUIRED

LEGEND

PROPERTY BOUNDARY	ABS	ALUMINIUM BATTEN SCREEN	WM	WATER METER
GB/TURF GARDEN BED/ TURFING	BOL	BOLLARD	WS	WHEEL STOP
BFC CONCRETE DRIVEWAY (BFC)	BW2	140 BLOCKWORK WALL	F1	TIMBER PALING FENCE 1500H (NO GAP)
BFC PAINTED COLOURED CONCRETE PATHWAY (BFC)	COL	SHS POST	F2	TIMBER PALING FENCE RAKING (NO GAP)
CONCRETE EDGE (CE) TO GARDEN BED / TURF	DP	DOWNPIPE	F3	TIMBER PALING FENCE 1800H (NO GAP)
BROWN DASHED LINE INDICATIVE LOCATION OF LOW FLOW PIPE	FIP	FIELD INLET PIT	F4	TIMBER PALING ACOUSTIC FENCE 1800H (DOUBLE LAPPED)
STEP	GB	LOW SHRUBS GARDEN BED	F5	TIMBER PALING FENCE RAKING (DOUBLE LAPPED)
	G1	LOCKABLE 1800mm TIMBER PALING PRIVATE GATE	F6	ALUMINIUM FLAT TOP POOL TYPE FENCE 1200H
	G2	LOCKABLE GATE	+RLXX.XX	PROPOSED SURFACE LEVEL
	GS	GARDEN SHED	+ERLXX.XX	EXISTING LEVEL
	LB	LETTER BOX		ADJACENT SURFACES FLUSH
	MSB	MAIN SWITCHBOARD		
	RW	RETAINING WALL	GREEN DASHED LINE	SCREEN (SCN-1) TO UNDERSIDE OF STAIR
	RWT	650L RAINWATER TANK FITTED WITH A 10mm DIAMETER OUTLET ORIFICE, LOCATE RWT ON CONCRETE SLAB. RWT TO BE 100mm ABOVE GROUNDAND ON CONCRETE SLAB.	ORANGE DASHED LINE	SCREEN (SCN-1) FIXED TO STAIR STRINGER
	ST	45 LITRES LOW MAINTENANCE TREE		

NOTE:

1. WASTE BINS TO BE BROUGHT TO THE KERBS ON BIN COLLECTION DAY.
2. PROVIDE SCREEN TO UNDERSIDE OF STAIRS TO LIMIT STORAGE OF RUBBISH, AS PER SHDG COMMENT. EXTENT OF SCREEN UNDER STAIR SHOWN IN GREEN DASHED.
3. LIGHTING TO BE PROVIDED TO DRIVEWAY AND CARPARK. ALL LIGHTING TO HAVE BACKSHIELDS TO ENSURE NIL LIGHTSPILL TO NEIGHBOURING PROPERTY (SOUTH).
4. REQUIRED PLANNING SETBACKS MEASURED TO "OMP" SHOWN IN RED — — — —
5. PARTY WALLS & SLABS: VERIFY DETAIL TO ACHIEVE ACOUSTIC RATING TO COMPLY WITH NCC. ADJUST O/A BUILDING WIDTH & HEIGHT ACCORDINGLY.

SD-3

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AMENDMENTS

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Queensland Government
Department of Housing and Public Works

ST 08/04/24
DRAWN DATE

RB / AG 08/04/24
DISCIPLINE TEAM LEADER DATE

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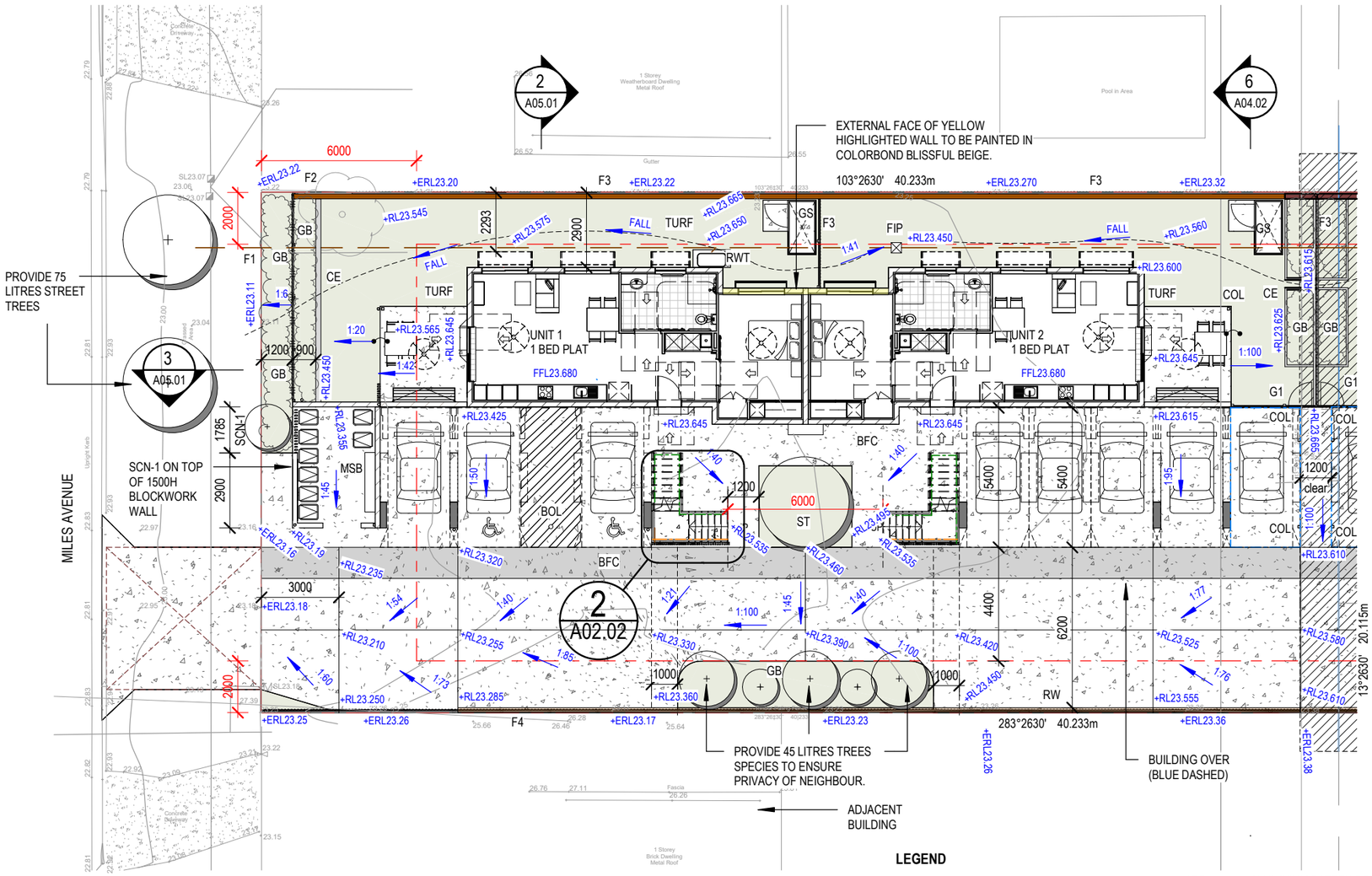
Social Housing Construction Program

8 MILES AVENUE & 1265 RIVERWAY DRIVE, KELSO
4X1 BED PLATINUM & 1X1 BED GOLD
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EXTERNAL WORKS PLAN - SHEET 1

SCALE	AT
As indicated	A3 SIZE

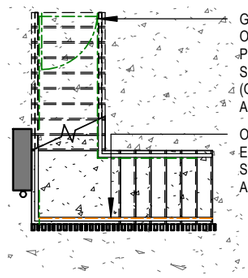
MASTER SITE NUMBER	CLIENT REFERENCE NUMBER
58908	23961

DRAWING NUMBER	ISSUE	SHEET NO
93378/SD/A02.01	B	5



1 External Works Plan_Part 1

SCALE 1 : 200



GREEN DASHED LINE INDICATES EXTENT OF SCREEN (SCN-1) UNDER STAIR. PROVIDE GATE FOR CLEANING. GATE SHOWN INDICATIVELY. (GATE & SCREEN EXTENT APPLICABLE TO ALL BUILDING 1 STAIRS)

ORANGE DASHED LINE INDICATES EXTENT OF SCREEN (SCN-1) FIXED TO STAIR STRINGER. (SCREEN EXTENT APPLICABLE TO ALL BUILDING 1 STAIRS)

2 Building 1 Stair

SCALE 1 : 100

LEGEND

PROPERTY BOUNDARY	
GB/TURF	GARDEN BED/ TURFING
BFC	CONCRETE DRIVEWAY (BFC)
BFC	PAINTED COLOURED CONCRETE PATHWAY (BFC)
CE	CONCRETE EDGE (CE) TO GARDEN BED / TURF
BROWN DASHED LINE	INDICATIVE LOCATION OF LOW FLOW PIPE
STEP	

ABS	ALUMINIUM BATTEN SCREEN
BOL	BOLLARD
BW2	140 BLOCKWORK WALL
COL	SHS POST
DP	DOWNPIPE
FIP	FIELD INLET PIT
GB	LOW SHRUBS GARDEN BED
G1	LOCKABLE 1800mm TIMBER PALING PRIVATE GATE
G2	LOCKABLE GATE
GS	GARDEN SHED
LB	LETTER BOX
MSB	MAIN SWITCHBOARD
RW	RETAINING WALL
RWT	650L RAINWATER TANK FITTED WITH A 10mm DIAMETER OUTLET ORIFICE, LOCATE RWT ON CONCRETE SLAB. RWT TO BE 100mm ABOVE GROUNDAND ON CONCRETE SLAB.
ST	45 LITRES LOW MAINTENANCE TREE

WM	WATER METER
WS	WHEEL STOP
F1	TIMBER PALING FENCE 1500H (NO GAP)
F2	TIMBER PALING FENCE RAKING (NO GAP)
F3	TIMBER PALING FENCE 1800H (NO GAP)
F4	TIMBER PALING ACOUSTIC FENCE 1800H (DOUBLE LAPPED)
F5	TIMBER PALING FENCE RAKING (DOUBLE LAPPED)
F6	ALUMINIUM FLAT TOP POOL TYPE FENCE 1200H (IF PMT IS REQUIRED)
+RLXX.XX	PROPOSED SURFACE LEVEL
+ERLXX.XX	EXISTING LEVEL
	ADJACENT SURFACES FLUSH
GREEN DASHED LINE	SCREEN (SCN-1) TO UNDERSIDE OF STAIR
ORANGE DASHED LINE	SCREEN (SCN-1) FIXED TO STAIR STRINGER

NOTE:

1. WASTE BINS TO BE BROUGHT TO THE KERBS ON BIN COLLECTION DAY.
2. PROVIDE SCREEN TO UNDERSIDE OF STAIRS TO LIMIT STORAGE OF RUBBISH, AS PER SHDG COMMENT. EXTENT OF SCREEN UNDER STAIR SHOWN IN GREEN DASHED.
3. LIGHTING TO BE PROVIDED TO DRIVEWAY AND CARPARK. ALL LIGHTING TO HAVE BACKSHIELDS TO ENSURE NIL LIGHTSPILL TO NEIGHBOURING PROPERTY (SOUTH).
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5.PARTY WALLS & SLABS: VERIFY DETAIL TO ACHIEVE ACOUSTIC RATING TO COMPLY WITH NCC. ADJUST O/A BUILDING WIDTH & HEIGHT ACCORDINGLY.

SD-3

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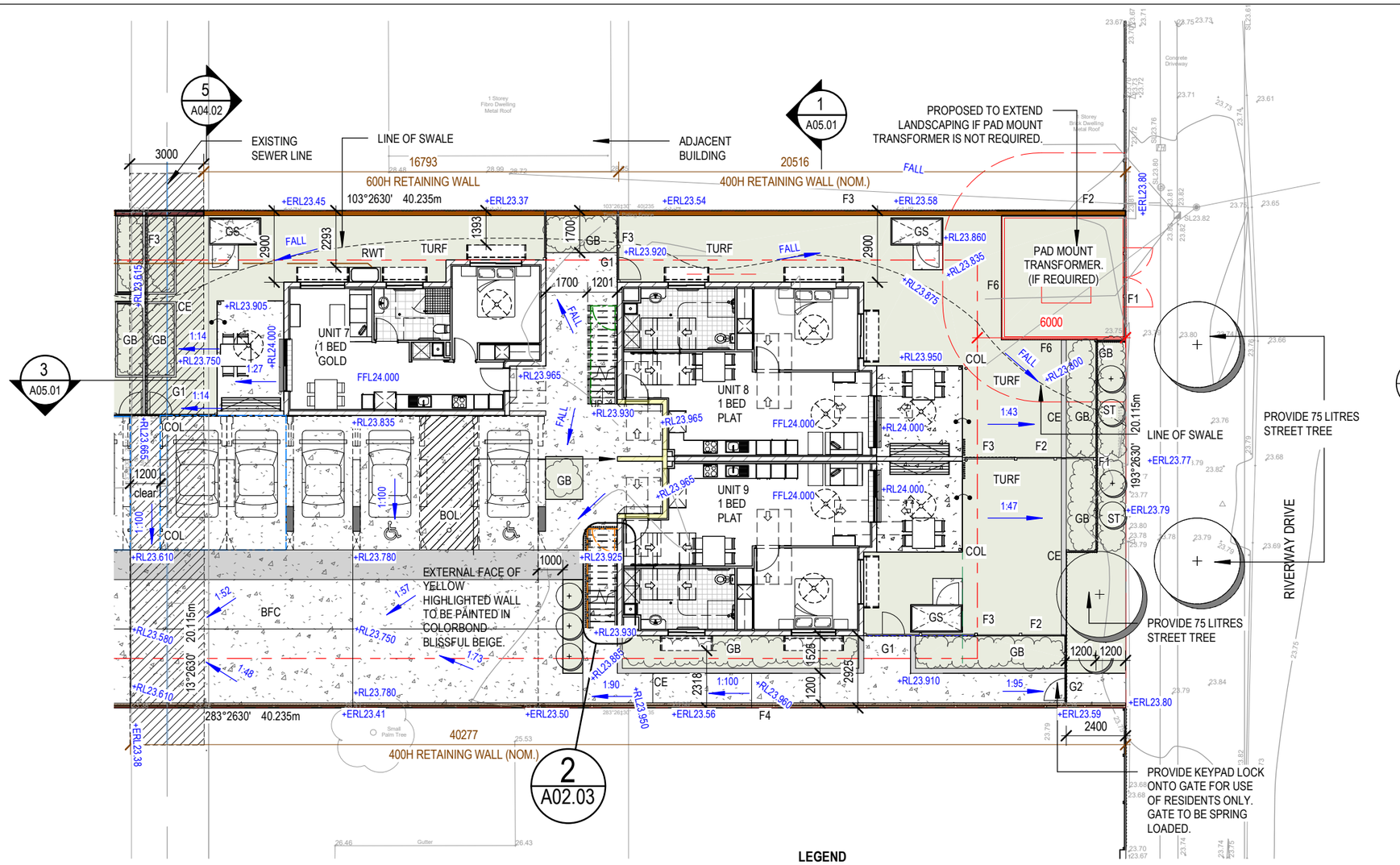
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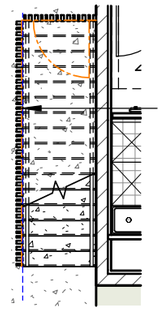
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Social Housing Construction Program

8 MILES AVENUE & 1265 RIVERWAY DRIVE, KELSO
4X1 BED PLATINUM & 1X1 BED GOLD
4X2 BED GENERAL & 4X1 BED GENERAL
EXTERNAL WORKS PLAN - SHEET 2

SCALE	As indicated
AT	A3 SIZE
MASTER SITE NUMBER	58908
CLIENT REFERENCE NUMBER	23961
DRAWING NUMBER	93378/SD/A02.02
ISSUE	B
SHEET NO	6





ORANGE DASHED LINE INDICATES EXTENT OF SCREEN (SCN-1) FIXED TO STAIR STRINGER. PROVIDE GATE FOR CLEANING. GATE SHOWN INDICATIVELY.

2 Building 2 Stair

SCALE 1 : 100

1 External Works Plan_Part 2

SCALE 1 : 200

LEGEND

- PROPERTY BOUNDARY
- GB/TURF — GARDEN BED/ TURFING
- BFC — CONCRETE DRIVEWAY (BFC)
- BFC — PAINTED COLOURED CONCRETE PATHWAY (BFC)
- CONCRETE EDGE (CE) TO GARDEN BED / TURF
- BROWN DASHED LINE — INDICATIVE LOCATION OF LOW FLOW PIPE
- STEP

ABS	ALUMINIUM BATTEN SCREEN
BOL	BOLLARD
BW2	140 BLOCKWORK WALL
COL	SHS POST
DP	DOWNPIPE
FIP	FIELD INLET PIT
GB	LOW SHRUBS GARDEN BED
G1	LOCKABLE 1800mm TIMBER PALING PRIVATE GATE
G2	LOCKABLE GATE
GS	GARDEN SHED
LB	LETTER BOX
MSB	MAIN SWITCHBOARD
RW	RETAINING WALL
RWT	650L RAINWATER TANK FITTED WITH A 10mm DIAMETER OUTLET ORIFICE, LOCATE RWT ON CONCRETE SLAB. RWT TO BE 100mm ABOVE GROUNDAND ON CONCRETE SLAB.
ST	45 LITRES LOW MAINTENANCE TREE
WM	WATER METER
WS	WHEEL STOP
F1	TIMBER PALING FENCE 1500H (NO GAP)
F2	TIMBER PALING FENCE RAKING (NO GAP)
F3	TIMBER PALING FENCE 1800H (NO GAP)
F4	TIMBER PALING ACOUSTIC FENCE 1800H (DOUBLE LAPPED)
F5	TIMBER PALING FENCE RAKING (DOUBLE LAPPED)
F6	ALUMINIUM FLAT TOP POOL TYPE FENCE 1200H
+RLXX.XX	PROPOSED SURFACE LEVEL
+ERLXX.XX	EXISTING LEVEL

- ADJACENT SURFACES FLUSH
- GREEN DASHED LINE — SCREEN (SCN-1) TO UNDERSIDE OF STAIR
- ORANGE DASHED LINE — SCREEN (SCN-1) FIXED TO STAIR STRINGER

NOTE:

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3. LIGHTING TO BE PROVIDED TO DRIVEWAY AND CARPARK. ALL LIGHTING TO HAVE BACKSHIELDS TO ENSURE NIL LIGHTSPILL TO NEIGHBOURING PROPERTY (SOUTH).
4. REQUIRED PLANNING SETBACKS MEASURED TO "OMP" SHOWN IN RED — — — —
5. PARTY WALLS & SLABS: VERIFY DETAIL TO ACHIEVE ACOUSTIC RATING TO COMPLY WITH NCC. ADJUST O/A BUILDING WIDTH & HEIGHT ACCORDINGLY.

SD-3

DRAWING INDEX SYSTEM
FOR QBUILD USE ONLY

- ☐ CEILING PLANS
- ☐ CONSTRUCTION DETAILS
- ☐ ELEVATIONS
- ☒ EXTERNAL WORKS
- ☐ FITOUTS
- ☐ FLOOR PLANS
- ☐ FURNITURE & EQUIPMENT
- ☐ HYDRAULICS
- ☐ MASTER PLAN
- ☐ MISC DETAILS
- ☐ PLAY STRUCTURES
- ☐ ROOF PLANS
- ☐ SECTIONS
- ☐ SETOUT PLAN
- ☐ SITE PLAN
- ☐ STANDARDS / OTHER

AMENDMENTS

ISSUE	DATE	SUBJECT	AUTHO-RISED
A	25/06/2024	PD3 - FOR REVIEW	RB
B	29/07/2024	PD3 - FOR REVIEW	AG
A	30/10/2024	SD1 - FOR REVIEW	AG
A	15/01/2025	SD2 - FOR REVIEW	AG
A	10/02/2025	SD3 - FOR REVIEW	AG
B	21/02/2025	SD3	AG

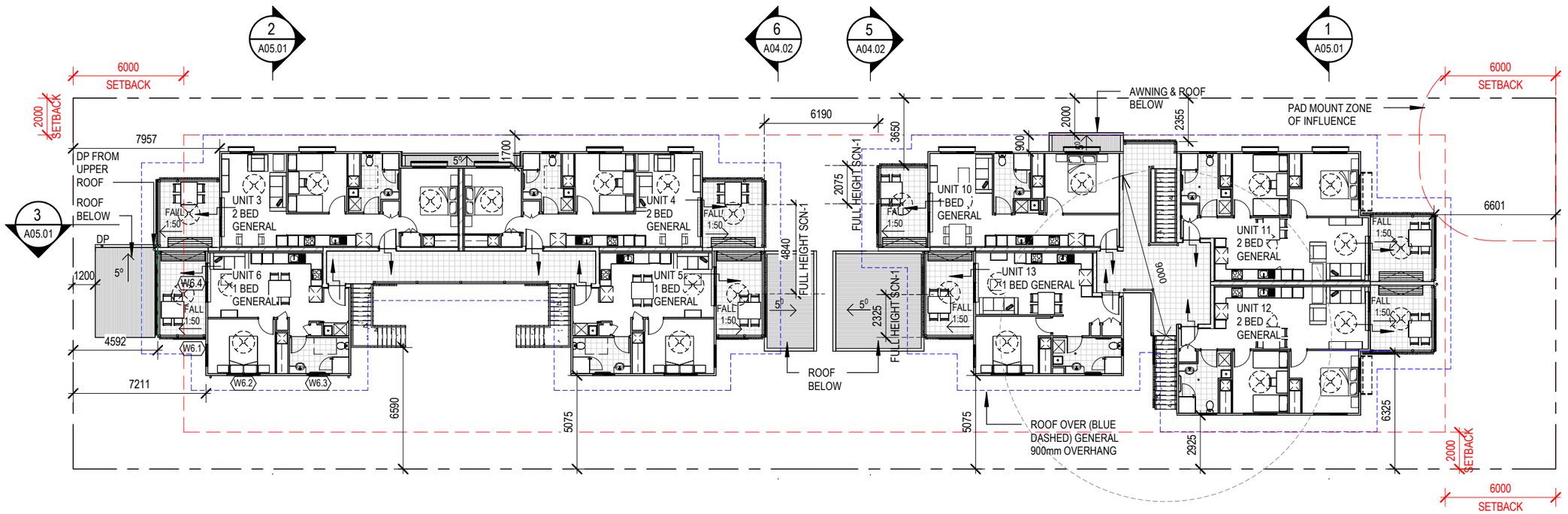
Queensland Government
Department of Housing and Public Works

ST	08/04/24
DRAWN	DATE
RB / AG	08/04/24
DISCIPLINE TEAM LEADER	DATE
AUTHORISED FOR ISSUE	DATE

Social Housing Construction Program

8 MILES AVENUE & 1265 RIVERWAY DRIVE, KELSO
4X1 BED PLATINUM & 1X1 BED GOLD
4X2 BED GENERAL & 4X1 BED GENERAL
EXTERNAL WORKS PLAN - SHEET 3

SCALE	AT		
As indicated	A3 SIZE		
MASTER SITE NUMBER	CLIENT REFERENCE NUMBER		
58908	23961		
DRAWING NUMBER	ISSUE	SHEET NO	
93378/SD/A02.03	B	7	



1 First Floor Plan

SCALE 1 : 250

SD-3

DRAWING INDEX SYSTEM
FOR QBUILD USE ONLY

- ☐ CEILING PLANS
- ☐ CONSTRUCTION DETAILS
- ☐ ELEVATIONS
- ☐ EXTERNAL WORKS
- ☐ FITOUTS
- ☒ FLOOR PLANS
- ☐ FURNITURE & EQUIPMENT
- ☐ HYDRAULICS
- ☐ MASTER PLAN
- ☐ MISC DETAILS
- ☐ PLAY STRUCTURES
- ☐ ROOF PLANS
- ☐ SECTIONS
- ☐ SETOUT PLAN
- ☐ SITE PLAN
- ☐ STANDARDS / OTHER

AMENDMENTS

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B	29/07/2024	PD3 - FOR REVIEW	AG
A	30/10/2024	SD1 - FOR REVIEW	AG
A	15/01/2025	SD2 - FOR REVIEW	AG
A	10/02/2025	SD3 - FOR REVIEW	AG
B	21/02/2025	SD3	AG

Queensland Government
Department of **Housing and Public Works**

ST	08/04/24
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Social Housing Construction Program

8 MILES AVENUE & 1265 RIVERWAY DRIVE, KELSO
4X1 BED PLATINUM & 1X1 BED GOLD
4X2 BED GENERAL & 4X1 BED GENERAL
FIRST FLOOR PLAN

SCALE	AT
1 : 250	A3 SIZE
MASTER SITE NUMBER	CLIENT REFERENCE NUMBER
58908	23961
DRAWING NUMBER	ISSUE / SHEET NO
93378/SD/A02.04	B / 8

LEGEND

BFC	BROOM FINISH CONCRETE	COL	COLUMN	GS	GARDEN SHED	NBN/DB	'NBN AND DISTRIBUTION B'WITH SPACE TO FIT	S	SINK	TD	THRESHOLD DRAIN	WC	TOILET SUITE WITH CISTERN
BR	BROOM CUPBOARD	DP	METAL DOWN PIPE	HP	HOT PLATES		ROUTER DEVICE IN PROPRIETARY CABINET	SC	PRIVACY SCREEN - TO WINDOW	TRP	1:8 CONCRETE THRESHOLD	WM	WASHING MACHINE
CF	CEILING FAN	DR	DRYER	HWU	INSTANTANEOUS HOT WATER UNIT		RECESSED IN FRAMED WALL	SCN	VERTICAL ALUM. BATTEN		RAMP; HEIGHT: 35MM;	WO	WALL OVEN
CL	SLIMLINE CLOTHESLINE	FW	FLOOR WASTE	LN	LINEN CUPBOARD	O/C	OVERHEAD CUPBOARD	SCREEN			LENGTH: TO SPAN ACROSS DOOR		
	(Aus. Made Eco 240 or equal & approved)	G2	VERTICAL ALUM. BATTEN GALT	LT	LAUNDRY TUB	PAN	PANTRY	SD	SECURITY SCREEN DOOR		OPENING		1500x1500 CLEAR ZONE
CT	CERAMIC TILES	GR	GRAB RAIL (TO AS1428.1)	MW	MICROWAVE - 1100mm AFFL	REF	REFRIGERATOR	SH	SUN HOOD - TO WINDOW	TR	TOWEL RAIL		2400x2400 CLEAR ZONE
						RH	RANGE HOOD (DUCTED EXTERNALLY)	SHL	SHELF	V	VINYL		1200x1200 CLEAR ZONE
								SHR	SHOWER	VB	VANITY BASIN (SEMI RECESSED)		900x900 CLEAR ZONE
								STD	STRIP DRAIN	W	WINDOW		1000x1000 CLEAR ZONE
											STEP		1540x2070 CLEAR ZONE
											BATHROOM FALL		1600x1400 CLEAR ZONE
													2250 DIA. TURNING CIRCLE

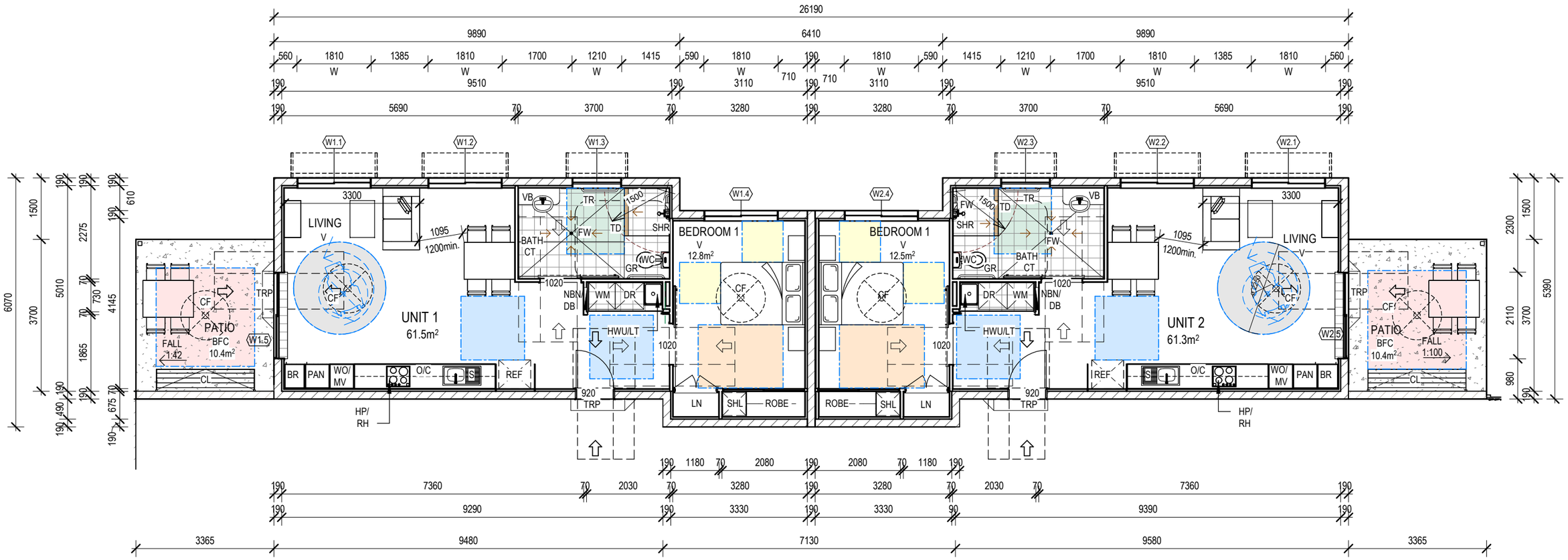
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NOTES

FLOOR SLAB SETDOWNS:
BATHROOM , WC & LAUNDRY - min. 50mm

PROVIDE WATERPROOFING TO ALL WET ZONES IN ACCORDANCE WITH NCC.

NOTE: PLATINUM UNIT SHOWER OUTLET LOCATION IS DEEMED TO BE COMPLIANT WITH NCC VOL 3 TO PREVENT SHOWER HEAD TOUCHING WC RIM – WHEN LOCATED 100MM FROM WALL CORNER 1200MM AFFL. ALTERNATIVELY, IF THE OUTLET LOCATION CANNOT ACHIEVE THIS PREVENTION THEN PROVIDE A PROPRIETARY HOSE RESTRICTOR BRACKET. (REFER QBUILD TYPICAL CONSTRUCTION DETAILS FOR BATHROOMS).



1 Unit 1 & 2 - Platinum Level

SCALE 1 : 100

SD-3

DRAWING INDEX SYSTEM
FOR QBUILD USE ONLY

- ☐ CEILING PLANS
- ☐ CONSTRUCTION DETAILS
- ☐ ELEVATIONS
- ☐ EXTERNAL WORKS
- ☐ FITOUTS
- ☒ FLOOR PLANS
- ☐ FURNITURE & EQUIPMENT
- ☐ HYDRAULICS
- ☐ MASTER PLAN
- ☐ MISC DETAILS
- ☐ PLAY STRUCTURES
- ☐ ROOF PLANS
- ☐ SECTIONS
- ☐ SETOUT PLAN
- ☐ SITE PLAN
- ☐ STANDARDS / OTHER

AMENDMENTS

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A	30/10/2024	SD1 - FOR REVIEW	AG
A	15/01/2025	SD2 - FOR REVIEW	AG
A	10/02/2025	SD3 - FOR REVIEW	AG
B	21/02/2025	SD3	AG

Queensland Government
Department of **Housing and Public Works**

ST	22/04/24
DRAWN	DATE
RB / AG	22/04/24
DISCIPLINE TEAM LEADER	DATE
AUTHORISED FOR ISSUE	DATE

Social Housing Construction Program

8 MILES AVENUE & 1265 RIVERWAY DRIVE, KELSO
4X1 BED PLATINUM & 1X1 BED GOLD
4X2 BED GENERAL & 4X1 BED GENERAL
UNIT PLANS - SHEET 1

SCALE	AT
1 : 100	A3 SIZE

MASTER SITE NUMBER	CLIENT REFERENCE NUMBER
58908	23961

DRAWING NUMBER	ISSUE	SHEET NO
93378/SD/A02.05	B	9

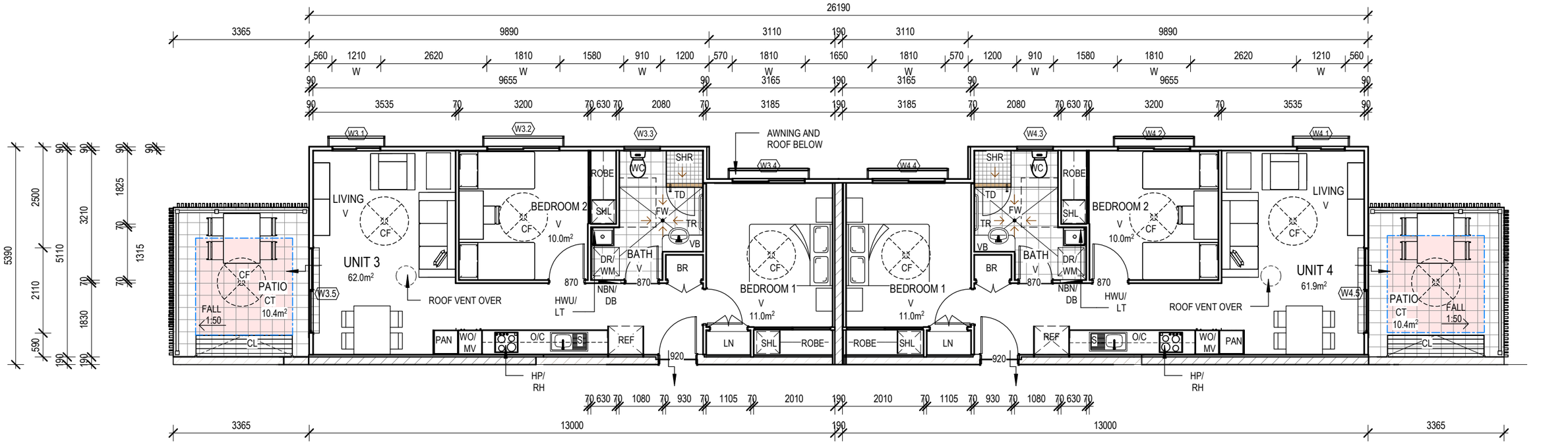
LEGEND

BFC	BROOM FINISH CONCRETE	COL	COLUMN	GS	GARDEN SHED	NBN/DB	'NBN AND DISTRIBUTION B'WITH SPACE TO FIT ROUTER DEVICE IN PROPRIETARY CABINET RECESSED IN FRAMED WALL	S	SINK	TD	THRESHOLD DRAIN	WC	TOILET SUITE WITH CISTERN
BR	BROOM CUPBOARD	DP	METAL DOWN PIPE	HP	HOT PLATES			SC	PRIVACY SCREEN - TO WINDOW	TRP	1:8 CONCRETE THRESHOLD RAMP; HEIGHT: 35MM; LENGTH: TO SPAN ACROSS DOOR OPENING	WM	WASHING MACHINE
CF	CEILING FAN	DR	DRYER	HWU	INSTANTANEOUS HOT WATER UNIT			SCN	VERTICAL ALUM. BATTEN SCREEN			WO	WALL OVEN
CL	SLIMLINE CLOTHESLINE (Aus. Made Eco 240 or equal & approved)	FW	FLOOR WASTE	LN	LINEN CUPBOARD	O/C	OVERHEAD CUPBOARD	SD	SECURITY SCREEN DOOR				1500x1500 CLEAR ZONE / 2400x2400 CLEAR ZONE
		G2	VERTICAL ALUM. BATTEN GALT.		LAUNDRY TUB	PAN	PANTRY	SH	SUN HOOD - TO WINDOW	TR	TOWEL RAIL		
CT	CERAMIC TILES	GR	GRAB RAIL (TO AS1428.1)	MW	MICROWAVE - 1100mm AFFL	REF	REFRIGERATOR	SHL	SHELF	V	VINYL		1200x1200 CLEAR ZONE
						RH	RANGE HOOD (DUCTED EXTERNALLY)	SHR	SHOWER	VB	VANITY BASIN (SEMI RECESSED)		900x900 CLEAR ZONE
								STD	STRIP DRAIN	W	WINDOW		1000x1000 CLEAR ZONE
											STEP		1540x2070 CLEAR ZONE
											BATHROOM FALL		1600x1400 CLEAR ZONE
													2250 DIA. TURNING CIRCLE

NOTES

FLOOR SLAB SETDOWNS:
BATHROOM , WC & LAUNDRY - min. 50mm

PROVIDE WATERPROOFING TO ALL WET ZONES IN ACCORDANCE WITH NCC.



1 Unit 3 & 4 - General Level

SCALE 1 : 100

SD-3

DRAWING INDEX SYSTEM
FOR QBUILD USE ONLY

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- ☐ FITOUTS
- ☒ FLOOR PLANS
- ☐ FURNITURE & EQUIPMENT
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- ☐ MASTER PLAN
- ☐ MISC DETAILS
- ☐ PLAY STRUCTURES
- ☐ ROOF PLANS
- ☐ SECTIONS
- ☐ SETOUT PLAN
- ☐ SITE PLAN
- ☐ STANDARDS / OTHER

AMENDMENTS

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A	25/06/2024	PD3 - FOR REVIEW	RB
B	29/07/2024	PD3 - FOR REVIEW	AG
A	30/10/2024	SD1 - FOR REVIEW	AG
A	15/01/2025	SD2 - FOR REVIEW	AG
A	10/02/2025	SD3 - FOR REVIEW	AG
B	21/02/2025	SD3	AG

Queensland Government
Department of Housing and Public Works

ST	22/04/24
DRAWN	DATE
RB / AG	22/04/24
DISCIPLINE TEAM LEADER	DATE
AUTHORISED FOR ISSUE	DATE

Social Housing Construction Program

8 MILES AVENUE & 1265 RIVERWAY DRIVE, KELSO
4X1 BED PLATINUM & 1X1 BED GOLD
4X2 BED GENERAL & 4X1 BED GENERAL
UNIT PLANS - SHEET 2

SCALE	1 : 100
AT	A3 SIZE
MASTER SITE NUMBER	58908
CLIENT REFERENCE NUMBER	23961
DRAWING NUMBER	93378/SD/A02.06
ISSUE	B
SHEET NO	10

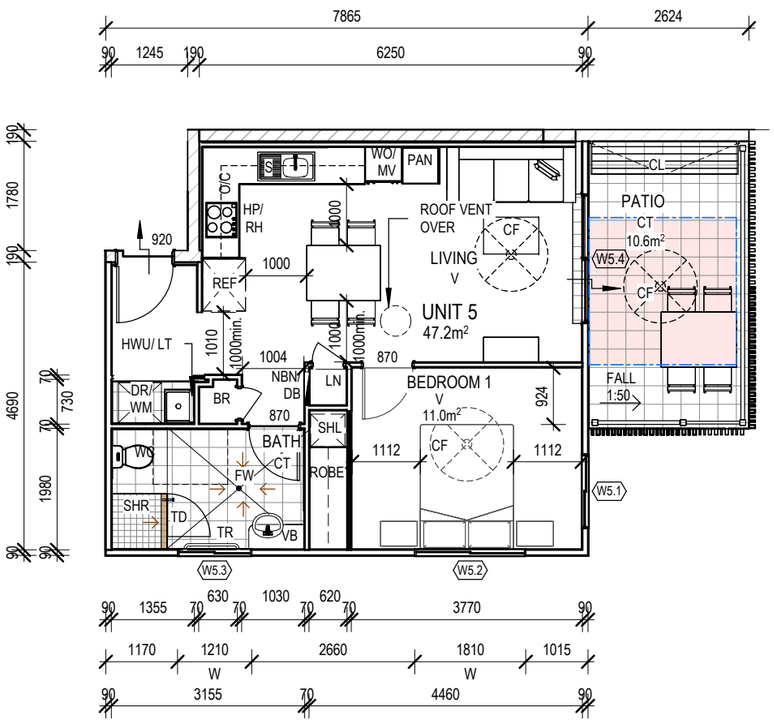
LEGEND

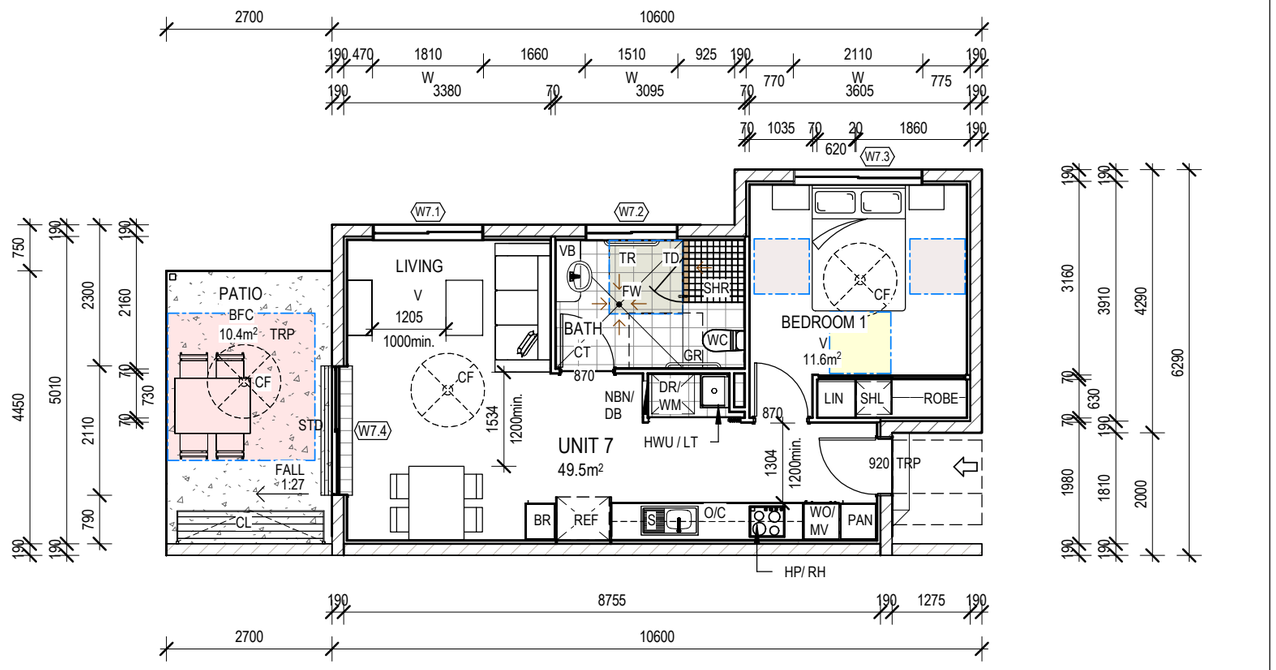
BFC	BROOM FINISH CONCRETE	COL	COLUMN	GS	GARDEN SHED	NBN/DB	'NBN AND DISTRIBUTION B'WITH SPACE TO FIT ROUTER DEVICE IN PROPRIETARY CABINET	S	SINK	TD	THRESHOLD DRAIN	WC	TOILET SUITE WITH CISTERN
BR	BROOM CUPBOARD	DP	METAL DOWN PIPE	HP	HOT PLATES		RECESSED IN FRAMED WALL	SC	PRIVACY SCREEN - TO WINDOW	TRP	1:8 CONCRETE THRESHOLD RAMP; HEIGHT: 35MM; LENGTH: TO SPAN ACROSS DOOR OPENING	WM	WASHING MACHINE
CF	CEILING FAN	DR	DRYER	HWU	INSTANTANEOUS HOT WATER UNIT	O/C	OVERHEAD CUPBOARD	SCN	VERTICAL ALUM. BATTEN SCREEN			WO	WALL OVEN
CL	SLIMLINE CLOTHESLINE (Aus. Made Eco 240 or equal & approved)	FW	FLOOR WASTE	LN	LINEN CUPBOARD	PAN	PANTRY	SD	SECURITY SCREEN DOOR				1500x1500 CLEAR ZONE / 2400x2400 CLEAR ZONE
CT	CERAMIC TILES	G2	VERTICAL ALUM. BATTEN GALT.	LT	LAUNDRY TUB	REF	REFRIGERATOR	SH	SUN HOOD - TO WINDOW	TR	TOWEL RAIL		
		GR	GRAB RAIL (TO AS1428.1)	MW	MICROWAVE - 1100mm AFFL	RH	RANGE HOOD (DUCTED EXTERNALLY)	SHL	SHELF	V	VINYL		1200x1200 CLEAR ZONE
								SHR	SHOWER	VB	VANITY BASIN (SEMI RECESSED)		900x900 CLEAR ZONE
								STD	STRIP DRAIN	W	WINDOW		1000x1000 CLEAR ZONE
											STEP		1540x2070 CLEAR ZONE
											BATHROOM FALL		1600x1400 CLEAR ZONE
													2250 DIA. TURNING CIRCLE

NOTES

FLOOR SLAB SETDOWNS:
BATHROOM , WC & LAUNDRY - min. 50mm

PROVIDE WATERPROOFING TO ALL WET ZONES IN ACCORDANCE WITH NCC.





1 Unit 5 - General Level

SCALE 1 : 100

Unit 6 (Mirrored), Refer A02.04 For Unit 6 Windows Numbers

2 Unit 7 - Gold Level

SCALE 1 : 100

SD-3

DRAWING INDEX SYSTEM
FOR QBUILD USE ONLY

- ☐ CEILING PLANS
- ☐ CONSTRUCTION DETAILS
- ☐ ELEVATIONS
- ☐ EXTERNAL WORKS
- ☐ FITOUTS
- ☒ FLOOR PLANS
- ☐ FURNITURE & EQUIPMENT
- ☐ HYDRAULICS
- ☐ MASTER PLAN
- ☐ MISC DETAILS
- ☐ PLAY STRUCTURES
- ☐ ROOF PLANS
- ☐ SECTIONS
- ☐ SETOUT PLAN
- ☐ SITE PLAN
- ☐ STANDARDS / OTHER

AMENDMENTS

ISSUE	DATE	SUBJECT	AUTHO -RISED
B	29/07/2024	PD3 - FOR REVIEW	AG
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B	10/02/2025	SD3 - FOR REVIEW	AG
A	10/02/2025	SD3 - FOR REVIEW	AG
B	21/02/2025	SD3	AG

Queensland Government
Department of **Housing and Public Works**

ST	25/06/24	
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RB / AG	25/06/24	
DISCIPLINE TEAM LEADER	DATE	
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Social Housing Construction Program

8 MILES AVENUE & 1265 RIVERWAY DRIVE, KELSO
4X1 BED PLATINUM & 1X1 BED GOLD
4X2 BED GENERAL & 4X1 BED GENERAL
UNIT PLANS - SHEET 3

SCALE	AT
1 : 100	A3 SIZE

MASTER SITE NUMBER	CLIENT REFERENCE NUMBER
58908	23961

DRAWING NUMBER	ISSUE	SHEET NO
93378/SD/A02.07	B	11

LEGEND

BFC	BROOM FINISH CONCRETE	COL	COLUMN	GS	GARDEN SHED	NBN/DB	'NBN AND DISTRIBUTION B'WITH SPACE TO FIT	S	SINK	TD	THRESHOLD DRAIN	WC	TOILET SUITE WITH CISTERN
BR	BROOM CUPBOARD	DP	METAL DOWN PIPE	HP	HOT PLATES		ROUTER DEVICE IN PROPRIETARY CABINET	SC	PRIVACY SCREEN - TO WINDOW	TRP	1:8 CONCRETE THRESHOLD	WM	WASHING MACHINE
CF	CEILING FAN	DR	DRYER	HWU	INSTANTANEOUS HOT WATER UNIT		RECESSED IN FRAMED WALL	SCN	VERTICAL ALUM. BATTEN		RAMP; HEIGHT: 35MM;	WO	WALL OVEN
CL	SLIMLINE CLOTHESLINE	FW	FLOOR WASTE	LN	LINEN CUPBOARD	O/C	OVERHEAD CUPBOARD		SCREEN		LENGTH: TO SPAN ACROSS DOOR		
	(Aus. Made Eco 240 or equal & approved)	G2	VERTICAL ALUM. BATTEN GALT.		LAUNDRY TUB	PAN	PANTRY	SD	SECURITY SCREEN DOOR		OPENING		1500x1500 CLEAR ZONE
CT	CERAMIC TILES	GR	GRAB RAIL (TO AS1428.1)	MW	MICROWAVE - 1100mm AFFL	REF	REFRIGERATOR	SH	SUN HOOD - TO WINDOW	TR	TOWEL RAIL		2400x2400 CLEAR ZONE
						RH	RANGE HOOD (DUCTED EXTERNALLY)	SHL	SHELF	V	VINYL		1200x1200 CLEAR ZONE
								SHR	SHOWER	VB	VANITY BASIN (SEMI RECESSED)		900x900 CLEAR ZONE
								STD	STRIP DRAIN				1000x1000 CLEAR ZONE
										W	WINDOW		1540x2070 CLEAR ZONE
											STEP		1600x1400 CLEAR ZONE
											BATHROOM FALL		2250 DIA. TURNING CIRCLE

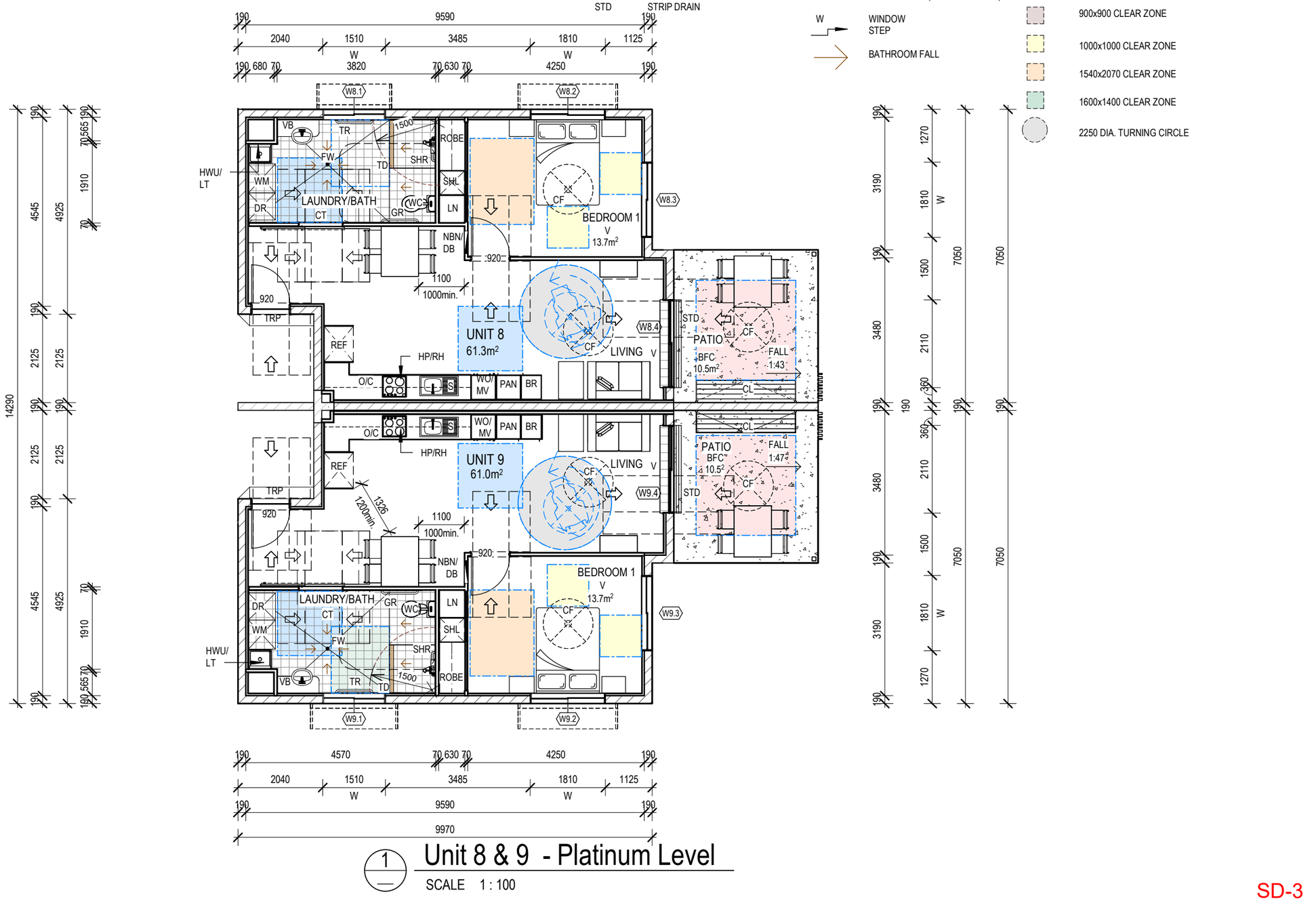
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NOTES

FLOOR SLAB SETDOWNS:
BATHROOM , WC & LAUNDRY - min. 50mm

PROVIDE WATERPROOFING TO ALL WET ZONES IN ACCORDANCE WITH NCC.

NOTE: PLATINUM UNIT SHOWER OUTLET LOCATION IS DEEMED TO BE COMPLIANT WITH NCC VOL 3 TO PREVENT SHOWER HEAD TOUCHING WC RIM – WHEN LOCATED 100MM FROM WALL CORNER 1200MM AFFL. ALTERNATIVELY, IF THE OUTLET LOCATION CANNOT ACHIEVE THIS PREVENTION THEN PROVIDE A PROPRIETARY HOSE RESTRICTOR BRACKET. (REFER QBUILD TYPICAL CONSTRUCTION DETAILS FOR BATHROOMS).



1 Unit 8 & 9 - Platinum Level

SCALE 1 : 100

SD-3

DRAWING INDEX SYSTEM
FOR QBUILD USE ONLY

- ☐ CEILING PLANS
- ☐ CONSTRUCTION DETAILS
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- ☐ EXTERNAL WORKS
- ☐ FITOUTS
- ☒ FLOOR PLANS
- ☐ FURNITURE & EQUIPMENT
- ☐ HYDRAULICS
- ☐ MASTER PLAN
- ☐ MISC DETAILS
- ☐ PLAY STRUCTURES
- ☐ ROOF PLANS
- ☐ SECTIONS
- ☐ SETOUT PLAN
- ☐ SITE PLAN
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AMENDMENTS

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A	30/10/2024	SD1 - FOR REVIEW	AG
A	15/01/2025	SD2 - FOR REVIEW	AG
A	10/02/2025	SD3 - FOR REVIEW	AG
B	21/02/2025	SD3	AG

Queensland Government
Department of Housing and Public Works

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DRAWN	DATE	
RB / AG	25/06/24	
DISCIPLINE TEAM LEADER	DATE	
AUTHORISED FOR ISSUE	DATE	

Social Housing Construction Program

8 MILES AVENUE & 1265 RIVERWAY DRIVE, KELSO
4X1 BED PLATINUM & 1X1 BED GOLD
4X2 BED GENERAL & 4X1 BED GENERAL
UNIT PLANS - SHEET 4

SCALE	1 : 100
AT	A3 SIZE
MASTER SITE NUMBER	58908
CLIENT REFERENCE NUMBER	23961
DRAWING NUMBER	93378/SD/A02.08
ISSUE	B
SHEET NO	12

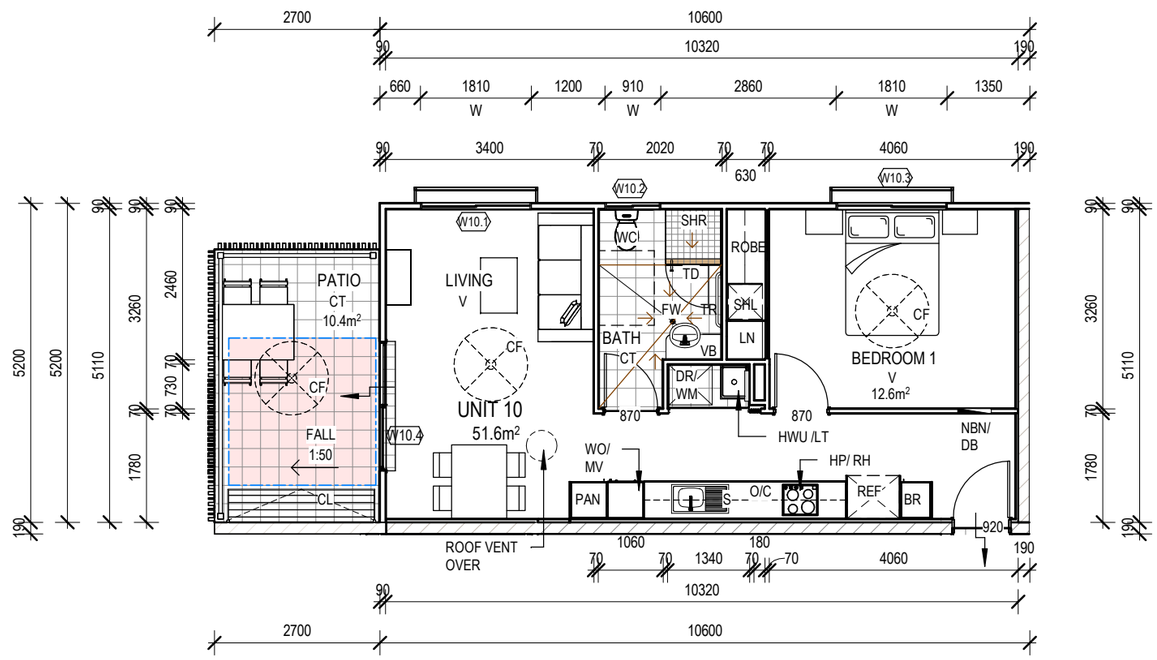
LEGEND

BFC	BROOM FINISH CONCRETE	COL	COLUMN	GS	GARDEN SHED	NBN/DB	'NBN AND DISTRIBUTION B'WITH SPACE TO FIT	S	SINK	TD	THRESHOLD DRAIN	WC	TOILET SUITE WITH CISTERN	N	
BR	BROOM CUPBOARD	DP	METAL DOWN PIPE	HP	HOT PLATES		ROUTER DEVICE IN PROPRIETARY CABINET	SC	PRIVACY SCREEN - TO WINDOW	TRP	1:8 CONCRETE THRESHOLD RAMP; HEIGHT: 35MM; LENGTH: TO SPAN ACROSS DOOR OPENING	WM	WASHING MACHINE		
CF	CEILING FAN	DR	DRYER	HWU	INSTANTANEOUS HOT WATER UNIT		RECESSED IN FRAMED WALL	SCN	VERTICAL ALUM. BATTEN SCREEN			WO	WALL OVEN		
CL	SLIMLINE CLOTHESLINE (Aus. Made Eco 240 or equal & approved)	FW	FLOOR WASTE	LN	LINEN CUPBOARD	O/C	OVERHEAD CUPBOARD	SD	SECURITY SCREEN DOOR	TR	TOWEL RAIL		1500x1500 CLEAR ZONE		2400x2400 CLEAR ZONE
		G2	VERTICAL ALUM. BATTEN GALT.	LT	LAUNDRY TUB	PAN	PANTRY	SH	SUN HOOD - TO WINDOW	V	VINYL		1200x1200 CLEAR ZONE		
CT	CERAMIC TILES	GR	GRAB RAIL (TO AS1428.1)	MW	MICROWAVE - 1100mm AFFL	REF	REFRIGERATOR	SHL	SHELF	VB	VANITY BASIN (SEMI RECESSED)		900x900 CLEAR ZONE		
						RH	RANGE HOOD (DUCTED EXTERNALLY)	SHR	SHOWER	W	WINDOW		1000x1000 CLEAR ZONE		
								STD	STRIP DRAIN		STEP		1540x2070 CLEAR ZONE		
											BATHROOM FALL		1600x1400 CLEAR ZONE		
													2250 DIA. TURNING CIRCLE		

NOTES

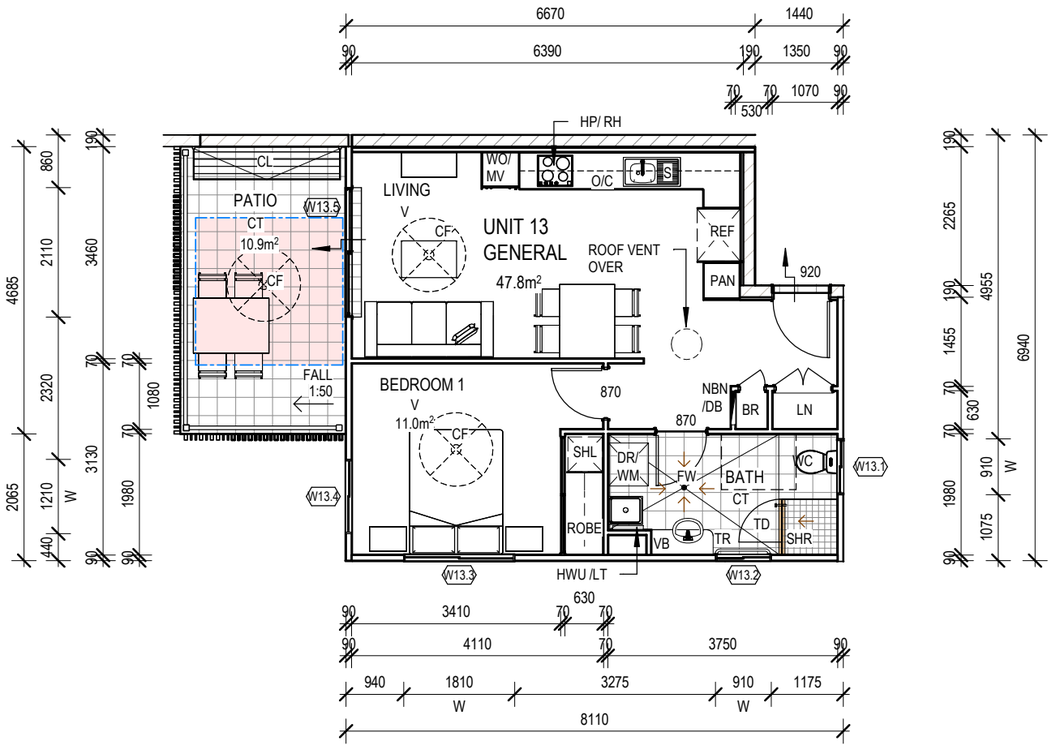
FLOOR SLAB SETDOWNS:
BATHROOM , WC & LAUNDRY - min. 50mm

PROVIDE WATERPROOFING TO ALL WET ZONES IN ACCORDANCE WITH NCC.



1 — Unit 10 - General Level

SCALE 1 : 100



2 — Unit 13 - General Level

SCALE 1 : 100

SD-3

DRAWING INDEX SYSTEM
FOR QBUILD USE ONLY

- ☐ CEILING PLANS
- ☐ CONSTRUCTION DETAILS
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- ☐ SETOUT PLAN
- ☐ SITE PLAN
- ☐ STANDARDS / OTHER

AMENDMENTS

ISSUE	DATE	SUBJECT	AUTHORISED
A	25/06/2024	PD3 - FOR REVIEW	RB
B	29/07/2024	PD3 - FOR REVIEW	AG
A	30/10/2024	SD1 - FOR REVIEW	AG
A	15/01/2025	SD2 - FOR REVIEW	AG
A	10/02/2025	SD3 - FOR REVIEW	AG
B	21/02/2025	SD3	AG

Queensland Government
Department of Housing and Public Works

ST	25/06/24	
DRAWN	DATE	
RB / AG	25/06/24	
DISCIPLINE TEAM LEADER	DATE	
AUTHORISED FOR ISSUE	DATE	

Social Housing Construction Program

8 MILES AVENUE & 1265 RIVERWAY DRIVE, KELSO
4X1 BED PLATINUM & 1X1 BED GOLD
4X2 BED GENERAL & 4X1 BED GENERAL
UNIT PLANS - SHEET 5

SCALE	AT
1 : 100	A3 SIZE

MASTER SITE NUMBER	CLIENT REFERENCE NUMBER
58908	23961

DRAWING NUMBER	ISSUE	SHEET NO
93378/SD/A02.09	B	13

LEGEND

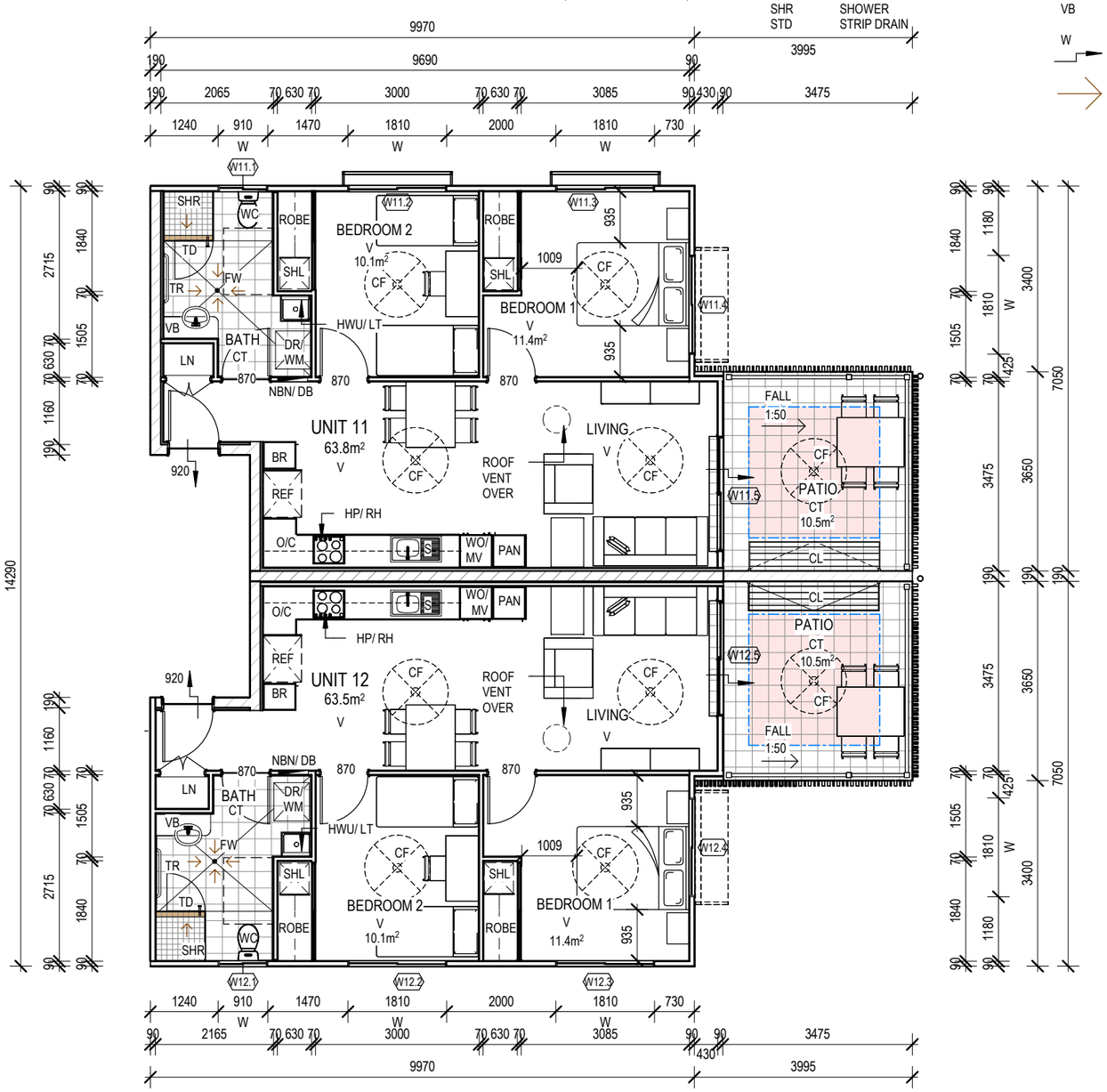
BFC	BROOM FINISH CONCRETE	COL	COLUMN	GS	GARDEN SHED	NBN/DB	'NBN AND DISTRIBUTION B'WITH SPACE TO FIT	S	SINK	TD	THRESHOLD DRAIN	WC	TOILET SUITE WITH CISTERN
BR	BROOM CUPBOARD	DP	METAL DOWN PIPE	HP	HOT PLATES		ROUTER DEVICE IN PROPRIETARY CABINET	SC	PRIVACY SCREEN - TO WINDOW	TRP	1:8 CONCRETE THRESHOLD	WM	WASHING MACHINE
CF	CEILING FAN	DR	DRYER	HWU	INSTANTANEOUS HOT WATER UNIT		RECESSED IN FRAMED WALL	SCN	VERTICAL ALUM. BATTEN		RAMP; HEIGHT: 35MM;	WO	WALL OVEN
CL	SLIMLINE CLOTHESLINE	FW	FLOOR WASTE	LN	LINEN CUPBOARD	O/C	OVERHEAD CUPBOARD		SCREEN		LENGTH: TO SPAN ACROSS DOOR		
	(Aus. Made Eco 240 or equal & approved)	G2	VERTICAL ALUM. BATTEN GALT.	LT	LAUNDRY TUB	PAN	PANTRY	SD	SECURITY SCREEN DOOR		OPENING		1500x1500 CLEAR ZONE
CT	CERAMIC TILES	GR	GRAB RAIL (TO AS1428.1)	MW	MICROWAVE - 1100mm AFFL	REF	REFRIGERATOR	SH	SUN HOOD - TO WINDOW	TR	TOWEL RAIL		2400x2400 CLEAR ZONE
						RH	RANGE HOOD (DUCTED EXTERNALLY)	SHL	SHELF	V	VINYL		1200x1200 CLEAR ZONE
								SHR	SHOWER	VB	VANITY BASIN (SEMI RECESSED)		900x900 CLEAR ZONE
								STD	STRIP DRAIN				1000x1000 CLEAR ZONE
										W	WINDOW		1540x2070 CLEAR ZONE
											STEP		1600x1400 CLEAR ZONE
											BATHROOM FALL		2250 DIA. TURNING CIRCLE

N

NOTES

FLOOR SLAB SETDOWNS:
BATHROOM , WC & LAUNDRY - min. 50mm

PROVIDE WATERPROOFING TO ALL WET ZONES IN ACCORDANCE WITH NCC.



Unit 11 & 12 - General Level

1 / —

SCALE 1 : 100

SD-3

DRAWING INDEX SYSTEM
FOR QBUILD USE ONLY

- ☐ CEILING PLANS
- ☐ CONSTRUCTION DETAILS
- ☐ ELEVATIONS
- ☐ EXTERNAL WORKS
- ☐ FITOUTS
- ☒ FLOOR PLANS
- ☐ FURNITURE & EQUIPMENT
- ☐ HYDRAULICS
- ☐ MASTER PLAN
- ☐ MISC DETAILS
- ☐ PLAY STRUCTURES
- ☐ ROOF PLANS
- ☐ SECTIONS
- ☐ SETOUT PLAN
- ☐ SITE PLAN
- ☐ STANDARDS / OTHER

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A	10/02/2025	SD3 - FOR REVIEW	AG
B	21/02/2025	SD3	AG

Queensland Government
Department of **Housing and Public Works**

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AUTHORISED FOR ISSUE	DATE

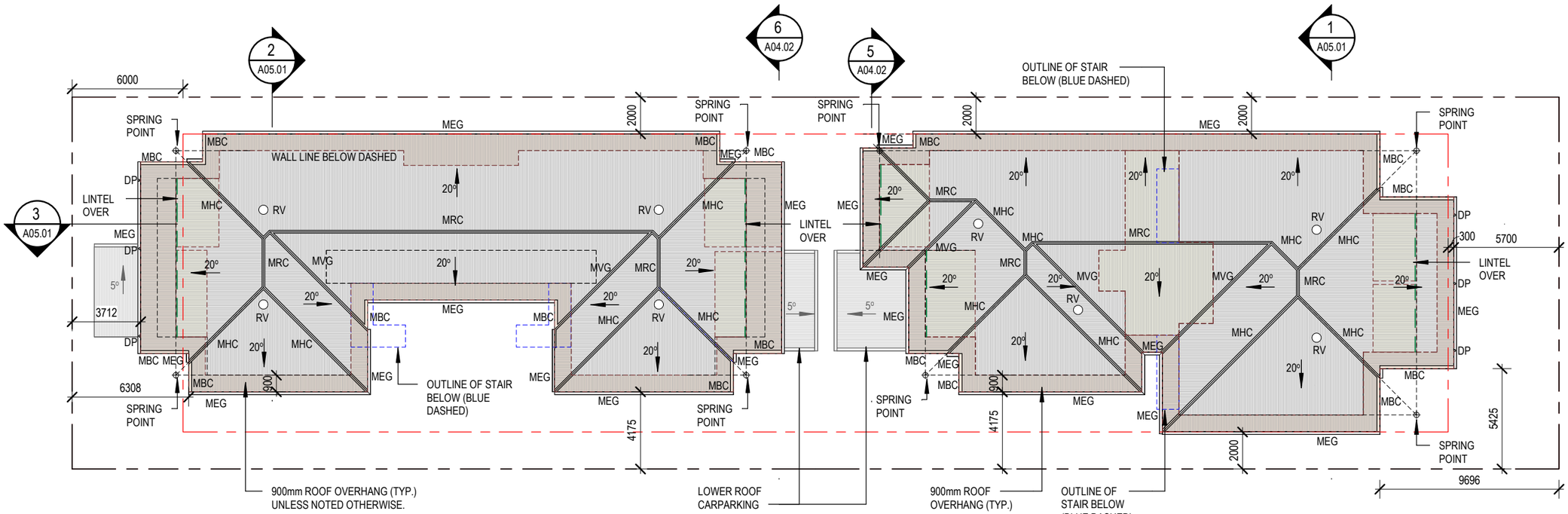
Social Housing Construction Program

8 MILES AVENUE & 1265 RIVERWAY DRIVE, KELSO
4X1 BED PLATINUM & 1X1 BED GOLD
4X2 BED GENERAL & 4X1 BED GENERAL
UNIT PLANS - SHEET 6

SCALE 1 : 100	AT A3 SIZE		
MASTER SITE NUMBER 58908	CLIENT REFERENCE NUMBER 23961		
DRAWING NUMBER 93378/SD/A02.10	ISSUE B	SHEET NO 14	

LEGEND

DP	DOWNPIPE - COLORBOND "MONUMENT"
MBC	METAL BARGE CAPPING - COLORBOND "SOUTHERLY"
MEG	METAL EAVES GUTTER - COLORBOND "MONUMENT" - HALF ROUND PROFILE (SLOTTED)
MHC	METAL HIP CAPPING - COLORBOND "SOUTHERLY"
MRC	METAL RIDGE CAPPING - COLORBOND "SOUTHERLY"
MRS	ROOF SHEETING - COLORBOND "SOUTHERLY" (WITH INSULATION)
MVG	METAL VALLEY CAPPING - COLORBOND "SOUTHERLY"
RV	ROOF VENT
	FLAT SOFFIT
	RAKED SOFFIT
	LINTEL



1 Roof Plan

SCALE 1 : 250

SD-3

DRAWING INDEX SYSTEM
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A	10/02/2025	SD3 - FOR REVIEW	AG
B	21/02/2025	SD3	AG

Queensland Government
Department of Housing and Public Works

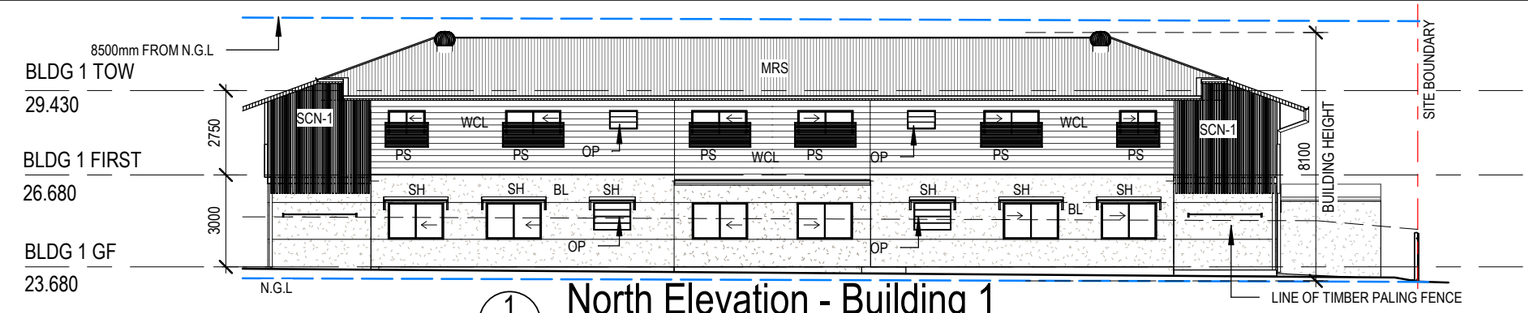
ST	30/01/24
DRAWN	DATE
RB / AG	30/01/24
DISCIPLINE TEAM LEADER	DATE
AUTHORISED FOR ISSUE	DATE

Social Housing Construction Program

8 MILES AVENUE & 1265 RIVERWAY DRIVE, KELSO

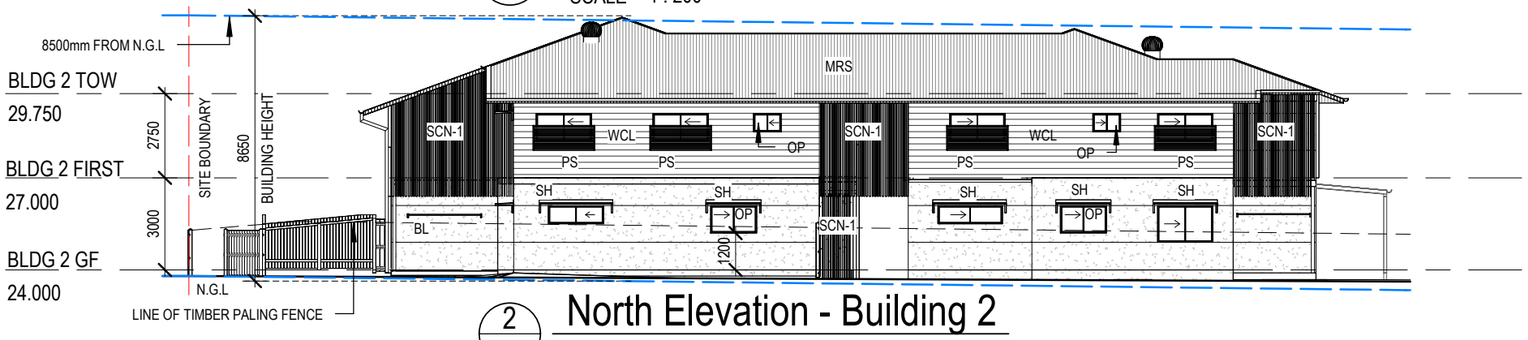
ROOF PLAN

SCALE	As indicated
AT	A3 SIZE
MASTER SITE NUMBER	58908
CLIENT REFERENCE NUMBER	23961
DRAWING NUMBER	93378/SD/A03.01
ISSUE	B
SHEET NO	15



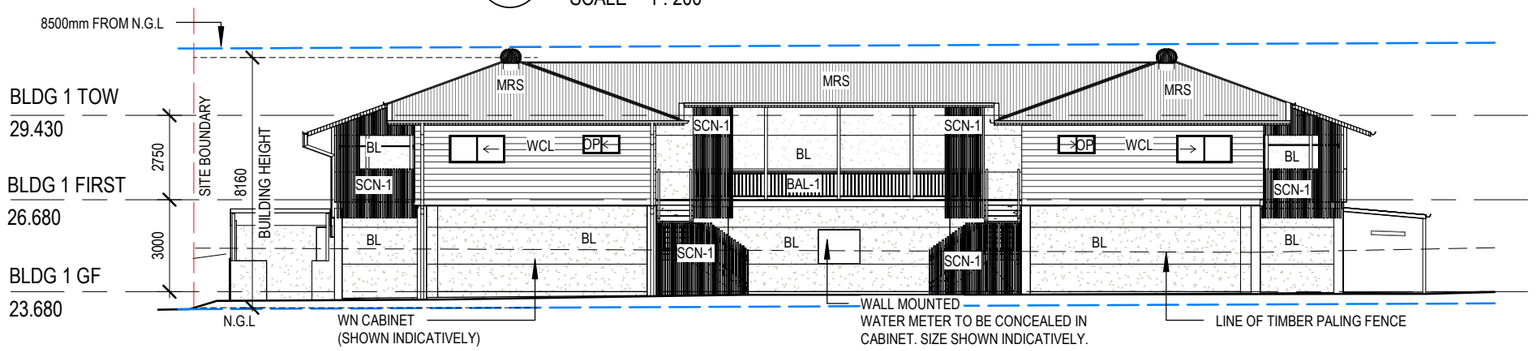
1 North Elevation - Building 1

SCALE 1 : 200



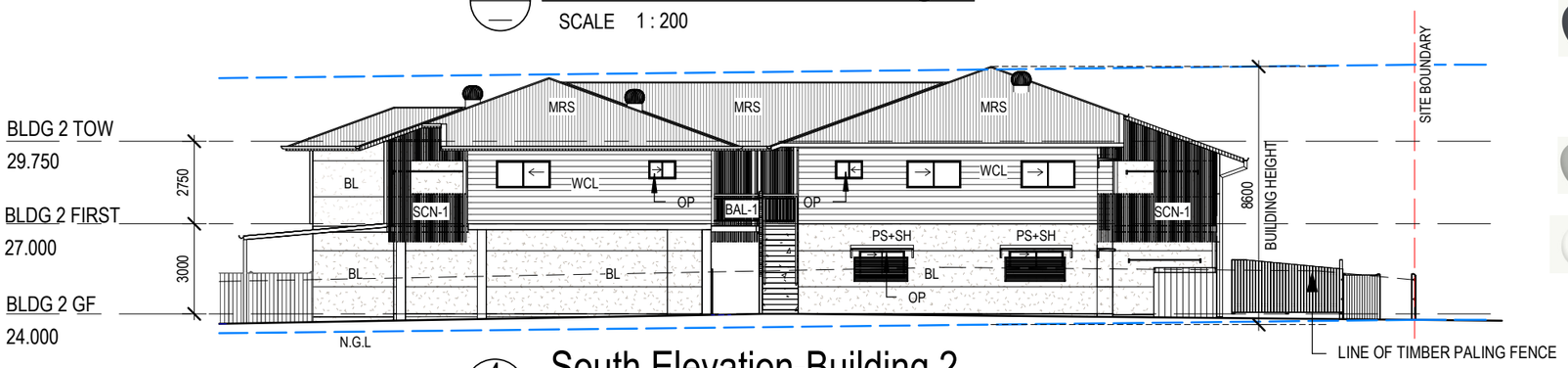
2 North Elevation - Building 2

SCALE 1 : 200



3 South Elevation-Building 1

SCALE 1 : 200



4 South Elevation-Building 2

SCALE 1 : 200

LEGEND

BAL-1	HOT DIP GALVANISED BALUSTRADE
BL	PAINTED AND RENDERED CONCRETE BLOCKWORK - PAINT FINISH(DULUX BEIGE INTENT)
CONC	OFF FORM CONCRETE FINISH (STAIR)
GS	GARDEN SHED
MRS	METAL ROOF SHEETING - COLORBOND "SHALE GREY"
OP	OPAQUE FILM TO WINDOW
PS	PRIVACY SCREEN - POWDERCOATED ALUMINIUM SCREEN CONFIGURATION 'ABABBA', A: 50x16 ALUMINIUM BATTEN; B: 25x16 ALUMINIUM BATTEN,75 GAPS BETWEEN HORIZONTAL BATTENS. SCREEN IN DULUX "VIVD WHITE".
RV	ROOF VENT
SH	WINDOW SUN HOOD - POWDERCOAT ALUMINIUM, IN DULUX "IRONSTONE"
SCN-1	VERTICAL ALUMINIUM BATTEN SCREEN - POWDERCOAT FINISH SCREEN CONFIGURATION 'ABABBA', A: 50x16 ALUMINIUM BATTEN; B: 25x16 ALUMINIUM BATTEN, 75 GAPS BETWEEN VERTICAL BATTENS. BATTEN 'A' IN POWDERCOAT "IRONSTONE" AND BATTEN 'B' IN "VIVID WHITE"
WCL	LINEA WALL CLADDING ON STUD FRAME - PAINT FINISH (DULUX PHANTOM WHITE)

NOTE: A PERFORMANCE SOLUTION REQUIRED FOR ALL EXTERNAL WALLS NOT LISTED UNDER F3D5. THE CONTRACTOR IS TO PROVIDE CERTIFICATE OF CONFORMITY THAT THE SPECIFIED WALL COMPLIES WITH NCC 2022 .

REFERENCE IMAGERY (SCN-1)

	COLORBOND BLISSFUL BEIGE	EXTERNAL WALL (GROUND FLOOR); REFER A02.02 & A02.03
	COLORBOND BEIGE INTENT	EXTERNAL WALL (GROUND FLOOR)
	COLORBOND PHANTOM WHITE	EXTERNAL WALL CLADDING (FIRST FLOOR)
	COLORBOND IRONSTONE	-POWDERCOATED ALUMINIUM SCREEN (SCN-1): BATTEN 'A' IN IRONSTONE -ROOF TRIMS -GUTTERS -DOWNPIPES -SUNHOOD -POST TO BALCONY AND CARBAY
	COLORBOND SHALE GREY	METAL ROOF SHEETING
	COLORBOND VIVD WHITE	-POWDERCOATED ALUMINIUM SCREEN (SCN-1): BATTEN 'B' IN VIVID WHITE -PRIVACY SCREEN (PS)

SD-3

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A	10/02/2025	SD3 - FOR REVIEW	AG
B	21/02/2025	SD3	AG

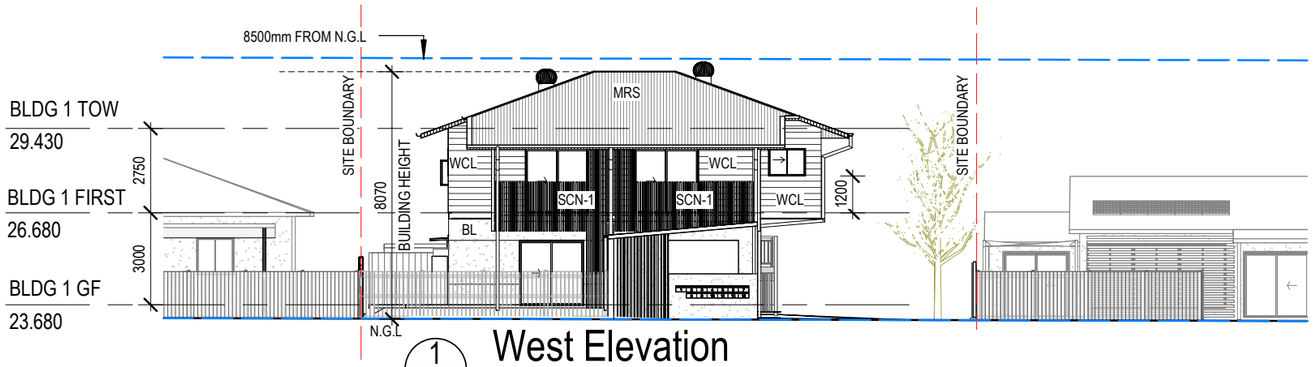
Queensland Government
Department of **Housing and Public Works**

ST	22/04/24
DRAWN	DATE
RB / AG	22/04/24
DISCIPLINE TEAM LEADER	DATE
AUTHORISED FOR ISSUE	DATE

Social Housing Construction Program

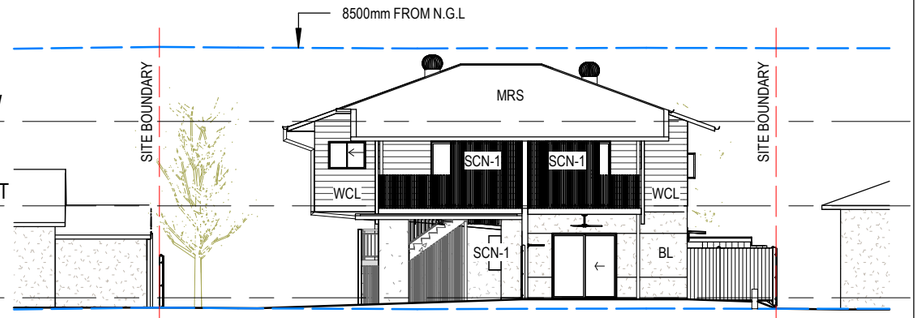
8 MILES AVENUE & 1265 RIVERWAY DRIVE, KELSO
4X1 BED PLATINUM & 1X1 BED GOLD
4X2 BED GENERAL & 4X1 BED GENERAL
ELEVATIONS - SHEET 1

SCALE	As indicated
AT	A3 SIZE
MASTER SITE NUMBER	58908
CLIENT REFERENCE NUMBER	23961
DRAWING NUMBER	93378/SD/A04.01
ISSUE	B
SHEET NO	16



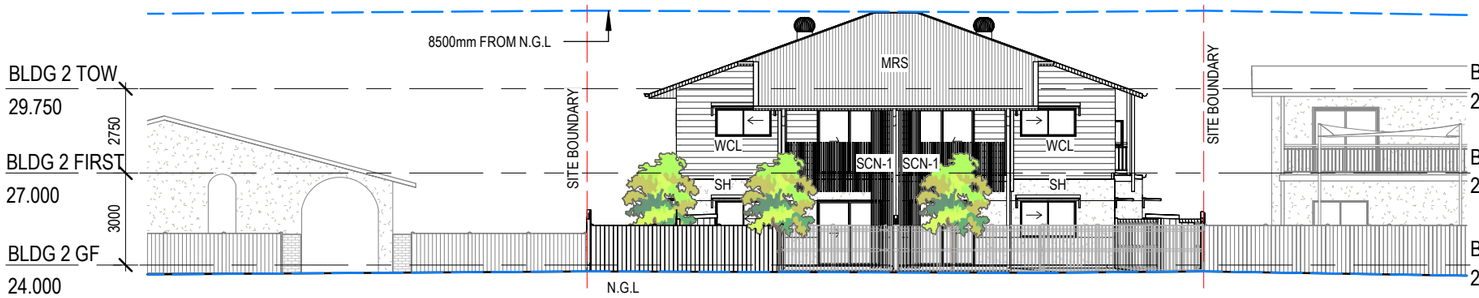
1 West Elevation

SCALE 1 : 200



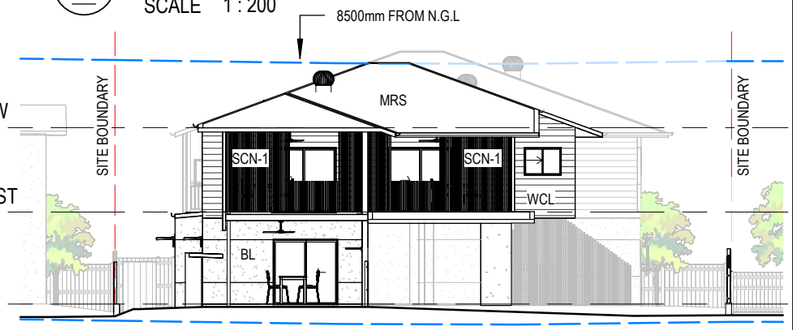
6 East Elevation - Building 1

SCALE 1 : 200



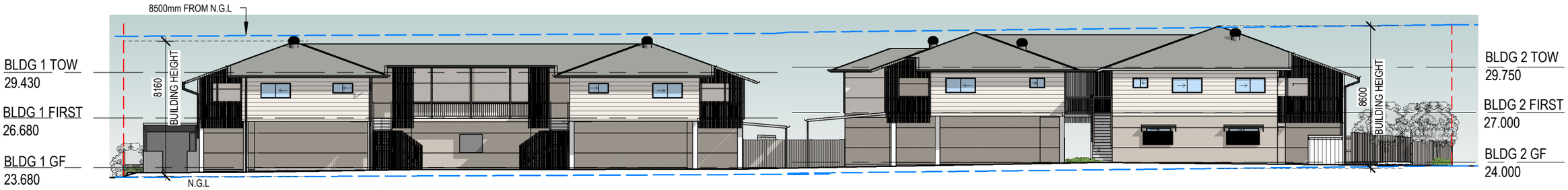
2 East Elevation

SCALE 1 : 200



5 West Elevation - Building 2

SCALE 1 : 200



3 South Elevation

SCALE 1 : 250



4 North Elevation

SCALE 1 : 250

SD-3

DRAWING INDEX SYSTEM
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- ☐ CONSTRUCTION DETAILS
- ☒ ELEVATIONS
- ☐ EXTERNAL WORKS
- ☐ FITOUTS
- ☐ FLOOR PLANS
- ☐ FURNITURE & EQUIPMENT
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A	10/02/2025	SD3 - FOR REVIEW	AG
B	21/02/2025	SD3	AG

Queensland Government
Department of **Housing and Public Works**

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RB / AG	22/04/24		
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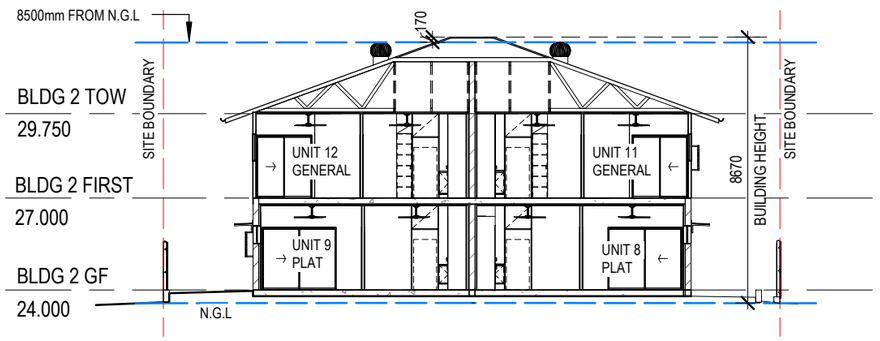
Social Housing Construction Program

8 MILES AVENUE & 1265 RIVERWAY DRIVE, KELSO
4X1 BED PLATINUM & 1X1 BED GOLD
4X2 BED GENERAL & 4X1 BED GENERAL
ELEVATIONS - SHEET 2

SCALE	AT
As indicated	A3 SIZE

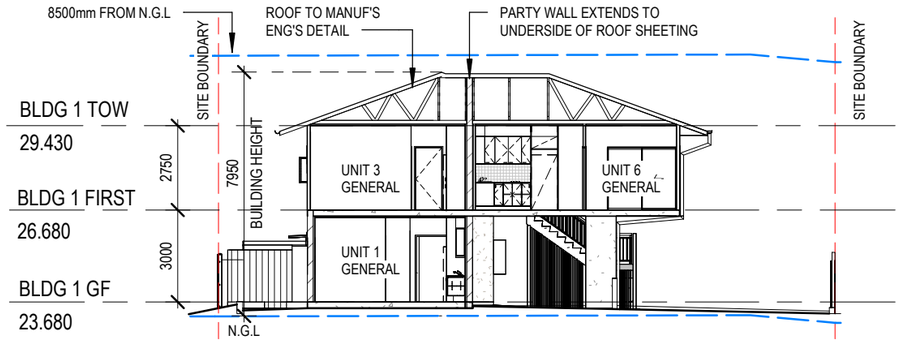
MASTER SITE NUMBER	CLIENT REFERENCE NUMBER
58908	23961

DRAWING NUMBER	ISSUE	SHEET NO
93378/SD/A04.02	B	17



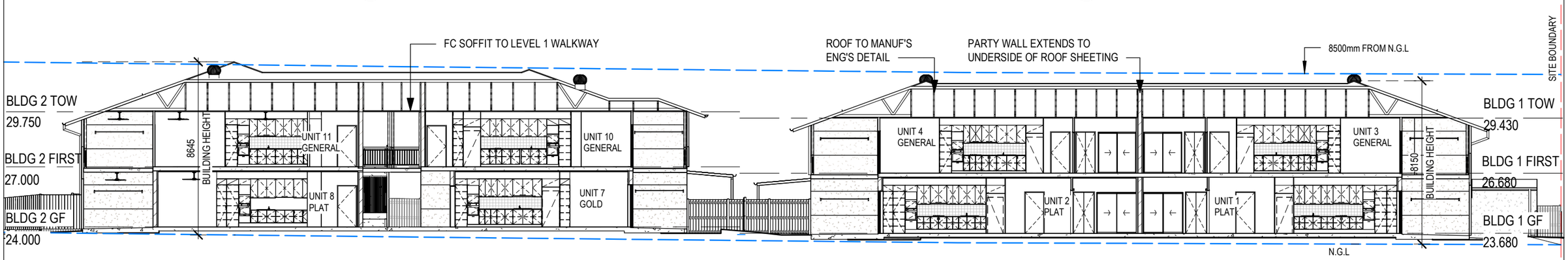
1 Section 1

SCALE 1 : 200



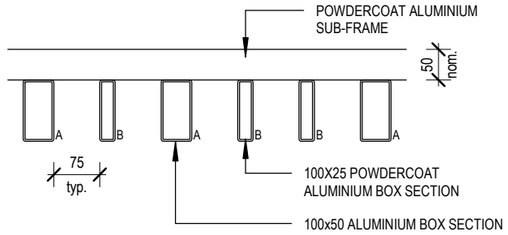
2 Section 2

SCALE 1 : 200



3 Section 3

SCALE 1 : 200



4 Screen Detail SCN-1

SCALE 1 : 10

SD-3

DRAWING INDEX SYSTEM
FOR QBUILD USE ONLY

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B	21/02/2025	SD3	AG

Queensland Government
Department of **Housing and Public Works**

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Social Housing Construction Program

8 MILES AVENUE & 1265 RIVERWAY DRIVE, KELSO
4X1 BED PLATINUM & 1X1 BED GOLD
4X2 BED GENERAL & 4X1 BED GENERAL
SECTIONS

SCALE	AT
As indicated	A3 SIZE

MASTER SITE NUMBER	CLIENT REFERENCE NUMBER
58908	23961

DRAWING NUMBER	ISSUE	SHEET NO
93378/SD/A05.01	B	18



1 — 3D View 1 - Site Entrance From Miles Avenue

SCALE



2 — 3D View 2 - Riverway Drive

SCALE

SD-3

DRAWING INDEX SYSTEM
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A	10/02/2025	SD3 - FOR REVIEW	AG
B	21/02/2025	SD3	AG

Queensland Government
Department of **Housing and Public Works**

ST — DRAWN — 22/04/24 DATE

RB / AG — DISCIPLINE TEAM LEADER — 22/04/24 DATE

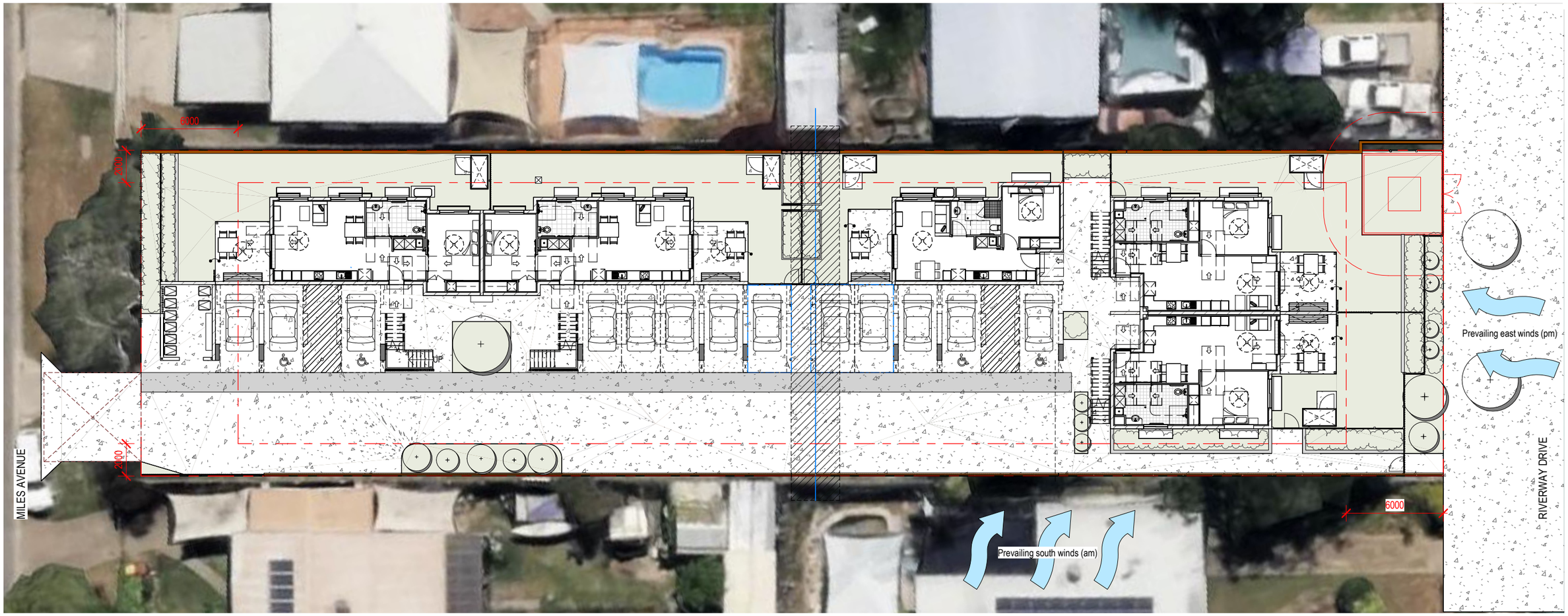
AUTHORISED FOR ISSUE — DATE

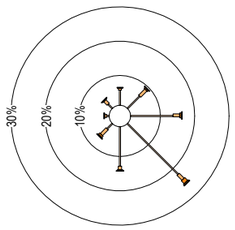
Social Housing Construction Program

8 MILES AVENUE & 1265 RIVERWAY DRIVE, KELSO
4X1 BED PLATINUM & 1X1 BED GOLD
4X2 BED GENERAL & 4X1 BED GENERAL
3D VIEWS

SCALE — AT A3 SIZE

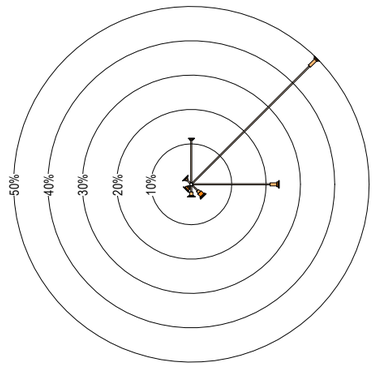
MASTER SITE NUMBER: 58908
CLIENT REFERENCE NUMBER: 23961
DRAWING NUMBER: 93378/SD/A06.01
ISSUE: B
SHEET NO: 19





Wind Rose - 9.00am Townsville

SCALE 1 : 200



3pm Wind Rose - Townsville

SCALE 1 : 200



SD-3

DRAWING INDEX SYSTEM
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- ☐ EXTERNAL WORKS
- ☐ FITOUTS
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Queensland Government
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Social Housing Construction Program

8 MILES AVENUE & 1265 RIVERWAY DRIVE, KELSO
4X1 BED PLATINUM & 1X1 BED GOLD
4X2 BED GENERAL & 4X1 BED GENERAL
ESD STRATEGY

SCALE	AT
As indicated	A3 SIZE

MASTER SITE NUMBER	CLIENT REFERENCE NUMBER
58908	23961

DRAWING NUMBER	ISSUE	SHEET NO
93378/SD/A06.02	B	20

WINDOW SCHEDULE				
Window Number	Height	Width	Comment	Description
W1.1	1200	1810	Sliding window	
W1.2	1200	1810	Sliding window	
W1.3	900	1210	Louvre window	Opaque window
W1.4	1200	1810	Sliding window	
W2.1	1200	1810	Sliding window	
W2.2	1200	1810	Sliding window	
W2.3	900	1210	Louvre window	Opaque window
W2.4	1200	1810	Sliding window	
W3.1	900	1210	Sliding window	
W3.2	900	1810	Sliding window	
W3.3	600	910	Louvre window	Opaque window
W3.4	900	1810	Sliding window	
W4.1	900	1210	Sliding window	
W4.2	900	1810	Sliding window	
W4.3	600	910	Louvre window	Opaque window
W4.4	900	1810	Sliding window	
W5.1	900	1210	Sliding window	
W5.2	900	1810	Sliding window	
W5.3	600	1210	Sliding window	Opaque window
W6.1	900	1210	Sliding window	
W6.2	900	1810	Sliding window	
W6.3	600	1210	Sliding window	Opaque window
W7.1	1200	1810	Sliding window. RW35 as per Acoustic Report	
W7.2	900	1510	Sliding window	
W7.3	600	2110	Sliding window. RW32 as per Acoustic Report	
W8.1	900	1510	Sliding window	Opaque window
W8.2	600	1810	Sliding window. RW38 as per Acoustic Report	
W8.3	1200	1810	Sliding window. RW38 as per Acoustic Report	
W9.1	900	1510	Sliding window	Opaque window
W9.2	600	1810	Sliding window. RW38 as per Acoustic Report	

WINDOW SCHEDULE				
Window Number	Height	Width	Comment	Description
W9.3	1200	1810	Sliding window. RW38 as per Acoustic Report	
W10.1	900	1810	Sliding window. RW32 as per Acoustic Report	
W10.2	600	910	Sliding window.	Opaque window
W10.3	900	1810	Sliding window. RW32 as per Acoustic Report	
W11.1	600	910	Sliding window	Opaque window
W11.2	900	1810	Sliding window. RW35 as per Acoustic Report	
W11.3	900	1810	Sliding window. RW38 as per Acoustic Report	
W11.4	900	1810	Sliding window. RW38 as per Acoustic Report	
W12.1	600	910	Sliding window	Opaque window
W12.2	900	1810	Sliding window. RW35 as per Acoustic Report	
W12.3	900	1810	Sliding window. RW38 as per Acoustic Report	
W12.4	900	1810	Louvre window. RW38 as per Acoustic Report	
W13.1	1200	910	Sliding window.	
W13.2	600	910	Sliding window.	Opaque window
W13.3	900	1810	Sliding window. RW35 as per Acoustic Report	
W13.4	900	1210	Sliding window. RW35 as per Acoustic Report	

Grand total: 46

PATIO SLIDING DOOR SCHEDULE			
Door Number	Height	Width	Comment
W1.5	2110	2110	Sliding door.
W2.5	2110	2110	Sliding door.
W3.5	2110	2110	Sliding door.
W4.5	2110	2110	Sliding door.
W5.4	2110	2110	Sliding door.
W6.4	2110	2110	Sliding door.
W7.4	2110	2110	Sliding door. RW35 as per Acoustic Report
W8.4	2110	2110	Sliding door. RW38 as per Acoustic Report.
W9.4	2110	2110	Sliding door. RW38 as per Acoustic Report.
W10.4	2110	2110	Sliding door. RW35 as per Acoustic Report
W11.5	2110	2110	Sliding door. RW38 as per Acoustic Report.
W12.5	2110	2110	Sliding door. RW38 as per Acoustic Report.
W13.5	2110	2110	Sliding door. RW35 as per Acoustic Report

Grand total: 13

NOTES

1. SECURITY SCREENS REQUIRED TO OPENABLE SECTIONS OF ALL WINDOWS AND SLIDING DOORS.
2. PROVIDE OPAQUE GLASS TO ALL BATHROOM WINDOWS.

SD-3

DRAWING INDEX SYSTEM
FOR QBUILD USE ONLY

- ☐ CEILING PLANS
- ☐ CONSTRUCTION DETAILS
- ☐ ELEVATIONS
- ☐ EXTERNAL WORKS
- ☐ FITOUTS
- ☐ FLOOR PLANS
- ☐ FURNITURE & EQUIPMENT
- ☐ HYDRAULICS
- ☐ MASTER PLAN
- ☐ MISC DETAILS
- ☐ PLAY STRUCTURES
- ☐ ROOF PLANS
- ☐ SECTIONS
- ☐ SETOUT PLAN
- ☐ SITE PLAN
- ☒ STANDARDS / OTHER

AMENDMENTS

ISSUE	DATE	SUBJECT	AUTHORISED
A	30/10/2024	SD1 - FOR REVIEW	AG
A	15/01/2025	SD2 - FOR REVIEW	AG
A	10/02/2025	SD3 - FOR REVIEW	AG
B	21/02/2025	SD3	AG

Queensland Government
Department of **Housing and Public Works**

ST — DRAWN — 01/10/24 DATE
RB / AG — DISCIPLINE TEAM LEADER — 01/10/24 DATE
AUTHORISED FOR ISSUE — DATE

Social Housing Construction Program

8 MILES AVENUE & 1265 RIVERWAY DRIVE, KELSO
4X1 BED PLATINUM & 1X1 BED GOLD
4X2 BED GENERAL & 4X1 BED GENERAL
WINDOW AND SLIDING DOOR SCHEDULE

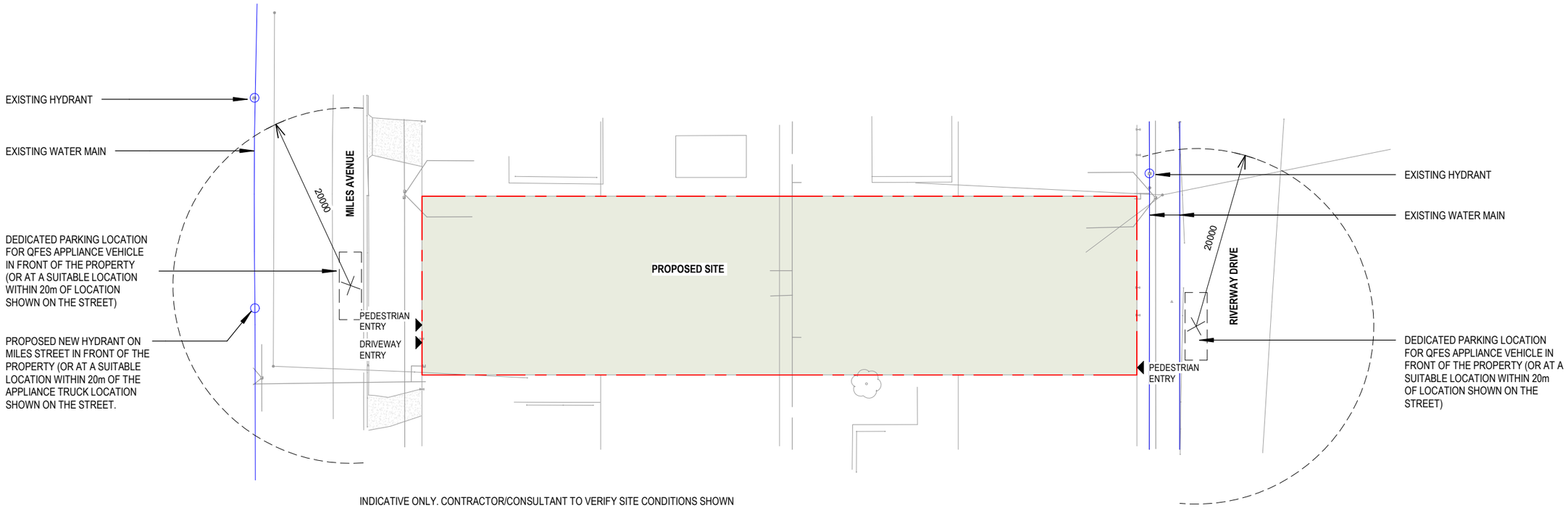
SCALE: 1 : 100 AT A3 SIZE
MASTER SITE NUMBER: 58908
CLIENT REFERENCE NUMBER: 23961
DRAWING NUMBER: 93378/SD/A07.01
ISSUE: B
SHEET NO: 21

FIRE HYDRANT

IT APPEARS THE FIRE HYDRANT COVERAGE COULD BE ACHIEVED TO ALL PARTS OF THE BUILDING FROM THE QFES APPLIANCE TRUCKS AT APPROXIMATELY THE LOCATIONS SHOWN, REFER "FIRE HYDRANT LOCATION DIAGRAM" , WITH THE TRUCKS USING THE STREET SPRING HYDRANTS ON THE TOWNSVILLE CITY COUNCIL (TCC) MAINS. THIS IS SUBJECT TO THE PRESENT LAYOUT AS SHOWN REMAINS UNCHANGED.

IT IS NOTED A NEW SPRING HYDRANT WOULD BE REQUIRED ON THE MILES AVENUE STREET NETWORK OF THE TCC MAINS, IN FRONT OF THE PROPERTY (OR AT A SUITABLE LOCATION WITHIN 20m OF THE APPLIANCE TRUCK LOCATION SHOWN ON THE STREET).

THE FH DESIGN CRITERIA FOR THE SITE IS 10L/s @ 200kPa, BASED ON THE LARGEST FIRE COMPARTMENT SIZE OF EACH SOU LESS THAN 500m2, SUBJECT TO COMPLIANT FIRE SEPERATION BETWEEN FLOOR LEVELS. THE FLOW PRESSURE TEST PROVIDED APPEARS TO ACHIEVE THIS.



INDICATIVE ONLY. CONTRACTOR/CONSULTANT TO VERIFY SITE CONDITIONS SHOWN ON THE DRAWING WITH CONTOUR & DETAIL SURVEY & ACTUAL SITE CONDITIONS.

1

Fire Hydrant Location Diagram

SCALE 1 : 500

SD-3

DRAWING INDEX SYSTEM
FOR QBUILD USE ONLY

- ☐ CEILING PLANS
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- ☐ ELEVATIONS
- ☐ EXTERNAL WORKS
- ☐ FITOUTS
- ☐ FLOOR PLANS
- ☐ FURNITURE & EQUIPMENT
- ☐ HYDRAULICS
- ☐ MASTER PLAN
- ☐ MISC DETAILS
- ☐ PLAY STRUCTURES
- ☐ ROOF PLANS
- ☐ SECTIONS
- ☐ SETOUT PLAN
- ☐ SITE PLAN
- ☐ STANDARDS / OTHER

AMENDMENTS

ISSUE	DATE	SUBJECT	AUTHORISED
A	30/10/2024	SD1 - FOR REVIEW	AG
A	15/01/2025	SD2 - FOR REVIEW	AG
A	10/02/2025	SD3 - FOR REVIEW	AG
B	21/02/2025	SD3	AG

Queensland Government
Department of **Housing and Public Works**

ST	29/10/24	
DRAWN	DATE	
RB / AG	29/10/24	
DISCIPLINE TEAM LEADER	DATE	
AUTHORISED FOR ISSUE	DATE	

Social Housing Construction Program

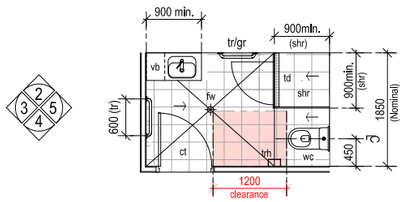
8 MILES AVENUE & 1265 RIVERWAY DRIVE, KELSO

FIRE HYDRANT DIAGRAM

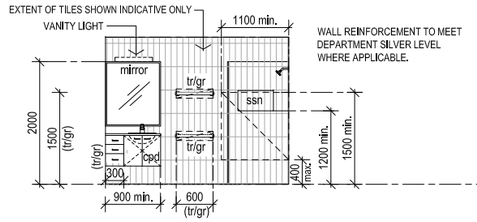
SCALE	AT
As indicated	A3 SIZE

MASTER SITE NUMBER	CLIENT REFERENCE NUMBER
58908	23961

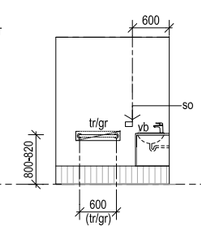
DRAWING NUMBER	ISSUE	SHEET NO
93378/SD/A08.01	B	22



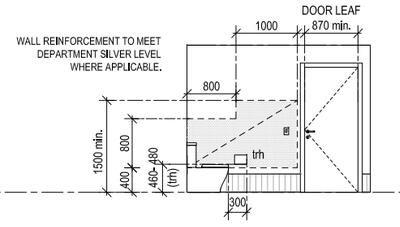
1 BATHROOM PLAN - GENERAL & SILVER LEVEL
SCALE 1:50 @ A1



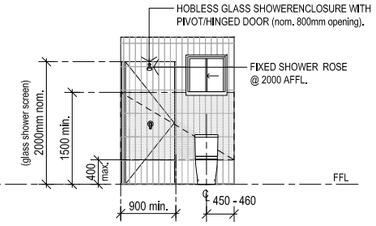
2 ELEVATION
SCALE 1:50 @ A1



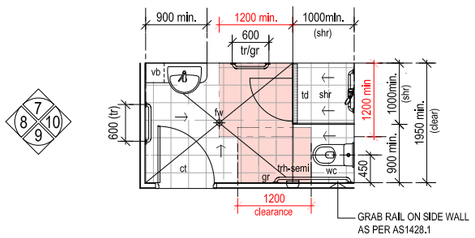
3 ELEVATION
SCALE 1:50 @ A1



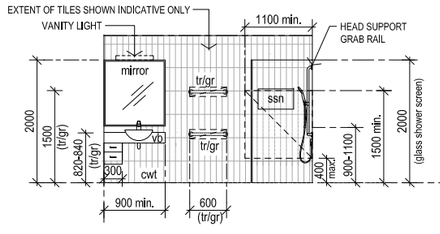
4 ELEVATION
SCALE 1:50 @ A1



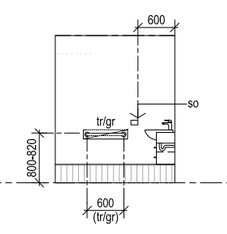
5 ELEVATION
SCALE 1:50 @ A1



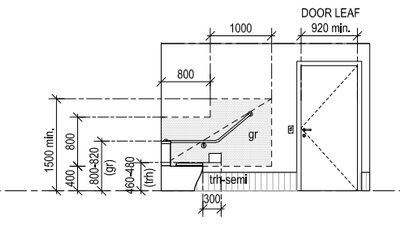
6 BATHROOM PLAN - GOLD LEVEL
SCALE 1:50 @ A1



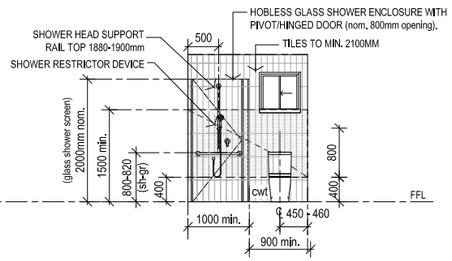
7 ELEVATION
SCALE 1:50 @ A1



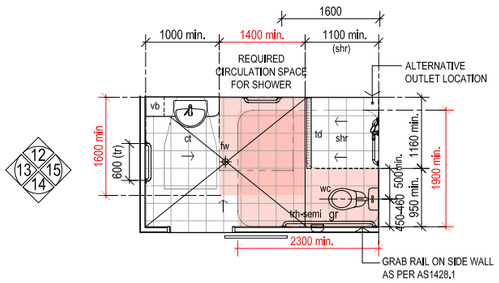
8 ELEVATION
SCALE 1:50 @ A1



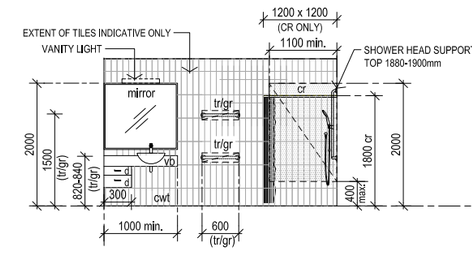
9 ELEVATION
SCALE 1:50 @ A1



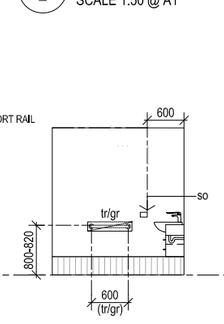
10 ELEVATION
SCALE 1:50 @ A1



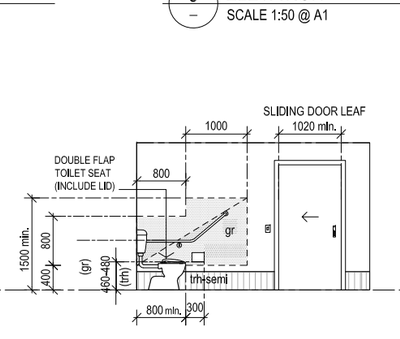
11 BATHROOM PLAN - PLATINUM LEVEL
SCALE 1:50 @ A1



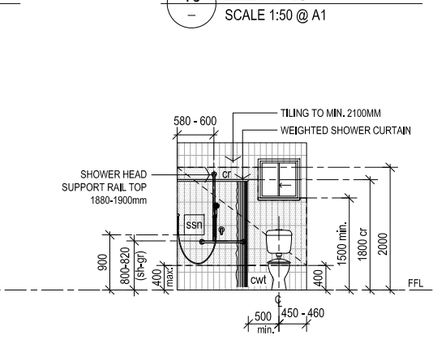
12 ELEVATION
SCALE 1:50 @ A1



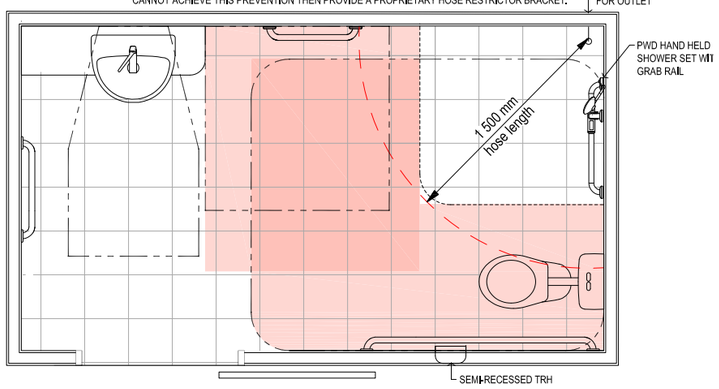
13 ELEVATION
SCALE 1:50 @ A1



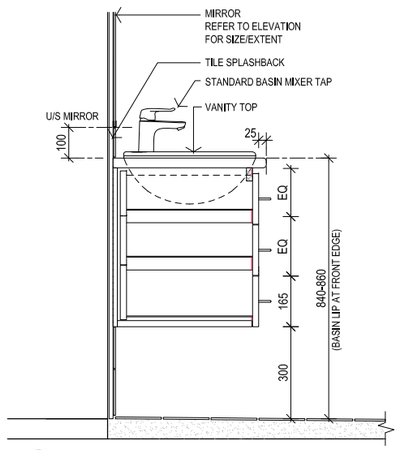
14 ELEVATION
SCALE 1:50 @ A1



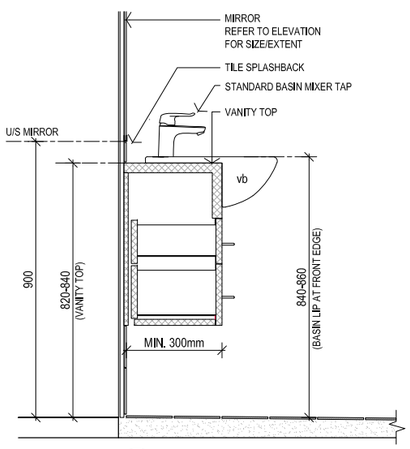
15 ELEVATION
SCALE 1:50 @ A1



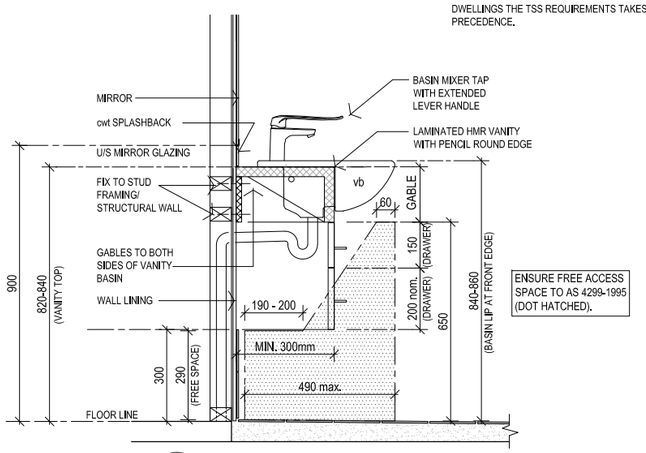
16 EXAMPLE CLEARANCE DIAGRAM - PLATINUM LEVEL
SCALE 1:20 @ A1



17 VANITY BASIN UNIT - GENERAL & SILVER LEVEL
SCALE 1:10 @ A1



18 VANITY BASIN UNIT - GOLD LEVEL
SCALE 1:10 @ A1



19 VANITY BASIN UNIT - PLATINUM LEVEL
SCALE 1:10 @ A1

LEGEND

cpd	CUPBOARD
cr	CURTAIN RAIL
ct	SLIP RESISTANT CERAMIC TILES
cwt	CERAMIC WALL TILES
d	DRAWER
fw	FLOOR WASTE
gr	GRAB RAIL TO AS1428.1. (VERTICAL PERMISSABLE)
shr	SHOWER RECESS
so	DOUBLE SOCKET OUTLET
ssn	SHAMPOO / SOAP HOLDER NICHE
td	TRENCH DRAIN
tr/gr	TOWEL RAIL (FIXED TO BE USEABLE AS GRAB RAIL) LOCATIONS SHOWN INDICATIVE ONLY)
trh	TOILET ROLL HOLDER SURFACE MOUNTED
trh-semi	TOILET ROLL HOLDER (SEMI - RECESSED GOLD & PLATINUM LEVEL ONLY)
vb	VANITY BASIN
wc	WATER CLOSET

REQUIRED CIRCULATION SPACE

ZONE OF WALL REINFORCEMENT

GENERAL NOTES

1. BCA (2022), H4D2 FOR CLASS 1 BUILDINGS AND BCA (2022) F2D4 FOR CLASS 2 AND 3 BUILDINGS REQUIRE FALLS FOR CERTAIN BATHROOMS TO THE FOLLOWING:

- MINIMUM CONTINOUS FALL OF THE FLOOR PLANE TO THE FLOOR WASTE: 1:80.
- MAXIMUM CONTINOUS FALL OF THE FLOOR PLANE TO THE FLOOR WASTE: 1:50.

NOTE: THE DEPARTMENT PREFERS FALLS TO RANGE BETWEEN 1:60-1:80 IN CATEGORY 1 WET AREAS (HIGH RISK), AND A 1:100 FALL IN CATEGORY 2 WET AREAS (MODERATE RISK) WHERE ACHIEVEABLE.

FLOOR WASTES SHOWN ARE INDICATIVE ONLY AND TO MEET ALL STATUARY REQUIREMENTS.

2. PACKING: FOR MASONRY WALLS WHERE REQUIRED PACK OUT WALL TO PROVIDE SPACE FOR SERVICES.

3. IF SUSPENDED CEILING IS REQUIRED, JUNCTION BETWEEN WALLS TO CEILING ARE TO BE 'SQUARE-SET'.

4. IN SOME CASES THE TECHNICAL SUMMARY SHEETS (TSS) REQUIREMENTS CONTRADICT THE GUIDELINES OUTLINED IN AS 1428.1 AND AS 4299. FOR CLASS 1 & 2 DWELLINGS THE TSS REQUIREMENTS TAKES PRECEDENCE.

DRAWINGS INDEXING SYSTEM
FOR QBUILD USE ONLY

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- ☐ FITOUTS
- ☐ FLOOR PLAN
- ☐ FURNITURE & EQUIPMENT
- ☐ HYDRAULICS
- ☐ MASTER PLAN
- ☐ MISCELLANEOUS DETAILS
- ☐ OTHER
- ☐ PLAY STRUCTURES
- ☐ ROOF PLAN
- ☐ SECTIONS
- ☐ SETOUT PLAN
- ☐ SITE PLAN
- ■ STANDARDS

AMENDMENTS

ISSUE	DATE	SUBJECT	AUTHORISED
C	10.01.2018	NEW DRAWING ISSUE	
D	10.12.2018	ADDITIONAL BATHROOM LAYOUTS PROVIDED	
E	11.02.2021	DEPARTMENT NAME CHANGE	
F	16.09.2022	TO MATCH 'SHDG' UPDATE	
G	07.03.2024	IN ACCORDANCE IN WITH TSS 2024	
H	07.11.2024	DEPARTMENT NAME CHANGE	

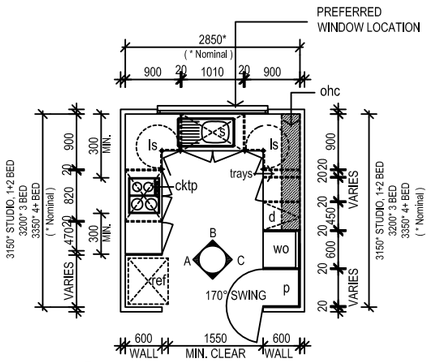
Queensland Government

Professional & Technical Services
A business unit of the
Department of Housing and Public Works

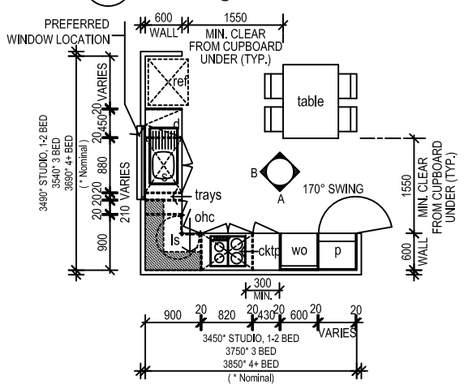
S TOH / A GISH	07/03/2024
DRAWN	DATE
A GISH	25/03/2024
DISCIPLINE TEAM LEADER	DATE
R BARTKOWIAK	25/03/2024
AUTHORISED FOR ISSUE	DATE

DHPW STANDARD TECHNICAL DRAWING
SOCIAL HOUSING
BATHROOMS - TYPICAL
GENERAL, SILVER, GOLD & PLATINUM LEVEL

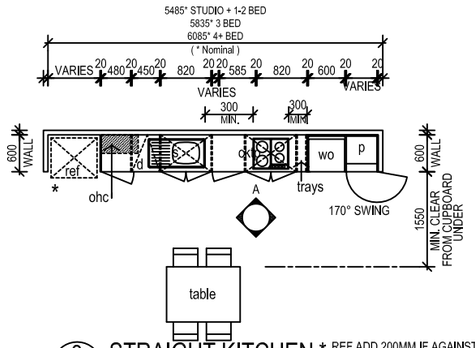
SCALE	AT
AS INDICATED	A1 SIZE
MASTER SITE NUMBER	CLIENT REFERENCE NUMBER
DRAWING NUMBER	ISSUE / SHEET NO
QTD B01	H / 1



1 U- SHAPE KITCHEN
SCALE 1:50 @ A1

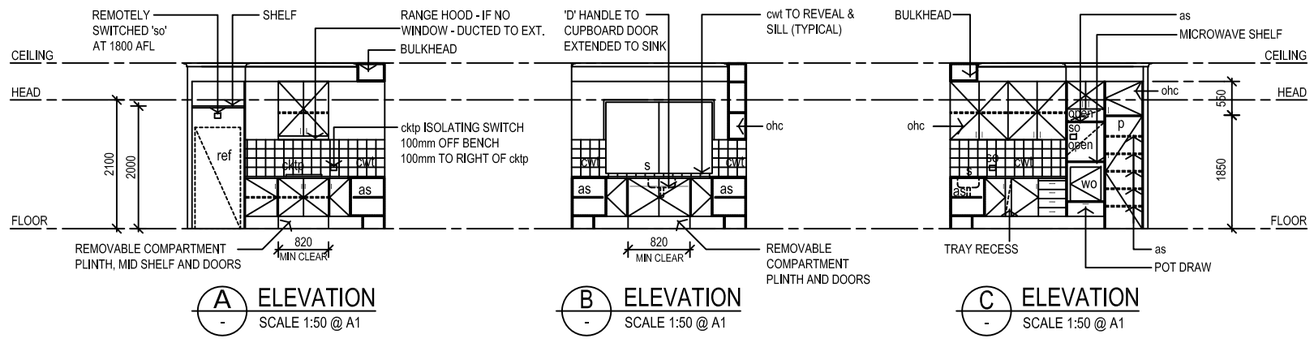


2 L- SHAPE KITCHEN
SCALE 1:50 @ A1



3 STRAIGHT KITCHEN
SCALE 1:50 @ A1

* REF ADD 200MM IF AGAINST RETURN WALL.



A ELEVATION
SCALE 1:50 @ A1

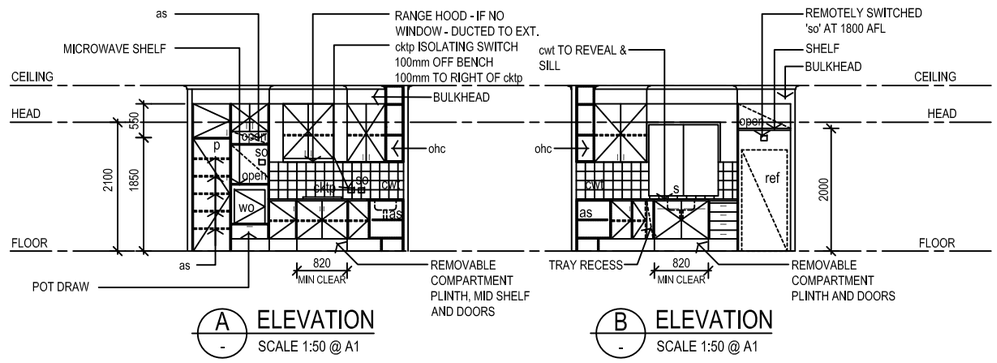
B ELEVATION
SCALE 1:50 @ A1

C ELEVATION
SCALE 1:50 @ A1

NOTE:
PLATINUM LEVEL

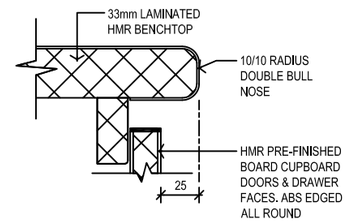
REFRIGERATOR SPACE - WIDTH
850mm - STUDIO + 1-2 BED
900mm - 3 BEDROOM
1050mm - 4+ BEDROOM

PANTRY - WIDTH
600mm - STUDIO + 1-2 BED
900mm - 3 BEDROOM
1000mm - 4+ BEDROOM

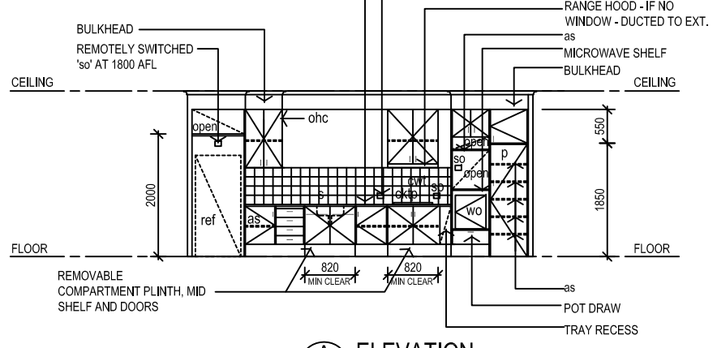


A ELEVATION
SCALE 1:50 @ A1

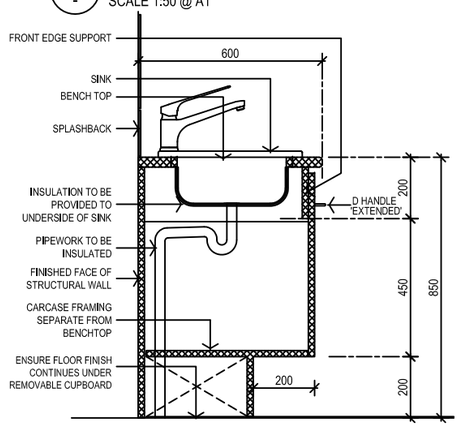
B ELEVATION
SCALE 1:50 @ A1



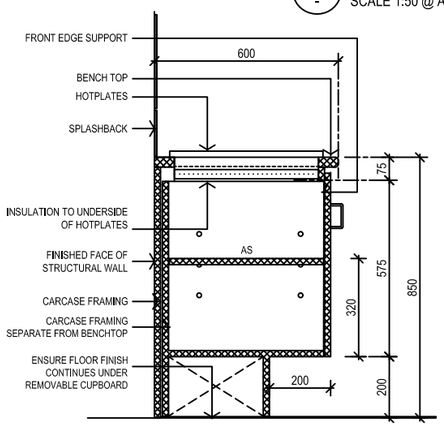
8 DETAIL - BENCH NOSING
SCALE 1:2 @ A1



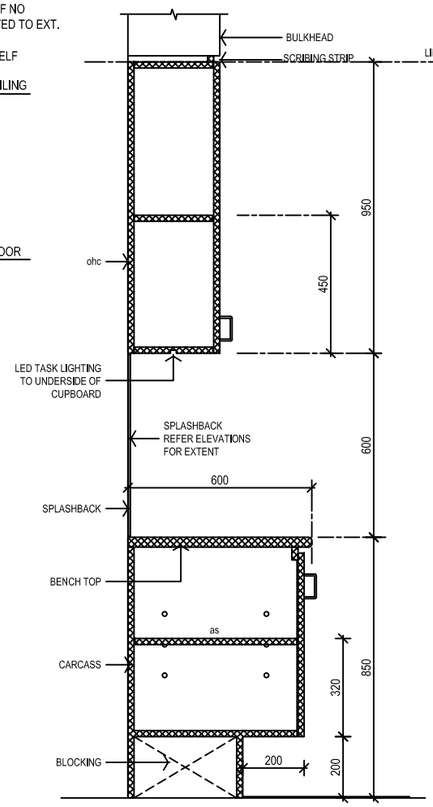
A ELEVATION
SCALE 1:50 @ A1



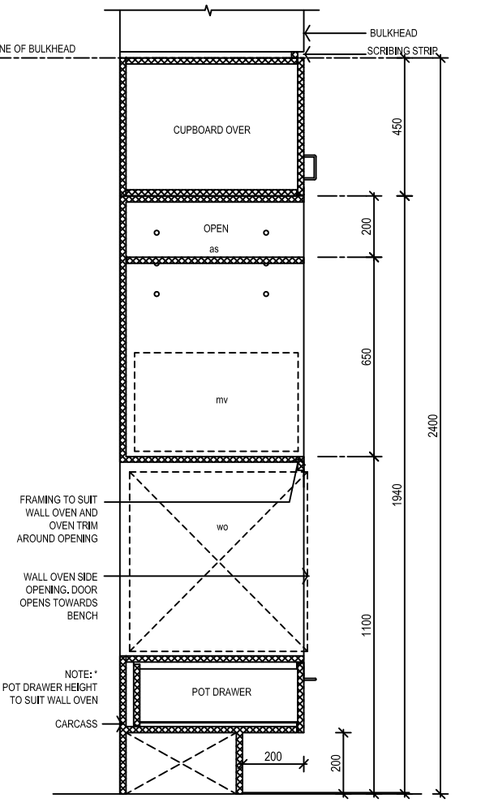
4 REMOVABLE CUPBOARD UNDER SINK
PLATINUM LEVEL SCALE 1:10 @ A1



5 REMOVABLE CUPBOARD UNDER HOTPLATES
PLATINUM LEVEL SCALE 1:10 @ A1



6 KITCHEN BENCH CUPBOARD
PLATINUM LEVEL SCALE 1:10 @ A1



7 WALL OVEN and MICROWAVE UNIT
PLATINUM LEVEL SCALE 1:10 @ A1

BARCODE

LEGEND

as	ADJUSTABLE SHELF	p	PANTRY
cktp	COCKTOPS	ref	FRIDGE (NOT IN CONTRACT
cwt	CERAMIC WALL TILES	s	SINK
d	DRAWERS	so	SOCKET OUTLET
ls	LAZY SUSAN	wo	WALL OVEN (GOLD LEVEL - SIDE HINGED)
mv	MICROWAVE SHELF		
ohc	OVERHEAD CUPBOARD		

CERAMIC TILES

GENERAL NOTES

1.COOKTOPS (cktp) ARE EQUIVALENT TO HOTPLATES ON ALL TYPICAL PLAN SHEETS.

2.RANGEHOOD REQUIRED IF NO KITCHEN WINDOW.

3.RANGEHOOD TO BE DUCTED OUTSIDE.

4.SENIOR APARTMENTS 850 BENCH LENGTH.

5.DISHWASHER SPACE FOR 3+ BEDROOMS 650 NOM. WIDTH.

AMENDMENTS

ISSUE	DATE	SUBJECT	AUTHORISED
C	25.10.2019	MICROWAVE SHELF HEIGHT	RB
		ALTERED, REMOVEABLE CUPB'D	
		UNDER SINK ALTERED	
D	30.11.2023	TO MATCH 'SHDG' UPDATE	ST
E	31.01.2024	DEPT' NAME CHANGE	

DRAWING INDEX SYSTEM
FOR QBUILD USE ONLY

- ☐ CEILING PLANS
- ☐ CONSTRUCTION DETAILS
- ☐ ELEVATIONS
- ☐ EXTERNAL WORKS
- ☐ FITOUTS
- ☐ FLOOR PLANS
- ☐ FURNITURE & EQUIPMENT
- ☐ HYDRAULICS
- ☐ MASTER PLAN
- ☐ MISCELLANEOUS DETAILS
- ☐ OTHER
- ☐ PLAY STRUCTURES
- ☐ ROOF PLANS
- ☐ SECTIONS
- ☐ SETOUT PLAN
- ☐ SITE PLAN
- ■ STANDARDS

Queensland Government
Department of Housing, Local Government, Planning and Public Works

NOTES FOR KITCHENS: IN PLATINUM APARTMENTS

1. WASTE PIPES MUST NOT COMPROMISE THE REQUIRED CLEARANCE REQUIREMENTS UNDER SINK, AS PER AS4299.
2. EXTEND FLOORING UNDER PANTRY, BROOM CUPBOARD AND REMOVABLE CUPBOARDS.

WJ Kite	OCT' 2017
A.GISH	OCT' 2017
R. BARTKOWIAK	OCT' 2017

SOCIAL HOUSING

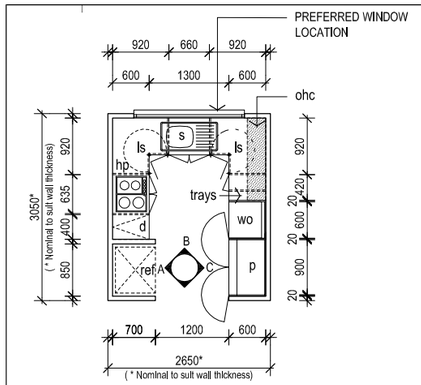
TYPICAL JOINERY DETAILS

KITCHEN
PLATINUM OCCUPANCY LEVEL

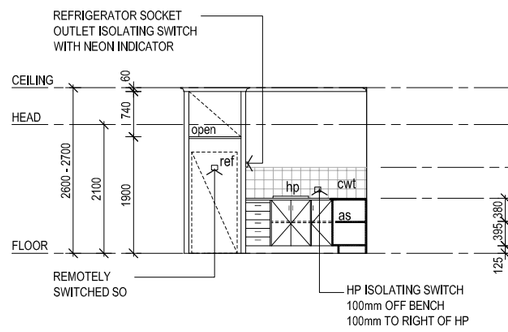
SCALE	AT
AS SHOWN	A1 SIZE

MASTER SITE NUMBER | CLIENT REFERENCE NUMBER

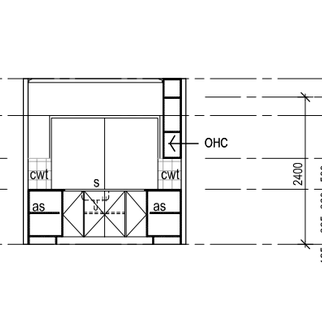
DRAWING NUMBER	ISSUE	SHEET NO
TDK01	E	1



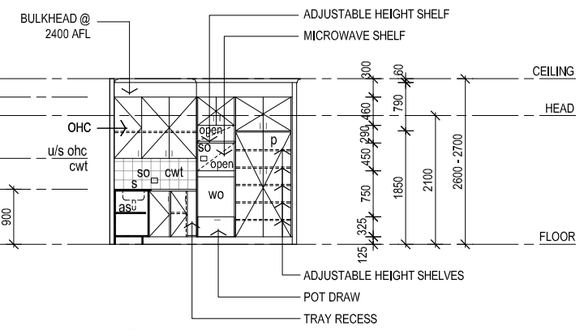
1 U- SHAPE KITCHEN
SCALE 1:50 @ A1



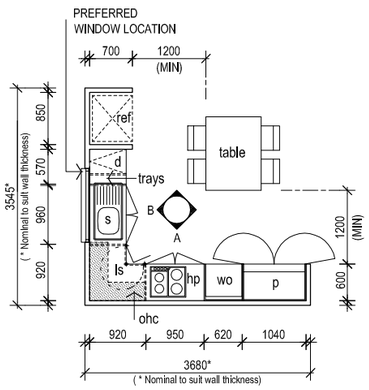
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SCALE 1:50 @ A1



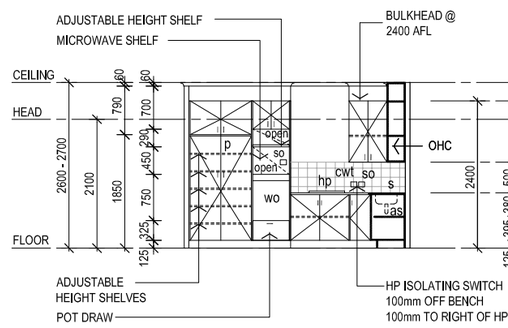
B ELEVATION
SCALE 1:50 @ A1



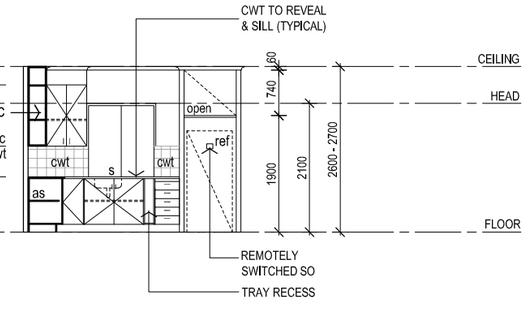
C ELEVATION
SCALE 1:50 @ A1



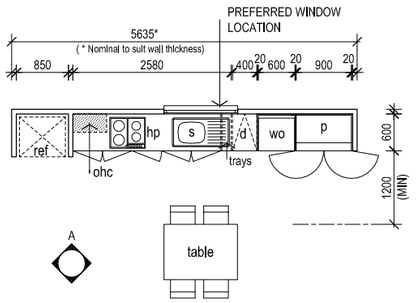
2 L- SHAPE KITCHEN
SCALE 1:50 @ A1

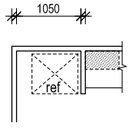


A ELEVATION
SCALE 1:50 @ A1



B ELEVATION
SCALE 1:50 @ A1

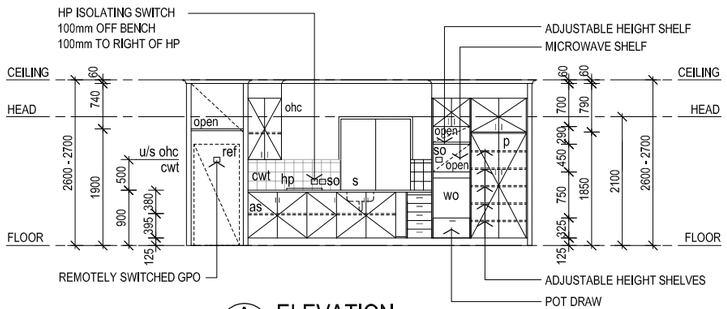




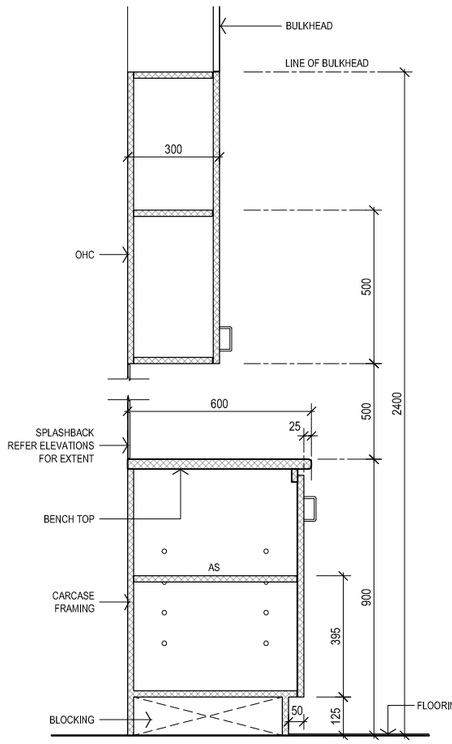
NOTE:
ALTERNATE REFRIGERATOR LAYOUT AGAINST END WALL

ALLOW SPACE TO OPEN DRAWERS AND SHELVES

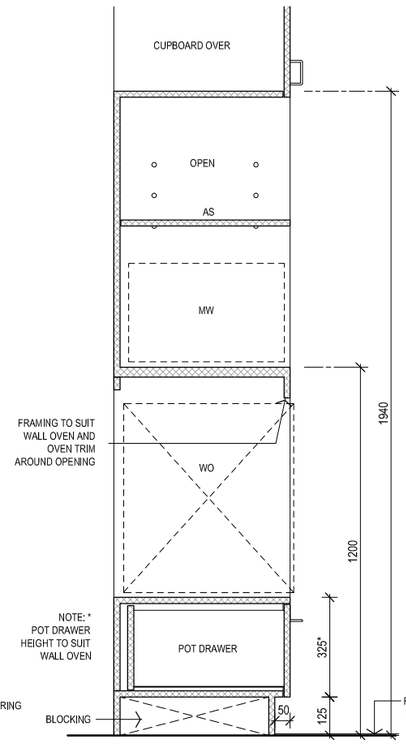
3 STRAIGHT KITCHEN
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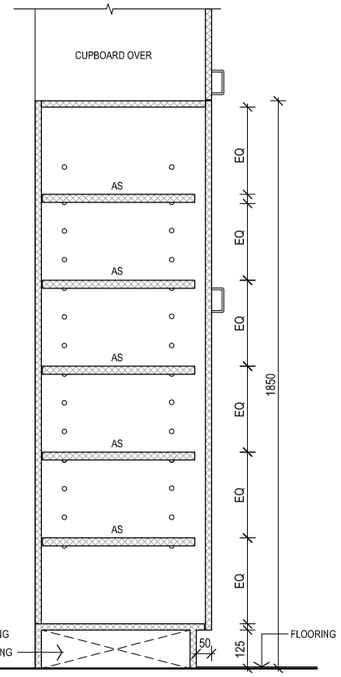
A ELEVATION
SCALE 1:50 @ A1



1 KITCHEN BENCH CUPBOARD
SCALE 1:10 @ A1



2 WALL OVEN and MICROWAVE UNIT
SCALE 1:10 @ A1



3 TYPICAL PANTRY
SCALE 1:10 @ A1

BARCODE

LEGEND:

AS	ADJUSTABLE SHELF	Ref	REFRIGERATOR (NOT IN CONTRACT)
CWT	CERAMIC WALL TILES	S	SINK
D	DRAWERS	SHL	SHELVES
HP	HOT PLATES	SO	SOCKET OUTLET
HW	HOT WATER UNIT	ST	STOVE
LS	LAZY SUSAN	WO	WALL OVEN
MW	MICROWAVE SHELF		
OHC	OVERHEAD CUPBOARD		
P	PANTRY		CERAMIC TILES

HOTPLATES:
HOTPLATES (HP) ARE EQUIVALENT TO COOK TOPS (CT) ON ALL TYPICAL PLAN SHEETS.

SENIOR APARTMENTS:
SENIOR APARTMENTS 850 BENCH HEIGHT

AMENDMENTS

ISSUE	DATE	SUBJECT	AUTHORISED
A	20.10.2017	NEW DRAWING ISSUE	
B	19.04.2018	RAISED FLOOR TO PANTRY ADDED	

DRAWING INDEX SYSTEM
FOR BUILDING and ASSET SERVICES USE ONLY

- ☐ CEILING PLANS
- ☐ CONSTRUCTION DETAILS
- ☐ ELEVATIONS
- ☐ EXTERNAL WORKS
- ■ FITOUTS
- ☐ FLOOR PLANS
- ☐ FURNITURE & EQUIPMENT
- ☐ HYDRAULICS
- ☐ MASTER PLAN
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- ☐ OTHER
- ☐ PLAY STRUCTURES
- ☐ ROOF PLANS
- ☐ SECTIONS
- ☐ SETOUT PLAN
- ☐ SITE PLAN
- ☐ STANDARDS

Queensland Government
Department of Housing and Public Works

WJ Kite (DRAWN)	OCT'. 2017 (DATE)
A.GISH (DISCIPLINE TEAM LEADER)	OCT' 2017 (DATE)
R. BARTKOWIAK (AUTHORISED FOR ISSUE)	OCT' 2017 (DATE)

SOCIAL HOUSING

TYPICAL JOINERY DETAILS

KITCHEN
GOLD, SILVER and GENERAL OCCUPANCY LEVELS

SCALE	AT
AS SHOWN	A1 SIZE

MASTER SITE NUMBER	CLIENT REFERENCE NUMBER

DRAWING NUMBER	ISSUE	SHEET NO
TDK02	B	2

PRELIMINARY COMPLIANCE - LOW DENSITY RESIDENTIAL ZONE

ITEM	REQUIREMENT	PROVISION	COMPLIANCE
Height	8.5m / 2 stories within 10m of site boundaries 10m / 3 stories over 10m of site boundaries	2 stories / 8.5m	√
Site Cover	65% of 1 600m² or 1 040m²	820m² or 56%	x
Front Setback	6m		√
Rear Setback	-		-
Side Setback	1.5m below 4.5m height, add 0.5m for every 3m above 4.5m height		√
Private Open Space	GF 35m² at min 3m FF 1 bed 9m², 2 bed 16m² min 3m	over 12m² min 12m²	√ √
Communal Open Space	-	-	√
Car Parking	1.7 spaces per dwelling + 0,2 visitor space per dwelling + incorporated wash bay	20 covered bays + 3 visitor bays required 10 covered + 1 visitor bays provided	x

PRELIMINARY COMPLIANCE - DESIGN STANDARD FOR DWELLINGS V4.2

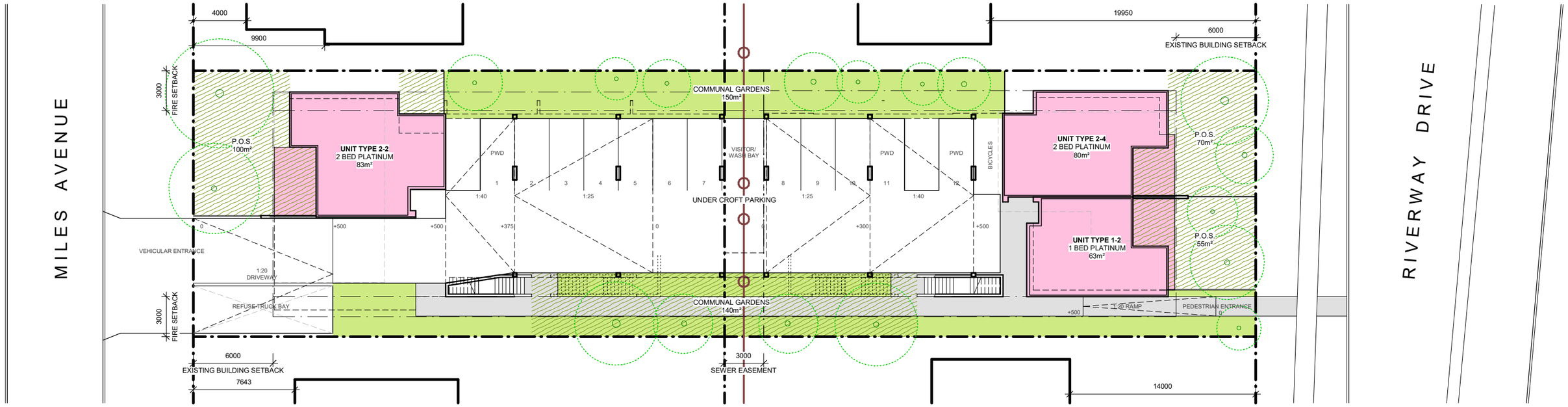
ITEM	REQUIREMENT	PROVISION	COMPLIANCE
Accessibility	30% of Social Housing Apartments in new multiple dwelling developments designed to LHDG Platinum Level	3 of 12 units or 25%	x
Design Principles	Housing must be consistant with the central principles.		√
	Housing must face the street or public realm.	7 units faces the street	√
Legibility	Front doors of dwellings must be individually identifiable.		√
	Visitors must have access to front doors without moving through private open space.	all provided with rear access doors	√
Car Parking & Street Presentation	Streetscape must not be dominated by car parking.	parking behind buildings	√
	Parking to be setback further than front building line.		√
Indoor/Outdoor Connection	Direct connection between internal and POS		√

PRELIMINARY COMPLIANCE - LIVABLE HOUSING DESIGN GUIDELINES

ITEM	GOLD REQUIREMENT	PLATINUM REQUIREMENT	COMPLIANCE
Dwelling Access	Disability access to AS1428 to be provided from footpath to the entrance of all units on at least one floor; Pathways min 1000mm wide.	Disability access to AS1428 to be provided from footpath to the entrance of all units on at least one floor; Pathways min 1200mm wide.	√
Dwelling Entrance	Level entrance landing of 1350 x 1350mm and clear door opening of 850mm.	Level entrance landing of 1500 x 1500mm and clear door opening of 900mm.	√
Circulation Space	Minimum door openings of 850mm and corridors of 1200mm.	Minimum door openings of 900mm and corridors of 1200mm.	√
Car Parking	Bay of 5400(l) x 3200(w) x 2500(h) connected with 1100mm wide path.	Bay of 6000(l) x 3800(w) x 2500(h) connected with 1200mm wide path for each accessible unit	standard PWD bays
Bathrooms	Hobless showers min 1000 x 1000mm and open space of 1200 x 1200mm forward of shower.	Hobless showers min 1160 x 1100mm and open space of 1400 x 1600mm forward of shower.	√
Kitchens	1200 clearance between benches.	1550 clearance between benches.	√
Laundry	1200 clearance between appliances.	1550 clearance between appliances.	√
Bedroom	Minimum 10m², one wall minimum length 3m, minimum clearance 1m.	Minimum circulation space 1540mm x 2070mm inside door, minimum clearance everywhere else of 1m.	√
Living Area	No requirments.	Family living room accommodates 2250mm in diameter free space.	√

UNIT COUNT

TYPE 1-1	1 BED GENERAL	5x
TYPE 1-2	1 BED PLATINUM	1x
TYPE 2-1	2 BED GENERAL	2x
TYPE 2-2	2 BED PLATINUM	1x
TYPE 2-3	2 BED GENERAL	1x
TYPE 2-4	2 BED PLATINUM	1x
TYPE 2-5	2 BED GENERAL	1x
TOTAL		**12 UNITS**



1 GROUND FLOOR PLAN
1 : 150

As indicated @ A1 SIZE SHEET

NOTES:
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Date	Amt	Description	Drawn	Auth
23/03/31	A	PRELIMINARY SKETCH DESIGN - ISSUED FOR COMMENTS	CL	AD

CLIENT
DEPARTMENT of COMMUNITIES, HOUSING and DIGITAL ECONOMY
Queensland Government

ARCHITECTS DOVEY & ASSOCIATES

PROJECT
KELSO APARTMENTS

ADDRESS
8 MILES AVE & 1265 RIVERWAY DR, KELSO

DRAWING TITLE
GROUND FLOOR PLAN

North Point

Reviewed/Authorised
☐ Tender
☐ Construction
☒ For Information
☐ Approval
☐ .....

PROJECT MANAGER
DATE *

DIRECTOR
DATE *

PRELIMINARY SKETCH DESIGN

DRAWN BY: CL
DATE: 23/03/31
SCALE: As Indicated @ A1
DRAWING CAD REFERENCE: C086FO
SHEET SIZE: A1
PROJECT NUMBER: C086FO
DRAWING NUMBER: PSD A01.01
AMENDMENT: A

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31/03/2023 4:20:37 PM

PRELIMINARY COMPLIANCE - LOW DENSITY RESIDENTIAL ZONE

ITEM	REQUIREMENT	PROVISION	COMPLIANCE
Height	8.5m / 2 stories within 10m of site boundaries 10m / 3 stories over 10m of site boundaries	2 stories / 8.5m	√
Site Cover	65% of 1 600m² or 1 040m²	820m² or 56%	x
Front Setback	6m		√
Rear Setback	-		-
Side Setback	1.5m below 4.5m height, add 0.5m for every 3m above 4.5m height		√
Private Open Space	GF 35m² at min 3m FF 1 bed 9m², 2 bed 16m² min 3m	over 12m² min 12m²	√ √
Communal Open Space	-	-	√
Car Parking	1.7 spaces per dwelling + 0.2 visitor space per dwelling + incorporated wash bay	20 covered bays + 3 visitor bays required 10 covered + 1 visitor bays provided	x

PRELIMINARY COMPLIANCE - DESIGN STANDARD FOR DWELLINGS V4.2

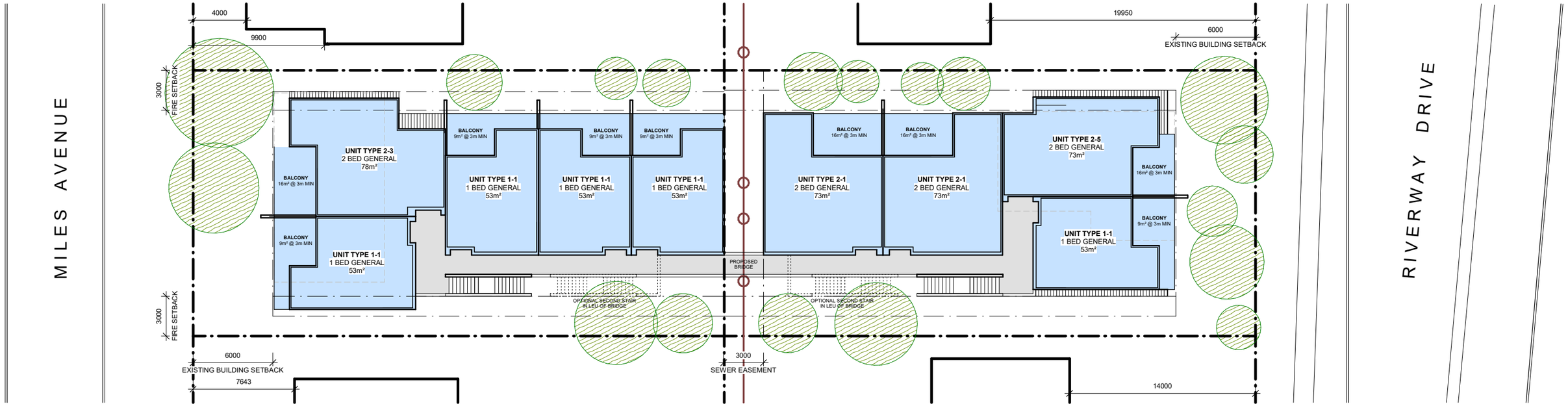
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	Housing must face the street or public realm.	7 units faces the street	√
Legibility	Front doors of dwellings must be individually identifiable.		√
	Visitors must have access to front doors without moving through private open space.	all provided with rear access doors	√
Car Parking & Street Presentation	Streetscape must not be dominated by car parking.	parking behind buildings	√
	Parking to be setback further than front building line.		√
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Kitchens	1200 clearance between benches.	1550 clearance between benches.	√
Laundry	1200 clearance between appliances.	1550 clearance between appliances.	√
Bedroom	Minimum 10m², one wall minimum length 3m, minimum clearance 1m.	Minimum circulation space 1540mm x 2070mm inside door, minimum clearance everywhere else of 1m.	√
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TYPE 2-3	2 BED GENERAL	1x
TYPE 2-4	2 BED PLATINUM	1x
TYPE 2-5	2 BED GENERAL	1x
TOTAL		**12 UNITS**



1 FIRST FLOOR PLAN
1 : 150

As indicated @ A1 SIZE SHEET

NOTES:
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Date	Amt	Description	Drawn	Auth
23/03/31	A	PRELIMINARY SKETCH DESIGN - ISSUED FOR COMMENTS	CL	AD

CLIENT
DEPARTMENT of COMMUNITIES, HOUSING and DIGITAL ECONOMY
Queensland Government

GHD
ARCHITECTS DOVEY & ASSOCIATES

PROJECT
KELSO APARTMENTS

ADDRESS
8 MILES AVE & 1265 RIVERWAY DR, KELSO

DRAWING TITLE
FIRST FLOOR PLAN

North Point

Reviewed/Authorised
☐ Tender
☐ Construction
☒ For Information
☐ Approval
☐ .....

PROJECT MANAGER
DATE *

DIRECTOR
DATE *

PRELIMINARY SKETCH DESIGN

DRAWN BY	DATE	SCALE
CL	23/03/31	As Indicated @ A1

DRAWING CAD REFERENCE
C086FO

SHEET SIZE	PROJECT NUMBER
A1	C086FO

DRAWING NUMBER	AMENDMENT
PSD A01.02	A

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31/03/2023 4:20:11 PM

SOCIAL HOUSING SPECIFICATION

For AS 4300 Document and Construct Projects

Part A - Standard Specification
Part B - Schedules to Specification

Department of Housing and Public Works

Document & Construct of a 13-unit apartment complex, 4x1 Bedroom Platinum, 1x1 Bed Gold, 4 x2 Bed general, 4x1 Bed General.

8 Miles Ave &1265 Riverway Drive, Kelso, Townsville, 4815

Site Number:	**Lot 1 & 3 RP727085 & RP727085**
Project Number:	**93378**

Name: Authorised for Issue: [Name and signature of Design Manager]	Date: 07/03/25

Queensland Government

QBuild
Enquiry Contact Details

For all project enquiries during the Tender Period contact:

QBuild.NQ.Tenders@epw.qld.gov.au

For all enquiries after the acceptance of tender contact the Superintendent's Representative.

Version Control

Refer Appendix 2: Version Control at the end of this document.

Substantial parts of material in this specification are drawn from NATSPEC BASIC which is a reference specification published by Construction Information Systems Australia Pty Ltd as NATSPEC - the national building specification. This material is developed by QBuild which is a licensed user of NATSPEC.

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PART A STANDARD SPECIFICATION

THIS PAGE NOT USED

010 PRELIMINARIES

1 GENERAL

1.1 CROSS REFERENCE

Project specific information included in the **Project Brief** document shall be read in conjunction with:

- **Part A**: This Standard Specification for AS 4300 Document and Construct **projects**; and
- **Part B**: Schedules to Specification (for completion by the Contractor's design consultants).

1.2 DESCRIPTION OF THE WORKS

General description

Refer to the project specific information in the **Project Brief** for:

- project description;
- location;
- specific site, special needs, and other Principal's requirements for the project.

Refer to the completed specification schedules in Part B for design, components and finishes selections proposed and approved for use in individual projects.

Contract documents

The Contract documents comprise all documents described in the Letter of Acceptance of Tender and include:

- Australian Standard General Conditions of Contract for Design and Construct AS 4300-1995 (hereinafter termed the 'General Conditions of Contract');
- the Special Conditions of Contract (including the completed Annexure) and any Supplementary Special Conditions of Contract, as issued by the Department of Energy and Public Works and attached to these Tender Documents:
- the accepted Tender Form and accompanying Conditions of Tendering;
- the **Project Brief**.

Reference documents

- Refer to the Project Brief for particulars.

Disclaimer on supply of electronic documentation

Electronic copies of preliminary design and services drawings forming part of the Principal's Project Requirements have been prepared by consultants engaged by the Principal for purposes associated with the Contract and remain the property of the State. Where provided by the Principal, electronic drawing and other document files represent 'information only' for the convenience of the Contractor. The Principal does not accept liability for attributes of electronic files provided for 'information only' purposes, including characteristics such as file format, document layering, completeness or accuracy.

Copyright in electronic drawing and other document files remains with the State of Queensland.

Existing work

If the Works include alterations or additions to existing work, verify the dimensions of the existing work before proceeding and notify discrepancies as required by the Contract.

1.3 SPECIAL NEEDS REQUIREMENTS

Features for enhanced mobility are an important component of social housing.

The State identifies four levels of accommodation, categorised as:

- **General Standard**
- **Silver Standard**.
- **Gold Standard**.
- **Platinum Standard**.

1.4 CONTRACTOR'S DOCUMENTS

General

Where the Contract requires the Contractor to supply documents such as, construction drawings, shop drawings, specification schedules, technical schedules, as-built drawings, or other written information, supply them in sufficient time for examination and revision, if necessary, before these documents are required for use.

Communications during documentation

The Superintendent may appoint one representative for design and documentation responsibilities and another representative for construction and administration responsibilities. Allow the Superintendent's Representatives to communicate via the Design Manager with any of the Contractor's design consultants.

1.5 SEPARATE CONTRACTS

General

Refer to **Project Brief** for information regarding any work to be undertaken on or about the site by the Principal or the Principal's agents and not forming part of the Contract.

1.6 PROVISIONAL ITEMS

General

Refer to the Preliminaries schedules in Specification for schedules of provisional allowances applicable to the Works.

Provisional allowances are subject to re-measurement or complete omission in accordance with instructions given by the Principal.

Provisional sums

Definition: The term 'provisional sums' includes prime cost sums and other monetary provisions.

Provisional sums included in the schedules of provisional allowances are for purposes stated in relevant specification worksections and are deemed to be included in the Contract Sum, together with the Contractor's allowance for margin, coordination and attendance (including special attendance).

Provisional quantities

Provisional quantities included in the schedules of provisional allowances shall be remeasured as executed to the satisfaction of the Superintendent and paid for at the unit rates provided in the Contractor's priced schedules. The Contractor is deemed to have allowed in the Contract Sum for all costs incurred in remeasuring, pricing and negotiating the value of work executed.

Schedule of rates

When included, reasonably price every item in the Contractor's returnable schedule of rates, including:

- labour;
- materials;
- waste of materials;
- custom duties and royalties;

- on-site overheads;
- head office costs.

1.7 VARIATIONS

Determination of prices for variations

The Contractor is deemed to have allowed in the Contract Sum for all costs incurred in measuring, pricing and negotiating the value of variations, and in administering the processing and implementation of variations.

In determining the value of a variation, allowance for profit, off-site overheads and preliminary items shall be included in the agreed rates.

The price for a variation shall not include an allowance for on-site overheads unless additional costs associated with such on-site overheads are specifically incurred on a particular variation.

1.8 STATUTORY REQUIREMENTS

Prior applications to authorities

Before entering into the Contract, the Principal has given the notices, paid the fees, and obtained the permits, approvals and other authorisations stated in the **Prior applications and approvals schedule**.

Prior applications and approvals schedule

Prior notices given and applications made	Fees paid	Permits, approvals and authorisations received
Notification to the Building and Construction Industry (Portable Long Service Leave) Authority ("QLeave") of the building and construction work described in the Contract documents	Payments required under provisions of the Building and Construction Industry (Portable Long Service Leave) Act	N/A

Contractor's responsibility to meet project requirements

Take responsibility for all aspects of the Works, to include compliance with the lawful requirements of public and other authorities applicable to the work, such as:

- provision of necessary documentation, inspections, and certificates sufficient to obtain compliance assessment under the Building Act 1975 / Building Regulation 2006 and Plumbing and Drainage Act 2002 / Standard Plumbing and Drainage Regulation 2003 as stated in the **Contractor's applications and approvals schedule**;
- compliance with provisions of the Queensland Building and Construction Commission (QBCC) Act 1991 / Queensland Building and Construction Commission Regulation 2003, including any necessary licensing, inspections, certifications and fee payments;
- necessary notifications, applications, inspections, fee payments, certifications, and other requirements of supply authorities in regard to necessary building services infrastructure;
- compliance with provisions of the Environmental Protection Act 1994, Planning Act 2016, Planning Regulation 2017, and subordinate regulations, codes of practice, and policies;
- compliance with Principal Contractor provisions of the Work Health and Safety (WHS) Act 2011 / Work Health and Safety Regulation 2011 and associated codes of practice.
- compliance with Formwork Code of Practice 2016. Refer to Workplace Health and Safety Queensland for detailed requirements: https://www.worksafe.qld.gov.au/laws-and-compliance/codes-of-practice/formwork-code-of-practice-2016-commences-31-march-2016

Contractor's applications and approvals schedule

Notices to be given and applications made	Fees to be paid	Permits, approvals and authorisations to be received
Submission of required number of copies of construction plans and specifications to the Contractor's Building Certifier	Payments required under provisions of the Building Act 1975	Building Act compliance permit with date, including with assessment conditions and stamped compliance documents
Submission of electronic copies of hydraulic plans and specifications to QBuild	Payments required (for permit only) under provisions of the Plumbing and Drainage Act 2002	Plumbing and Drainage Act compliance permit with date, including with assessment conditions and stamped compliance documents
Submission of required number of copies of stamped compliance documents to Queensland Fire and Emergency Services (QFES) as referral agency	Payments required under provisions of the Building Act 1975 and Fire and Emergency Services Act 1990	QFES approval with date, including with approval conditions and QFES stamped compliance documents

Give notice and pay fees in respect of all other statutory requirements e.g. for on-site inspections and testing on completion. Comply with provisions of relevant statutory requirements in accordance with Contract conditions. Take responsibility as the Principal Contractor under Work Health and Safety Regulation 2011.

Queensland Building and Construction Commission

Pay to the Queensland Building and Construction Commission (QBCC) an insurance premium ('the insurance premium') for residential construction work, as required under the Building and Construction

Commission Act 1991, unless the work is excluded from being relevant building work under Part 2 of the Building and Construction Commission Regulation 2003.

Provide the Superintendent with evidence that:

- the insurance premium has been paid, and
- the residential construction work is compliant with the Queensland Building and Construction Board Rectification of Building Work Policy.

Take responsibility for and pay costs associated with engaging a professional engineer registered in Queensland (RPEQ) to conduct required inspections and provide certification that all structural elements are constructed in accordance with the Contract documentation.

Applications to separate utility authorities
Where applicable, apply to relevant Utility Service Providers for supply and connection to required building services, to include but not be limited to power, communications, town mains water, and disposal of sewage or trade wastes. Pay all associated fees (including those for mandatory service requirements such as meters and testing) and provide all documentation and attendance required by the Provider and/or Local Authority for approval or other purposes. Furnish the Superintendent with evidence that Utility Service Provider and/or Local Authority fees are paid and requirements met. Notify the Superintendent if any necessary building service supply or connection is included in the Principal's Project Requirements but unavailable when fees are paid.

Building Act / Plumbing and Drainage Act compliance documents
Take responsibility for obtaining the QFES-approved Building Act / Plumbing and Drainage Act compliance permits and assessment conditions from the Contractor's Building Certifier or other required compliance assessment authority. Keep one set of QFES-approved Building Act / Plumbing and Drainage Act compliance documents on site as required by Building Regulation 2006 and satisfy all compliance assessment conditions during the course of the Works.

The compliance documents identify the "evidence of suitability" certificates required for compliance assessment. The Building Certifier may amend the list of certificates during the course of the Contract to reflect actual components and services used in the Works. Submit "evidence of suitability" certificates as they become available and issue a final consolidated set at least 2 weeks before offering the Works as practically complete. Working in association with other required compliance assessment authorities, the Building Certifier's issuing of a code assessment summary for the Works is a condition precedent to certification of practical completion.

Construction and services inspections
Engage independent and suitably qualified **Queensland Registered Professional Consultants** to undertake compliance inspections required by Part 6 of Building Regulation 2006 and for issuing of design and inspection certificates. Arrange and pay costs for independent inspection and certification of all other building components, systems and equipment where required under the National Construction Code (NCC) or other statutory provision. Notify the Superintendent of readiness for inspections 2 weeks prior to the inspection or activity occurring. Take responsibility for liaising with the relevant compliance inspector for:

- the type and nature of inspections required;
- the staging and timing of such inspections;
- notification periods required prior to required inspections.

Fire services
Where the building contains "special fire services" (as defined in Schedule 2 of the Building Act 1975), give 48 hours minimum notice to the Superintendent and the Commissioner, Queensland Fire and Emergency Services, so that they can be inspected as required by Section 74 of the Building Act 1975 and, if necessary, tested at the following stages:

- after installation and before concealment by subsequent construction work;
- after installation and before interior finishes are applied.

Fire services documentation
Prior to requesting practical completion, prepare and submit the following printed documents to the compliance officer nominated to perform Building Act inspections:

- a list of all "fire safety installations" as defined in Schedule 2 of the Building Act 1975;
- 3 copies of as-built drawings showing the location of fire safety installations.

Furnish to the Superintendent 2 copies of the as-built drawings. Furnish separately to the Superintendent (marked for the attention of the relevant Building Act compliance officer):

- the list of all "fire safety installations";
- 1 copy of the as-built drawings.

Supply all printed documents collated, bound and parcelled.

Approvals, Certificates and Plant Equipment Registration
In addition, to all other local statutory authorities having jurisdiction over the installations, obtain all necessary approvals, certificates, and registration from the relevant Authorities to enable operation of the plant equipment.

Refer to schedule 5 of the Work Health and Safety Regulation 2011 for requirements.

Competent person
Applications for plant equipment registration will require a 'safe to operate' statement by a competent person. This person will make a declaration that the plant equipment has been inspected and assessed as being safe to operate.

Approval for use
A person must not use the registerable plant, nor be directed to use registrable plant at the workplace, unless the plant has been registered.

Change of Ownership of Registered Plant
Prior to Handover (in co-ordination with the Principal), organise to change ownership of plant equipment, registered with Work, Health and Safety Queensland, to the Principal and/or as directed by the Superintendent.

2 HEALTH AND SAFETY

2.1 ACCREDITED AUDITOR (CONSTRUCTION)

Functions

Further to Special Conditions of Contract clause 15.2.3, functions which an Accredited Auditor (Construction) is to perform on Queensland Government building and construction projects include:

(a) Assessment of the Contractor's Work Health and Safety (WHS) management plan in relation to site construction activities being undertaken.

(b) Inspection of the Contractor's site construction activities and assessment of safety practices observed against criteria contained in the Site Inspection Report checklist.

(c) Providing the Superintendent with summary audit reports prepared after assessments / site inspections, including of any non-conformances and recommendations that:

- work should be suspended for safety reasons;
- urgent action is needed to protect work under the Contract, other property, or people.

(d) Verification when corrective action notices are finalised, including providing corresponding notices to the Superintendent.

If, in the opinion of the Accredited Auditor (Construction), corrective action notices are taking longer than is reasonable to finalise, the Superintendent shall be notified, and recommendations made in accordance with (c).

Number of site inspections required:
Project duration 16-25 weeks: 1
Project duration 26-38 weeks: 2
Project duration 39 weeks and above: 2 plus one for each additional 13 weeks.

Ensure that all audit requirements are included in the contractual agreement between the Contractor and the Accredited Auditor (Construction).

Payment

Further to Special Conditions of Contract clause 15.2.4, the Principal shall reimburse the Contractor for Accredited Auditor (Construction) fees incurred in performing the functions specified above, provided always that fees shall not be reimbursed for "failed inspections".

The Contractor shall not be allowed any additional amount for profit, overheads or attendance in respect to Accredited Auditor (Construction) fees.

Reimbursement procedures shall be as follows:

(a) After paying the fees, the Contractor shall submit to the Superintendent a monthly invoice seeking reimbursement, together with evidence of the amount paid to the Accredited Auditor (Construction) and a statement of functions performed in respect of that invoice.

(b) Invoices for reimbursement of Accredited Auditor (Construction) fees shall not be included in payment claims made in accordance with Special Conditions of Contract Clause 42, but may be submitted at any time in the month.

(c) Invoices shall be addressed to QBuild and shall include:

- reference to the QBuild Project Number.
- allowance for GST.

Invoices shall be considered separately from, and shall be paid separately from, payment claims made in accordance with Special Conditions of Contract clause 42.

2.2 PROTECTION OF PEOPLE AND PROPERTY

Occupied premises

Where work is required in close proximity to existing occupied buildings, minimise nuisance to occupants and ensure their safety. Protect occupants against weather, dust, dirt, water, noise or other nuisance by appropriate means, including use of temporary screens and barriers, erosion control and dust suppression to earthworks, and residential class silencers on all equipment exhausts.

Where overhead cranage is necessary to complete the Works, ensure the safety of crane operation by monitoring and actively enforcing the exclusion zone. Make allowance for foreseeable time and cost effects on the construction program.

Submit details of proposed methods (for information only).

Construction safety generally

Particular statutory responsibilities apply to persons commissioning construction projects, designers and principal contractors under the Work Health and Safety Act 2011, Work Health and Safety Regulation 2011, and associated Codes of Practice, to ensure a safe work environment for:

- all persons associated with the Works;
- the Principal to manage before and after taking occupancy of the completed Works.

Manage risks to health and safety by diligent application, maintenance and continuing review of control measures for hazards reported by the Designers of each element of the Works or otherwise identified during the course of the Works. Upon request and where applicable, provide the Superintendent and Principal with:

- the Designers' written safety report on hazards associated with the particular building design (where not typical of known hazards associated with designs for similar structures);
- the Contractor's WHS management plan relative to site construction activities being undertaken;
- the individual safe work method statements prepared for high risk construction activities forming part of the Works.

Safe work method statements must address all relevant aspects of the activity, including following established codes of practice for hazardous activities such as formwork (including maximum load limits), working at heights, electrical / solar system safety, and safe working with ACM, along with general WHS considerations. Where required, switch off power and test metal roofs and other metal building elements before commencement to ensure they are not 'live'. Maintain written records of all testing and inspection procedures undertaken.

Temporary barricades, hoardings and other risk control measures

Enclose all work and plant areas with temporary barricades, hoardings and other appropriate risk control measures. Provide rigid safety fencing with

mesh screening around the entire perimeter of the worksite to minimum 1800mm height and maintain for the entire duration of the work. Incorporate lockable gates providing an equal level of risk control where necessary. Remove on completion and make good all affected areas.

Accidents
Promptly notify the Superintendent if any of the following occur:

- accidents involving death or personal injury;
- accidents involving loss of time;
- incidents with accident potential e.g. equipment failures or “near misses”.

Protective clothing
Make available sufficient protective clothing for use by minimum 6 daytime visitors.

- Safety helmets: To AS/NZS 1801, Type 1.
- Certification: Required.
- Certification provider: An organisation accredited by the Joint Accreditation System of Australia and New Zealand (JAS-ANZ).
- High visibility safety vests: To AS/NZS 4602.1, Class D.

Hazardous materials or conditions
Notify the Superintendent immediately if any of the following are found:

- asbestos and asbestos-containing materials (see also Clauses 2.4 to 2.6);
- flammable or explosive liquids or gases;
- toxic, infective or contaminated materials;
- radiation or radioactive materials;
- noxious or explosive chemicals;
- acid sulfate soils;
- tanks or other containers which have been used for storage of explosive, toxic, infective or contaminated substances;
- any other material or substance which may be potentially deemed as toxic, infective or a hazardous contaminant.

No Smoking policy
Smoking in dwelling units is prohibited, whether occupied or otherwise. Do not leave cigarette butts or other rubbish on the site at any time.

2.3 CARE OF THE WORK AND REINSTATEMENT OF DAMAGE

General
Damage to infrastructure and services: Do not obstruct or damage existing roadways, footpaths, drains, watercourses, public utilities, and other services in use on or adjacent to the site. Make good and pay all costs for rectifying any damage to existing infrastructure and services, including making temporary arrangements satisfactory to the Superintendent and relevant local or other authorities.

Damage to property: Do not interfere with or damage property which is to remain on or adjacent to the site, including adjoining property encroaching onto the site. Protect trees and other vegetation shown to be retained, or which need not be removed or damaged for construction operations. Make good and pay all costs for immediately rectifying any interference or damage to such property.

Existing services
Attend to existing services as follows:

- If the service is to be continued, repair, divert or relocate.
- If the service crosses the line of a required trench, or will lose support when the trench is excavated, provide permanent support for the existing service.
- If the service is to be abandoned, remove redundant parts and make safe.

Submit proposals for action to be taken with respect to existing services before starting work. Minimise the number and duration of interruptions.

Existing and new crossings
Existing gutter crossing(s): Arrange with the local authority for removal of the existing gutter and footpath crossing(s) as documented. Replace with kerbing, guttering and footpaths to match similar adjacent existing work, and pay all fees in connection with this work.

New gutter crossing(s): Arrange with the local authority for provision of gutter and footpath crossing(s) as documented and pay all fees in connection with this work.

Existing fencing and retaining walls
All existing fencing and retaining walls: Inspect for condition/dilapidation to notify and seek instruction for the Works from the Superintendent. Contractor is responsible for all costs associated to repair, disposal, and/or replace fencing and retaining walls as identified and directed by Superintendent.

Adjoining property
At least 14 days before commencing work, submit to the owners and occupants of adjoining property written notice of intention to commence work and an outline description of the type and extent of work.

As part of site establishment, arrange a joint inspection with the Superintendent and the owners and occupants of adjoining properties. Arrange a similar joint inspection on completion of the Works.

Dilapidation record
At the initial inspection, prepare a detailed photographic dilapidation record of conditions existing within the adjoining properties, especially structural defects and other damage or defacement. Label each image with information sufficient to confirm location and dilapidation observed.

Provide the Superintendent, Principal and each owner and occupant of an adjoining property with one electronic (PDF) copy of the dilapidation record. Keep a hard copy on site as evidence of conditions existing before commencement.

Encroachments
Advise the Superintendent immediately and seek instructions if the Works reveal encroachments of:

- adjoining property on to the site; or
- existing site structures on to adjoining property,

and such encroachments are not otherwise identified in the Contract documents.

2.4 ASBESTOS IN CONSTRUCTION WORK

Requirement
Prohibition on use of asbestos: Asbestos in the forms of crocidolite, amosite, fibrous anthophyllite, tremolite,

actinolite, or chrysotile must not be used or re-used as a building product or material.

Acceptable uses: Notwithstanding the above prohibition on use, asbestos containing material (ACM) may be worked with for the purposes of sampling and analysis in the minimum quantity necessary, and for removal, disposal, encapsulation, or enclosure as specified or directed. Chrysotile products installed before 31 December 2003 and in sound condition may also continue in use in their existing positions unless otherwise specified.

Prohibition on use of chrysotile asbestos in all forms: From 31 December 2003, under the *National Model Regulations for the Control of Workplace Hazardous Substances*, chrysotile asbestos ('white asbestos') cannot be imported into Australia, nor used or sold in any new product in Australia. Ensure that chrysotile asbestos is not included in any new or relocated products incorporated into the Works.

Restriction on materials imported to the site: Imported material, including fill, soils and mulches, must be free of building waste of any kind and in particular must be free of ACM. Before placing, provide the Superintendent with written certification that all imported material is free of building waste and ACM.

Discovery of suspected or confirmed ACM (an asbestos incident)
Stop work and notify the Superintendent immediately if suspected or confirmed ACM is discovered during work such as:

- excavation or trenching;
- placing fill, soil or mulch;
- any other work external or internal to a building.

Procedure in event of an asbestos incident
Where an "asbestos incident" occurs by disturbance of ACM during the course of the Works without appropriate controls being in place:

- notify the Superintendent immediately;
- stop work on the disturbed or discovered ACM, decontaminate workers as required, and temporarily seal any enclosure around the disturbed or discovered ACM;
- do not attempt to clean up or seal disturbed or discovered ACM in any way;
- secure the area with the assistance of staff nominated by the Principal;
- restrict access to the site to persons nominated by the Superintendent (these persons shall include a Principal's Advisor, appropriately licensed Asbestos Removal Contractor, and others);
- resume work only when directed by the Superintendent.

Obtain a copy of any sampling or test result arising from the asbestos incident and carry out appropriate and relevant measures as communicated by the Principal's Advisor. Revise the Safe Work Method Statement and provide 2 copies of the revised document to the Superintendent.

3 SITE MANAGEMENT

3.1 SETTING OUT

Certification
Provide certification from a Queensland Registered Consulting Cadastral Surveyor - Surveyors Board of Queensland (SBQ) to verify the Works are within the site boundaries, and within required setbacks from each site boundary, including with a drawing certifying the set out. Submit the certificate to the Superintendent within 10 working days of completion of setting out.

Take responsibility for the set out and indemnify the Principal against any liability, loss, claims or proceedings in respect of encroachment by the Works on to adjoining properties or required setbacks.

3.2 SITE MANAGEMENT GENERALLY

Contractor's site manager
Ensure attendance by a site manager or site foreman (hereinafter termed 'Site Foreman') with overall responsibility for issues that include construction safety and project coordination at all times work is being undertaken on the site. Persons in this position must have demonstrated experience in delivering similar projects and shall be separate from any leading hand, subcontractor or other representative of the Contractor.

Contractor's pedestrian and vehicular access
Comply with the *Traffic Management for Construction or Maintenance Work Code of Practice 2008*. Use a designated entry point agreed with the Superintendent for access and egress by Contractor's workers. No other access point is to be used without prior agreement.

Deliveries and site waste
All loading and unloading of materials must be in locations agreed with the Superintendent and subject to any time limits or clearways applicable to these locations. Ensure that materials and rubbish are not left in common areas outside the construction site. Remove site waste as it accumulates to avoid the formation of potential workplace hazards.

Fire protection services and emergency access / egress
Maintain fire protection services and emergency access when undertaking work under the Contract. Ensure that egress remains clear at all times for emergency evacuations on exit paths of travel.

Do not disconnect fire alarms, except with prior written approval from the Superintendent. Maintain fire mains and fire hydrants on adjoining sites in fully operational condition at all times.

Salvaged items
Unless otherwise nominated in the Contract, take responsibility for materials, plant, equipment and other items salvaged during work under the Contract and remove them from the site.

Trucking
Convey soils, earth, sand, loose debris, and like loose materials to or from the site in a manner that prevents dropping of materials on streets.

Ensure that the wheels, tracks and body surfaces of all vehicles and plant leaving the site are free of mud and that mud is not carried on to adjacent paved streets or other areas.

3.3 SITE MEETINGS

Pre-start meeting
After completion of the documentation stages and prior to site establishment, a meeting shall be held with relevant representatives of the Superintendent,

Contractor, Principal, Design Manager and Contractor's consultant team. The purpose of the meeting is to allow the Design Manager and appropriate consultants to explain the project's concept and any items considered to be particularly important during the construction stage, including those relating to environmental concerns or necessary but potentially disruptive activities. The pre-start meeting is intended to establish the basis for good communication between all participants by:

- confirming the roles and responsibilities of all parties to the Works;
- establishing clear and effective lines of communication between the parties;
- facilitating transfer of knowledge about all aspects of the Works to and from the participants;
- supporting attention to technical and administrative communications required under the Contract;
- setting the agenda and conduct for future site meetings.

Minutes for the pre-start meeting will be taken and distributed by the Superintendent's Representative.

Site meetings
Throughout the duration of the Contract, arrange meetings at fortnightly or other agreed intervals with appropriate Subcontractors, the Superintendent, and the nominated Principal's representative. Unless otherwise directed by the Superintendent, keep minutes of such meetings, and have electronic (PDF) copies forwarded to all attendees within 3 working days after each meeting.

Contacts
At the first site meeting, submit to the Superintendent the names and telephone numbers of responsible persons who may be contacted after hours during the course of the Contract.

3.4 MATERIALS, LABOUR AND CONSTRUCTIONAL PLANT

Site Foreman's office
Before major site operations commence, provide a secure weather-tight office for the Site Foreman with sufficient lighting, air conditioning, power, water and telecommunications services to allow the Site Foreman, Contractor, Superintendent and Principal's representative(s) to complete necessary Contract administration tasks while on site. Provide sufficient space, fitout and equipment in the office to:

- permit comfortable viewing, copying and printing of construction drawings and other documents;
- house the Building Act compliance documents in lockable drawer space;
- hold site meetings with a table and sufficient chairs for all required attendees.

Fire-fighting equipment: Provide a 4.5 kg dry chemical AB(E) class fire extinguisher to AS/NZS 1841.5.

Cost of services: Pay charges for installation, use and removal on completion.

Maintenance and access: Clean the Site Foreman's office regularly. If the office must be moved during progress of the Works, do so without charge and with minimum inconvenience. Provide access to the office at all times work is being undertaken on site.

Removal: When agreed by the Superintendent, remove the Site Foreman's office and contents on completion and make good the site.

Temporary infrastructure and services generally
Provide and maintain temporary infrastructure and services necessary for execution of work under the Contract. Install temporary infrastructure and services in accordance with the requirements of relevant authorities. Do not connect to existing services without the Superintendent's prior approval.

Pay charges in connection with installation and use of temporary services and make them available to subcontractors. On completion, disconnect and remove temporary infrastructure and services, and make good connection points and surrounds to match the site conditions existing prior to commencement of the Works.

Temporary power
Provide an electricity service for the Works, separately metered and suitably protected by circuit breakers and earth leakage protection devices.

Temporary water
Provide sufficient water of suitable quality to enable completion of work under the Contract. Notify the Superintendent and obtain approval of the proposed methods of providing temporary water to the site, and any associated conditions of supply, prior to implementation.

Potable water: Before using water from existing reticulated potable water systems, provide a dedicated calibrated water meter. Read meters jointly with a representative of the Principal at intervals directed by the Superintendent.

Water saving measures: Comply with any water restrictions set by the relevant regional water supply authority, and the local authority having jurisdiction in the general area surrounding the site.

Take all reasonable measures to minimise the consumption and waste of water used on site. Maintain all Contractor's fittings and equipment to minimise leaks.

Attendance: Attend the site at all times that water is being used, including during all commissioning activities and the planting establishment period. Cease water consumption before leaving the site each day.

Site amenities
Provide statutory and necessary amenities and sanitary facilities for workers and other persons lawfully upon the site and remove them on completion of the Works.

Principal Contractor and/or builder's signs
Within 2 weeks of taking possession of the site, provide a professionally lettered construction sign made of weatherproof materials. To include the Contractor's QBCC-licensed name, number, contact details that include a phone number and after-hours phone number, and location of the site office if this applies to the site. This is to be prominently displayed in black letters in accordance with Queensland Building and Construction Commission Act 1991.

Erect the sign in a suitable location on site as approved by the Superintendent. Apart from mandatory construction safety signs, no other

contractors' signs are permitted without the Superintendent's approval.

Notes:

Temporary fencing
Where the Works include the taking down, re-erection, or maintenance of existing fencing, ensure the site is secured at all times by temporary fencing.

3.5 MATERIALS AND WORK

Building Materials and Components
The use of Non-Conforming Building Products and Non-Compliant Building Products (NCBPs), as defined by the Queensland Building and Construction Commission (QBCC), is not permitted.

Materials shall conform to the Standards and Codes issued by the Standards Association of Australia, unless otherwise specified.

Verify building materials and components, conform, and comply with the National Construction Code (NCC) and following, as applicable:

- Certificate of Conformity by CodeMark or WaterMark;
- Certificate of Accreditation from a State or Territory Accreditation authority;
- Certificate from an appropriately qualified person such as an engineer;
- Certificate from a product certification body accredited by JAS-ANZ;
- Report registered by a registered testing authority;
- Other documentary evidence.

Upon request by Principal, provide evidence of compliance and conformance.

For detailed information about compliance and conformity assessment, refer to:

- Queensland Building and Construction Commission (QBCC) http://www.qbcc.qld.gov.au/non-conforming-building-products/non-conforming-building-products
- The Australasian Procurement and Construction Council Guide to Procurement of Construction Products.

Items supplied by the Principal
Where items are nominated in the *Preliminaries* schedules to be made available free of charge to the Contractor for use in the Works, take delivery of these items and assume responsibility for them.

If the Superintendent determines that the items are not in a suitable condition for use, the Contractor shall be entitled to a variation order for work necessary to make them suitable. Pay for all other costs and charges, including for collection, loading, transport to site, unloading, cutting, fabrication and insurance.

Give the Superintendent 3 weeks written notice of the date on which the items are required to be ready for collection, together with verification of the quantities required for the Works.

Except where caused by Contractor error, additional quantities of items required to complete the Works shall be supplied by the Principal free of charge to the Contractor. Return surplus unused items to the Principal at the discretion and direction of the Superintendent, and at the Principal's cost. Where additional quantities are required through Contractor error e.g. unnecessary wastage or mistake, the Principal shall supply the items at the Contractor's cost.

Measurement of work
For the purposes of the Contract, measure work in accordance with the Australian Standard Method of Measurement of Building Works.

Joining Up
Generally:

Carry out the joining of new work to existing work, and any consequent cutting away, in a manner appropriate to the materials, and make good to existing work as directed by the Superintendent.

3.6 AUSTRALIAN AND OTHER STANDARDS

Current editions
An Australian or other standard applicable to the Works should be the current Edition but may be the edition last published not later than one month prior to the closing date for tenders.

Site copies
Where reference to a standard is required to resolve differences in respect of compliance with the Contract requirements, provide a copy of the relevant Standard.

3.7 SAMPLES

Approved samples
Where samples are called for, items supplied are to be in accordance with the approved samples, or an approved alternative within a range defined by approved samples. Keep approved samples in good condition on site until Practical Completion. Where not so specified herein, provide samples upon reasonable request from the Superintendent at no additional cost to the contract.

Delay
The Contractor shall be solely responsible for the consequences of delay resulting from failure to allow adequate time for the assessment and approval of samples, or from the rejection of samples which do not comply with the Specification.

3.8 WARRANTIES

Name the Principal
Warranties or guarantees specified shall name the Principal as warrantee.

Written warranties are required:

- Where called for by the Contract Documents;
- On all Appliances and Equipment; and
- Where offered by the manufacturers.

All warranty periods shall commence from the Date of Practical Completion and remain in force for the periods specified or if not specified, for a period of twelve (12) months.

3.9 ALTERNATIVE MATERIALS OR WORK

The Contractor shall be deemed to have allowed for the materials and methods of work described in the Contract whether they are proprietary items or otherwise.

Where materials specified are not available or the method of work specified is not possible or for any other reason, the Contractor wishes to substitute an alternative material or method of work, then in each instance:

- The Contractor shall request the substitution, from the Superintendent, in writing in time to allow a response

to be given within 10 days of receipt of the notice so as not to cause delay to the progress of the Works;

- The Superintendent may allow the substitution at no additional cost to the Principal, or the Superintendent may issue a Variation to effect a reduction or increase in the value of the Works; and
- The Contractor shall be responsible for the suitability and performance and the fitness for purpose of the substituted material/item or method of work. The Contractor is required to supply a sample of the proposed item, and evidence that the performance is equal to or greater than that specified.
- Refer to this section Clause *3.5 - Materials and Work* for compliance and conformance when materials substitution is requested/required.

Claims

The Contractor shall not be entitled to compensation for any rejection of a submitted alternative, nor, unless otherwise agreed, shall adoption of an alternative be ground for any claim for additional cost damages or extension of time.

3.10 PROTECTION OF THE ENVIRONMENT

Statutory responsibilities

Carry out all work under the Contract and protect the site in compliance with provisions of the Environmental Protection Act 1994, Environmental Protection Policies, associated statutory legislation and this specification – refer to the *Environmental Management* worksection for detailed compliance requirements.

Audits

The Superintendent may undertake auditing of the Contractor's environmental management of work under the Contract at any time to ensure compliance with statutory requirements and this specification.

Environmental harm or breaches

During the course of work under the Contract, take responsibility for any incidents or non-compliances which could constitute an environmental harm or breach under the Environmental Protection Act, including acting immediately to contain or prevent environmental harm and/or public risk from such incidents. Notify the Superintendent immediately such circumstances arise and register the incident with the Department of Environment and Heritage Protection (DEHP) where required under the Act.

Restoration costs or time

If the Superintendent determines that the Contractor by act or omission has contributed to or caused the incident or non-compliance, the Contractor must bear responsibility for the full costs and time of attending to the incident.

Sewage overflow incidents

Should sewage surcharges / discharges occur across the site or across adjacent public land for any reason, advise the Superintendent immediately and take the following remedial measures:

- ensure personal protective equipment (PPE) is worn during containment and remediation work;
- contain the spill, particularly from entering stormwater drains or natural watercourses, and barricade the affected area with temporary fencing (star pickets and barricade mesh as minimum) to prevent public access;
- clean up the site where possible, including applying lime to small affected areas to reduce risk to the public from pathogens;
- notify the relevant Utility Service Provider and any affected land-owners.

These actions are to ensure the safety of the public and to protect the environment, and are mandated regardless of ownership of the infrastructure. To be effective, containment and remediation work must be undertaken immediately an overflow is detected and, in the absence of a timely response from the Contractor, may be performed by agents of the Principal at the Contractor's cost.

3.11 MOVEMENT CONTROL IN FIRE ANT / ELECTRIC ANT INFESTED AREAS

Statutory responsibilities

Biosecurity regulations apply to performance of work within, or operation from, fire ant and electric ant movement control areas. If the site has been identified as within a gazetted movement control area, make allowance for foreseeable time and cost effects on the construction program when fulfilling Contract requirements to:

- Comply with the Plant Protection Regulation 1990 as amended, any relevant quarantine notice issued under the Plant Protection Act, and the requirements of Biosecurity Queensland (within the Department of Agriculture, Fisheries and Forestry or DAFF) and this specification.
- When required by Biosecurity Queensland, obtain site inspections and appropriate approvals, and implement all required risk management procedures for the duration of the Works, including during defects liability and planting establishment periods. Risk management procedures may include but are not limited to:
  - Training of site supervisors and construction staff in issues related to awareness, detection, reporting and management of fire ant / electric ant infestation.
  - Inspecting and adequately cleaning items placed in contact with the ground, including vehicles, machinery, equipment and apparatus of any kind, prior to bringing to and leaving the site.
  - Transporting, storing and handling materials to be incorporated into the Works, including waste materials, by methods that minimize the risk of fire ant / electric ant infestation.

Immediately report any infestation of fire ants / electric ants found on the site to Biosecurity Queensland and the Superintendent.

Movement control restrictions: Obtain 'high-risk materials' to be incorporated into the Works from suppliers with an appropriate quality assurance system which provides effective controls against possible fire ant / electric ant infestation. 'High-risk materials' include sands, gravels, aggregates, soils, imported fill, soil mixes, mulches, plants, hay, straw, grass, seeds, turf, logs, sleepers, pavers, and other materials capable of harbouring fire ants / electric ants.

Before placing, provide the Superintendent with written certification that imported 'high-risk materials' comply with movement control restrictions.

- Incorporate warranties received from suppliers of 'high-risk materials' into the manuals specified in the clause **Operation and Maintenance Manuals** in *General Requirements* worksection.

4 PROGRESS AND PROGRAMMING OF THE WORKS

4.1 CONSTRUCTION PROGRAM

Linked bar chart

Within 14 calendar days of notification of acceptance of the tender, provide the Superintendent with an electronic (PDF) copy of a detailed linked bar chart showing intended progress and the relationship of each activity upon each subsequent activity set against a suitable time scale. Link the beginning and end of each activity with a dependency line, identify the critical path, and make provision for entering actual progress. If the Superintendent considers the initial construction program as submitted is insufficient or otherwise unsatisfactory for the purpose, resubmit an amended linked bar chart within 7 days of being requested to do so by the Superintendent.

Revisions: If, at any time during performance of the Works, the progress for any item of work shown on the linked bar chart is less than that forecast, or the Superintendent considers that the linked bar chart does not show a satisfactory program of work, resubmit an amended program within the period required by the Superintendent to show a revised work plan.

The Principal may refuse payment upon any certificate until such linked bar chart is provided.

Fortnightly and monthly reporting

- Refer to Schedules of this Specification – Part B for detailed scope and provide the Superintendent with site photographs (including sufficiently descriptive captions) of those portions of the Works under construction each fortnight to demonstrate progress. Provide a written report to the Superintendent each month which sets out:
  - the true position reached on the Works;
  - any deviations from the approved construction program;
  - any anticipated risks or circumstances adversely affecting performance of the Works;
  - a schedule of activities undertaken in the previous 2 weeks and planned for the following 2 weeks;
  - a record of labour / subcontractors engaged upon the site over the previous month;
  - the weather conditions experienced on site over the previous month.

4.2 PROGRAM CHART

Requirement

Mount and display the construction program in the Site Foreman's office and keep up to date.

4.3 HANDOVER REQUIREMENTS

General

On completion, the following steps shall be finalised to the Superintendent's satisfaction before offering the Works as practically complete:

- All required Building Act 'evidence of suitability' certificates* as listed in the **Building Act compliance documents schedule** in the *General Requirements* schedules have been obtained, collated, forwarded to, and accepted by the Building Certifier and the Superintendent has received the Building Certifier's completed code assessment summary for the Works.
- Submissions to the Building Certifier and the Superintendent have included written approvals from supply authorities responsible for testing of services installations and copies of applications for termination of temporary services supply (water / electricity / telephone / NBN / gas) when terminated.
- Information required by the Principal to allow safe and secure occupation and use of the Works has been supplied and accepted.
- Commissioning inspections and tests of installed building services and equipment systems have been satisfactorily completed and passed and the Superintendent has been provided with copies of the inspection and test results verifying that these systems are working within optimum design parameters (refer also to the **Handover documents schedule** and the *General Requirements* worksection).
- Persons nominated by the Principal have satisfactorily completed training in use of the building services and equipment systems.

*Revised 'evidence of suitability' certificates: Events during construction may require reissuing of Form 15 / Form 16 certificates for structural, mechanical, hydraulic, emergency lighting, fire and other services systems. Other 'evidence of suitability' certificates are required for compliant building elements, components, general finishes, non-slip finishes and fixtures, equipment and services systems actually forming part of the Works. Coordinate reissuing of any revised 'evidence of suitability' certificates in sufficient time to prevent possible delay in issuing of the Building Certifier's completed code assessment summary.

On completion, check and adjust all elements of the Works to the Superintendent's satisfaction, including but not limited to:

- easing and adjusting doors, windows, hatches, locks, hardware and other moving components;
- examining and clearing drains and gutters of any debris;
- ensuring that bolts and screws are tight;
- re-lamping luminaires and renewing similar replaceable services components used during construction and testing that all services are working as required.

Rectification of omissions and defects before practical completion

Further to General and Special Conditions of Contract clauses 30.1, 30.3, 30.4, 30.5, 30.6 and 42.5 and other requirements of the Contract, and before offering the Works as practically complete, the Contractor shall have:

- thoroughly inspected the Works for omissions and defects; and
- made good any omissions and defects so identified.

Assist the Superintendent and representatives of the Principal in separate and timely inspections for omissions and defects. Omissions and defects

identified by the Superintendent shall be included in the list of items to be rectified before offering the Works as practically complete.

Keep detailed records of all inspections for omissions and defects in the Works, including listing when each item is identified, rectified, reinspected, and confirmed as satisfactory. Provide the Superintendent with an electronic (PDF) copy of the compiled records of all completed omissions and defects before offering the Works as practically complete.

Final cleaning

On completion, thoroughly clean all elements of the Works to the satisfaction of the Superintendent, using labour skilled in the particular cleaning operations, including but not limited to:

- cleaning windows, both inside and out on all faces;
- removing paint spots from floors, walls, windows, and other visible surfaces;
- removing render and other spots on metal sashes, box sections and other surfaces;
- dusting walls, ledges, projections, and dust-collecting surfaces of any kind;
- washing down and cleaning of walls, fixtures, fittings, and internal equipment of all kinds;
- cleaning and polishing chrome, mirrors, hardware and like fittings;
- cleaning floors, including vacuuming carpets, polishing seamless finishes, and washing concrete slab surfaces;
- cleaning ducts, cupboards, and like accessible compartments;
- cleaning the insides of switchgear and control gear assemblies;
- cleaning and necessary adjusting of switchgear, contactors, and other electrical contacts.

Clean each building (or floor of each building) in sequence and lock off once cleaning is completed. If any further work is required in a cleaned area, thoroughly clean the building (or floor of the building) again. On completion of cleaning operations, check the master keying system and hand to the Superintendent a full set of keys for all locks, complete with properly engraved individual plastic labels.

Provide a 'UR22' restricted key system (keyed alike) locks to employee WC, storeroom, and gate locks, where applicable. Request direction from Principal prior to installation.

Rectification of omissions and defects after practical completion

Further to General and Special Conditions of Contract clause 37, rectify any omissions and defects remaining at the date of practical completion and/or identified during the defects liability period within:

- the timeframes directed by the Superintendent relative to risk or inconvenience to the Principal; or
- 30 days from the date of notification in all other instances.

Defects inspection and review meetings: Allow to meet with the Superintendent and representatives of the Principal at monthly intervals throughout the defects liability period for the purposes of:

- monitoring the status of omissions and defects in the Works; and
- ensuring these omissions and defects are properly rectified within the required timeframes.

Requirements at expiration of the defects liability period

Complete omissions and defects outstanding at practical completion and/or subsequently identified before expiration of the defects liability period. Additional requirements prior to issuing of a final certificate include but are not limited to:

- Submission to the Superintendent of electronic (PDF) copies of compiled records of completed omissions and defects up to and including the end of the defects liability period.
- Completion of scheduled maintenance of building components, services and equipment systems to accord with respective manufacturers' warranty or maintenance agreement conditions and which the Contract identifies as the responsibility of the Contractor.

4.4 AS-BUILT DRAWINGS

Submit as-built drawings at practical completion of size and quality standard commensurate with the contract drawings. Record accurately to scale, and on the same drawing, the sewerage, drainage, water supply, electrical, telephone and NBN services, showing:

- depth of services, and
- dimensions from boundaries, buildings and other obstructions.

Include on the drawings:

- a sufficient legend;
- project no / job no;
- real property description; and
- address of the Works.

4.5 PLANT / EQUIPMENT REGISTER

- Contractor to complete register (available from the Superintendent), providing description and details of plant/equipment installed on project site. Submit completed register (soft copy) at/or prior to Practical Completion.

5 DESIGN CRITERIA

5.1 ACCEPTANCE OF DESIGN AND CONSTRUCTION

General

Design buildings and associated structures to sustain the most adverse combination of loads to which they will be subjected. Designs should also reasonably provide for the legislated objectives of:

- safety of persons to be accommodated in each building or structure in case of fire (e.g. by rapid means of egress);
- prevention and suppression of fire;
- prevention of the spread of fire;
- energy efficiency in operation;
- protection of the health and amenity of all persons to be accommodated therein.

Acceptance of design and construction must accord with the National Construction Code (NCC) Vol. 1,

clause A2.2 Evidence of Suitability, except in instances where:

- Determination of the strength of sandwich panel wall and roof systems is made with reference to prototype testing as defined in AS 4100 Section 17.
- Structural components are used which are not covered by Australian Standards.

Specific evidence of suitability requirement
In the instances referenced above, provide evidence of suitability of the complete building system in one of these forms only:

- A technical assessment of fitness for purpose over the design life of the building by a Registered Testing Authority e.g. BRANZ Appraisals or approved equivalent testing assessment body.
- A current Certificate of Conformity or a current Certificate of Accreditation issued under Codemark, WaterMark, or other ABCB accepted building product certification scheme.

5.2 STRUCTURAL LOADS

Requirement
Dead and live loads: To AS/NZS 1170.

Wind loads:

- Ultimate limit state design wind speed must be shown on the drawings.
- Serviceability limit state design wind speed must be shown on the drawings.
- Internal pressure coefficients used must be those which result in the most adverse loading conditions that the building is designed to undergo on site.

Design internal walls, partitions, fixings and supports to resist a minimum lateral load of 0.5kPA from differential internal pressure. Internal partitions must not deflect more than height / 300 under this pressure.

Ceiling diaphragms spanning in excess of 9 metres shall incorporate specific structural detailing.

Deflections:

- Comply with suggested serviceability limit state criteria in AS/NZS 1170.
- Where absolute values are also given, adopt the smaller. Instantaneous deflection of a floor member must not exceed 2mm when subjected to a point load of 1kN.
- Notwithstanding the above, limit deflections and foundation movement so as not to adversely affect serviceability of buildings and associated structures.

Soil Criteria: Design buildings and associated structures to remain serviceable while accommodating expected surface movements.

5.3 DURABILITY

General
Design and document the Works to remain durable and fit-for-purpose for a minimum building life expectancy of 30 years. In all instances, base design for durability on the appropriate regional atmospheric corrosivity category determined in accordance with AS/NZS 2312.

Elements located in inaccessible locations shall be durable without maintenance for the expected building life. Unless otherwise specified or directed, structural elements located in accessible locations may be protected by systems that have a minimum life to first maintenance of greater than 15 years provided such systems can be maintained.

5.4 STORMWATER MANAGEMENT

Requirement
Provide and pay costs for preparation of a stormwater management plan (SWMP) by a suitably qualified professional engineer registered in Queensland (RPEQ) to show:

- The legal point of discharge;
- Pre and post development flow calculations from the site;
- Management of any overland flow issues from neighbouring properties (including from public land);

Determination of the size and location of any detention tanks required to provide a non-worsening effect to the Local Authority infrastructure.

5.5 WORK CERTIFIED BY CONTRACTOR'S CONSULTANTS

Requirement
Arrange and pay costs for independent inspection and certification of building components, systems and equipment where required to satisfy:

- compliance assessment under the Building Act 1975 / Building Regulation 2006 and Plumbing and Drainage Act 2002 / Standard Plumbing and Drainage Regulation 2003; and
- issuing of a corresponding code assessment summary once the work is satisfactorily completed.

Insurances
Independent RPEQ engineers and other suitably qualified consultants engaged by the Contractor (Contractor's certifying consultants) shall maintain and keep maintained the following insurances:

- public liability insurance in the amount shown in the Annexure to the Special Conditions of Contract; and
- professional indemnity insurance in the amount required by the Principal relative to project cost and service required for the Works, as tabled:

Professional indemnity insurance ($M) relative to project cost and service requirement

Project value	PQC1	PQC2	PQC3	PQC4
< $2M	$1M	$1M	$1M	$2M
$2M to < $5M	$1M	$1M	$2M	$2M
$5M to < $20M	$2M	$2M	$5M	$5M
$20M to < $50M	-	$5M	$10M	$10M
$50M to < $100M	-	-	$10M	$10M
> $100M	Project specific determination applies			

Inspections
No requirement for building components, services and equipment systems to be independently inspected and certified by Contractor's certifying consultants shall prejudice, remove or extinguish the rights of the Principal, Superintendent or any Superintendent's Representative appointed by the Superintendent under the Contract to inspect, reject, certify and approve any element or part of the Works,

including parts of the Works added to the Contract by instruction or by variation order.

6 PROGRESS PAYMENTS

6.1 PROGRESS CLAIM AND PAYMENT BREAKDOWN FOR MULTI UNIT ACCOMMODATION (ONE BEDROOM UNITS, APARTMENTS, ATTACHED HOUSES, AND CLUSTER HOUSES), INCLUDING CONTENT DEFINITION

Submit itemised progress claims through the Superintendent's Representative for approval. Generally, the following breakdown provides an alternative format for the basis of progress claims. Where a progress claim is not received by the Superintendent, the following breakdown may be used by the Superintendent as the basis for payment to the Contractor.

MULTI UNIT ACCOMMODATION

PERCENTAGE DISSECTION FOR PROGRESS PAYMENTS

		% Cost Distribution				
Code	**Item**	**1 Bed 1-Storey**	**1 Bed 2-Storey**	**Apart 3-Storey**	**Attached Houses**	**Cluster Houses**
1.00	**Developed-Design Stage (60% CD)**	1	1	1	1	1
2.00	**Contract Documentation Stage**	4	4	4	4	4
4.00	**Construction Stage**					
4.01	Site establishment	1	1	1	1	1
4.02	Filling and excavation	5	4	4	5	5
4.03	Footings and piers	4	3	3	3	3
4.04	Ground floor	6	5	5	5	5
4.05	First floor	-	8	8	5	-
4.06	Second floor	-	-	8	-	-
4.07	Brickwork and blockwork	10	16	20	12	10
4.08	External wall framing	3	-	-	3	3
4.09	External wall sheeting / soffit lining	1	1	-	1	1
4.10	Roof frame, ceiling and soffit framing	4	2	2	4	4
4.11	Roof covering and roof plumbing	5	3	2	3	3
4.12	Internal wall framing	3	1	-	3	3
4.13	Internal wall sheeting / ceiling lining	5	3	1	4	5
4.14	Joinery and hardware	4	4	4	4	4
4.15	Metalwork	4	5	6	3	3
4.16	Electrical fitout	4	4	3	3	3
4.17	Electrical fittings	4	4	3	3	3
4.18	Plumbing fitout	4	4	3	3	3
4.19	Plumbing fixtures and fittings	4	4	3	3	3
4.20	Painting, plastering and tiling	3	4	3	4	4
4.21	Sewer drainage	2	2	2	2	3
4.22	Stormwater drainage	2	2	1	2	3
4.23	Site work / hard landscape work	12	11	9	15	18
4.24	Soft landscape work	4	3	3	3	4
4.25	General completion	.75	.75	.75	.75	.75
5.00	**Defects Liability Period (DLP) Post Construction**					
5.01	**Services Maintenance***	.25	.25	.25	.25	.25
	TOTAL %	**100**	**100**	**100**	**100**	**100**

Note: The Multi Unit Accommodation schedule nominates percentages of the Contract Sum for the several items of operations which together comprise the Works, tabulated for assessing the value of progress payment claims.

Percentages shown against items are average for the groups of accommodation units in the Contract and do not necessarily represent the value of any items or of any particular accommodation unit.

1. SITE ESTABLISHMENT: Costs incurred in preparing the site to commence building construction.
2. FILLING AND EXCAVATION: Costs of site clearing, trimming, cut and filling, excavation, imported filling, planking and strutting and termite treatment are included.

   Costs of trench excavation for drainage, water, electrical, retaining walls etc. are included with the relevant trade.
3. FOOTINGS AND PIERS: Costs of footings, piers, piles, columns, and foundation walls.
4. GROUND FLOOR: All construction work involved in ground floor, including bearers and joists for timber floors, and membranes, sand, formwork and steel for concrete slabs.
5. FIRST FLOOR: All work involved in the construction of the floor (timber or concrete) and stairs including bearers, joists, flooring, sanding, formwork, supports, concrete and reinforcement.
6. SECOND FLOOR: All work involved in the construction of the floor including stairs.
7. BRICKWORK AND BLOCKWORK: Brickwork and blockwork in the building construction, including the costs of formwork and scaffolding. Brick fencing and retaining walls not attached to the building are included in site work.
8. EXTERNAL WALL FRAMING: Timber wall framing and bracing sheets.
9. EXTERNAL WALL SHEETING / SOFFIT LINING: Cladding to external walls and soffits, including sarking.
10. ROOF FRAME, CEILING AND SOFFIT FRAMING: Trusses or framework for the roof, ceiling and soffits including roof battens, manholes and sarking.
11. ROOF COVERING AND ROOF PLUMBING: Metal roof sheeting or concrete tiles, barges, fascias, gutters, downpipes and flashing.
12. INTERNAL WALL FRAMING: Timber wall framing and bracing sheets.
13. INTERNAL WALL SHEETING / CEILING LINING: Sheeting to all internal walls and ceilings, including cornices.
14. JOINERY AND HARDWARE: Kitchen bench cupboards, doors and frames, built in robes, architraves, skirtings, timber balustrading, locks, hinges and door furniture.
15. METALWORK: Metal balustrading, aluminium windows and doors, security screens, steel columns, beams, lintels and clothes lines.
16. ELECTRICAL FITOUT: All conduit and cabling for power, stove, hot water, TV, telephone, NBN, meter boxes, switchboard and distribution boards.
17. ELECTRICAL FITTINGS: Installation of light fittings, external lights, switches, TV antenna and stoves.
18. PLUMBING FITOUT: All piping work (including insulation) for cold and hot water supply, waste, vents and shower trays.
19. PLUMBING FIXTURES AND FITTINGS: Cocks and valves, baths, WCs, tubs, washbasins, sinks and water heaters.
20. PAINTING, PLASTERING AND TILING: Painting internally and externally, plastering including textured finishes, floor and wall tiling.
21. SEWER DRAINAGE: Drains and fittings, chambers, connections, grates and excavations.
22. STORMWATER DRAINAGE: Drains and fittings, chambers, connections, grates and excavations.
23. SITE WORK AND HARD LANDSCAPE WORK: External work, including retaining walls, roadways, paving, kerbing, crossovers, fencing, screens, letterboxes, pergolas and barbecues.
24. SOFT LANDSCAPE WORK: Planting areas, edging, turfing, seeding and planting.
25. GENERAL COMPLETION: Site clean-up, removal of Contractor's equipment, temporary facilities and rubbish.
26. SERVICES MAINTENANCE*: Scheduled maintenance of building components services and equipment systems in accordance with respective manufacturers' warranty and/or maintenance conditions.

6.2 PROGRESS CLAIM AND PAYMENT BREAKDOWN FOR HOUSES AND DUPLEXES, INCLUDING CONTENT DEFINITION

HOUSES AND DUPLEXES *PERCENTAGE DISSECTION FOR PROGRESS PAYMENTS*		
Code	**Item**	**% Cost Distribution**
1.00	**Developed-Design Stage**	1
2.00	**Contract Documentation Stage**	4
4.00	**Construction Stage**	
4.01	Site establishment and footings	5
4.02	Ground floor	10
4.03	Wall framing and bracing	10
4.04	External wall cladding and windows	10
4.05	Roof	15
4.06	Internal wall and ceiling linings	10
4.07	Joinery, hardware and metalwork	10
4.08	Plumbing and drainage	10
4.09	Electrical	5
4.10	Painting, tiling and floor coverings	5
4.11	External work and completion	5
	TOTAL %	**100**

Note: The Houses and Duplexes schedule nominates percentages of the Contract Sum for the several items of operations which together comprise the Works, tabulated for assessing the value of progress payment claims.

1. SITE ESTABLISHMENT AND FOOTINGS: Costs incurred in preparing the site to commence building construction.
2. GROUND FLOOR: All construction work involved in ground floor, including bearers and joists for timber floors, and membranes, sand, formwork and steel for concrete slabs.
3. WALL FRAMING AND BRACING: Timber wall framing and bracing sheets.
4. EXTERNAL WALL CLADDING AND WINDOWS: Cladding to external walls and soffits including all windows and frames, sliding glass doors and flashing.
5. ROOF: Roof complete, including metal roof sheeting or concrete tiles, barges, fascias, gutters, downpipes, flashings, framing and sarking.
6. INTERNAL WALL AND CEILING LININGS: Sheeting to all internal walls and ceilings including manholes, cornices and finishings.
7. JOINERY, HARDWARE AND METALWORK: Kitchen bench cupboards, doors and frames, built in robes, architraves, skirtings, timber balustrading, locks, hinges and door furniture. Metal balustrading, security screens, steel columns, beams, lintels and clothes lines.
8. PLUMBING AND DRAINAGE: Cocks and valves, bath, WC's, tubs, washbasins, sinks and water heaters and the like. Sewerage and stormwater drains and fittings, chambers, connections, grates and excavations.
9. ELECTRICAL: Complete electrical service installation of light fittings, external lights, switches, TV antenna and stoves.
10. PAINTING, TILING AND FLOOR COVERINGS: External and internal painting, tiling and floors and walls, floor sanding and floor coverings where applicable.
11. EXTERNAL WORK AND COMPLETION: All external site work, including car tracks, paving, fencing, driveways, clothes lines, retaining walls, letterboxes, turfing, planting, arboricultural works, removal of rubbish and general clean-up of the site.

020 GENERAL REQUIREMENTS

1 GENERAL

1.1 PRECEDENCE

General

Project specific schedules to this and subsequent worksections of the specification override conflicting requirements in this specification.

1.2 CROSS REFERENCES

Within the text:

- *Worksection* titles are indicated by *Italicised* text.
- Clause titles are indicated by **Bold** text.

1.3 REFERENCED DOCUMENTS

Contractual relationships

Responsibilities and duties of the Principal, Contractor and Superintendent are not altered by requirements in the documents referenced in this specification.

Current editions

Use referenced documents which are the editions, with amendments, current 3 months before the closing date for tenders, except where other editions or amendments are required by statutory authorities.

Environmental best practice references

Where applicable, the Contractor shall meet the requirements of the following standards and documents:

- The Australian Environmental Labelling Association Standard No: AELA 23-2005 "Australian Voluntary Environmental Labelling Standard Architectural and Protective Coatings".
- South Coast Air Quality Management Rule 1168.
- AS/NZS 2269 Structural plywood.
- AS/NZS 2098 Methods of test for veneer and plywood.
- EN 13986:2001 Wood based panels for use in construction - Characteristics, evaluation of conformity and marking.
- EN717-1 Test reference standard for formaldehyde emission testing.
- AS 4708 Australian Forestry Certification Scheme.
- Forest Stewardship Council certification program.

1.4 INTERPRETATION

Abbreviations

For the purposes of this Contract, the abbreviations given below apply:

- ABGR: Australian Building Greenhouse Rating.
- AFCS: Australian Forestry Certification Scheme.
- AFS: Australian Forestry Standard (AS 4808).
- AS: Australian Standard.
- ASHRAE: American Society of Heating, Refrigeration and Air-Conditioning Engineers.
- NCC: National Construction Code.
- BIM: Building information model.
- CFC: Compressed fibre cement.
- CIBSE: Chartered Institute of Building Services Engineers (UK).
- CSIRO CMSE: ActivFire Register of Fire Protection Equipment.
- DPC: Damp proof course.
- ESD: Environmentally Sustainable Design.
- FSC: Forest Stewardship Council.
- GBCA: Green Building Council of Australia.
- MS: Mild steel.
- MSDS: Material safety data sheets.
- NABERS: National Australian Built Environment Rating System.
- NATA: National Association of Testing Authorities.
- NZS: New Zealand Standard.
- PCA: Plumbing Code of Australia.
- PVC: Poly vinyl chloride.
- SS: Stainless steel.
- VOC: Volatile organic compound.

Definitions

General: For the purposes of this Contract the definitions given below apply.

- Approved: 'Approved', 'reviewed', 'directed', 'rejected', 'endorsed' and similar expressions mean 'approved (reviewed, directed, rejected, endorsed) in writing by the Superintendent'.
- Attendance: 'Attendance', 'provide attendance' and similar expressions mean 'give assistance for examination and testing'.
- Default: Specified value, product or installation method which is to be provided unless otherwise documented.
- Design life: The period of time for which it is assumed, in the design, that an asset will be able to perform its intended purpose with only anticipated maintenance but no major repair or replacement being necessary.
- Documented: 'Documented', 'as documented' and similar terms mean contained in the Contract documents.
- Economic life: The period of time from the acquisition of an asset to when the asset, while still physically capable of fulfilling its function and with only anticipated maintenance, ceases to be the lowest cost alternative for satisfying that function.
- Geotechnical site investigation: The process of evaluating the geotechnical characteristics of the site in the context of existing or proposed construction.
- Give notice: 'Give notice', 'submit', 'advise', 'inform' and similar expressions mean 'give notice (submit, advise, inform) in writing to the Superintendent'.
- Hold point: The activity cannot proceed without the approval of the Superintendent.
- IP: 'IP', 'IP code', 'IP rating' and similar expression have the same meaning as 'IP Code' in AS 60529.
- Maintenance period: Synonymous with 'Defects liability period'.
- Obtain: 'Obtain', 'seek' and similar expressions mean 'obtain (seek) in writing from the Superintendent'.
- Metallic-coated: Steel coated with zinc or aluminium-zinc alloy as follows:
  . Metallic-coated steel sheet: To AS 1397. Metal thicknesses specified are base metal thicknesses.

  - Ferrous open sections zinc coated by an in-line process: To AS/NZS 4791.
  - Ferrous hollow sections zinc coated by a continuous or specialised process: To AS/NZS 4792.
- AS/NZS 4791 and AS/NZS 4792 exclude electrogalvanized (zinc plated) steel.
- Pipe: Includes pipe and tube.
- Professional engineer: A person who is listed on the National Professional Engineers Register (NPER) in the relevant discipline at the relevant time.
- Proprietary: 'Proprietary' means identifiable by naming manufacturer, supplier, installer, trade name, brand name, catalogue or reference number.
- Provide: 'Provide' and similar expressions mean 'supply and install' and include development of the design beyond that documented.
- Registered testing authority:
  - An organisation registered by the National Association of Testing Authorities (NATA) to test in the relevant field; or
  - An organisation outside Australia registered by an authority recognised by NATA through a mutual recognition agreement; or
  - An organisation recognised as being a Registered Testing Authority under legislation at the time the test was undertaken.
- Required: Means required by the documents, the local council or statutory authorities.
- If required: A conditional specification term for work which may be shown in the documents or be a legislative requirement.
- Samples: Includes samples, prototypes and sample panels.
- Supply: 'Supply', 'furnish' and similar expressions mean 'supply only'.
- Tests:
  - Pre-completion tests: Tests carried out before completion tests.
  - Type tests: Tests carried out on an item identical with a production item, before delivery to the site.
  - Production tests: Tests carried out on a purchased item, before delivery to the site.
  - Site tests: Tests carried out on site.
  - Completion tests: Tests carried out on completed installations or systems and fully resolved before the date for practical completion, to demonstrate that the installation or system, including components, controls and equipment, operates correctly, safely and efficiently, and meets performance and other requirements. The superintendent may direct that completion tests be carried out after the date for practical completion.
- Tolerance: The permitted difference between the upper limit and the lower limit of dimension, value or quantity.
- Tolerance is an absolute value without a positive or a negative sign. It is commonly expressed by '± permitted deviation' so that the value of the tolerance is implicit.
- Verification: Provision of evidence or proof that a performance requirement has been met or a default exists.
- Witness points: Provides an opportunity to attend an activity but does not involve an obligation. The activity can proceed without approval from the Superintendent.

1.5 CONTRACT DOCUMENTS

Project Brief, Specification (Part A) and Schedules to Specification (Part B)

The **Project Brief** establishes the project objectives and outcomes, scope of design and documentation, project program, including associated particular requirements.

Specification Part A and Part B

The clauses contained in Part A of the specification apply to the project, where applicable, to meet the design intent, the Department's required construction standards and mandatory authority requirements.

Specific project requirements, modification to the Part A clauses and selection of materials and systems are specified in the Schedules in Part B of the specification and/or on the drawings.

Any ambiguity between the Part A clauses, the Part B schedules and the drawings or any conflict with statutory requirements, must be referred to the Superintendent's Representative immediately for clarification.

Levels

Spot levels take precedence over contour lines and ground profile lines.

Permanent footpath levels at street alignment are to be to Local Government requirements. Reduced levels shown relate to a datum (key point) indicated on drawings.

1.6 SUBCONTRACT DOCUMENT

Ensure that Subcontract and Supply Agreement tenderers are given or have a copy of all contract documents including:

- specification including *General Requirements* and the specification schedules
- Drawings and details
- General and Special Conditions of Contract.

1.7 NOTICE

Note

The inspections listed in the following clauses do not include inspections for QBCC Insurance purposes. These remain the responsibility of the Contractor. Department of Energy and Public Works officers are not authorised to perform inspections for insurance purposes.

Inspection

Concealment: If notice of inspection is required in respect of parts of the works that are to be concealed, advise when the inspection can be made before concealment.

Minimum notice for inspections to be made: Allow reasonable notice for all inspections.

- 2 clear working days, for projects within 50 kms of the local Inspector's office.
- 3 clear working days elsewhere, up to 200 kms.

- 5 clear working days for greater than 200 kms.

Light level requirements: to AS 1680.2.4.

Tests

General: Give notice of the time and place of nominated tests.

Minimum notice for witnessing of tests to be made: Allow reasonable notice for all test inspections (minimum four hours for on-site inspectors, otherwise two working days or greater, depending on location and access arrangements).

Attendance

General: Provide attendance for inspection and tests.

1.8 SUBMISSIONS

Approval

Do not commence work affected by samples until the samples have been approved. Submit further samples as necessary.

Retention

Keep endorsed samples in good condition on site, until practical completion.

Match approved samples throughout the works.

Timing

Submit documents and samples in a timely manner, to suit the construction program. Advise if any of the documents are to be returned.

Delays: Coordinate submissions of related items. Do not cause delays by making late or inadequate submissions.

Quantity

Bound documents: 2 copies.

Loose documents up to and including A3: Two copies.

Loose documents larger than A3: Two copies the same size as the standard contract drawings.

Electronic Submission: Electronic submission of documentation is acceptable.

Design

If part or all of an installation is to be designed by the contractor, submit documents showing the layout and details of the installation and certification if products must comply with product certification schemes or engineer's certification.

Variation documents: If it is proposed to change the installation from that shown on the contract documents, or if changes are required by statutory authorities, submit variation documents showing the proposed changes.

Samples: Submit a sample of each item where called for and 2 copies of supporting documentation. Include ancillary items such as fasteners, flashings and seals.

Errors

General: If a submission contains errors, make a new or amended submission as appropriate, indicating changes made since the previous submission.

Identification

Identify the project, Contractor, Subcontractor or supplier, manufacturer, applicable product, model number and options, as appropriate and include pertinent contract document references. Include service connection requirements and product certification. Identify proposals for non-compliance with project requirements, and characteristics which may be detrimental to successful performance of the completed work.

Endorsement

Witness points: Give notice before commencing work affected by Contractor's submissions, unless the submissions have been endorsed as satisfactory.

Hold points: Do not commence work affected by Contractor's submissions until, if appropriate, the submissions have been endorsed as satisfactory.

Authorities

Authorities' approvals: Submit documents showing approval by the authorities whose requirements apply to the work.

Correspondence: Submit copies of correspondence and notes of meetings with authorities whose requirements apply to the work.

Incorporation of samples

If it is intended to incorporate samples into the works, submit proposals.

Materials and components

Unspecified products: If and when requested, for proprietary items, submit the manufacturer's product data including:

- Technical specifications and drawings;
- Type test reports;
- Performance and rating tables; and
- Recommendations for installation and maintenance.
- Evidence of compliance, where products must comply with product certification schemes.

Substitution

Identified proprietary items: Identification of a proprietary item does not necessarily imply exclusive preference for the item so identified but indicates the necessary properties of the item.

Alternatives: If alternatives to the documented products, methods or systems are proposed, submit sufficient information to permit evaluation of the proposed alternatives, including the following:

- Evidence that the performance is equal to or greater than that specified.
- Evidence of conformity to a cited standard.
- Samples.
- Essential technical information, in English.
- Reasons for the proposed substitutions.
- Statement of the extent of revisions to the contract documents.
- Statement of the extent of revisions to the construction program.
- Statement of cost implications including costs outside the Contract.
- Statement of environmental sustainability credentials of the proposed alternative product, method or system, including listing all implications for statutory and other government policy initiatives in regard to environmental sustainability.
- Statement of consequent alterations to other parts of the works.

Availability: If the documented products or systems are unavailable within the time constraints of the construction program, submit evidence.

Criteria: If the substitution is for any reason other than unavailability, submit evidence that the substitution:

- Is of net enhanced value to the Principal.
- Is consistent with the Contract documents and is as effectual as the identified item, detail or method.

Instruction
Allow minimum 5 working days from submission of proposed alternatives for instruction from the Superintendent. If additional information is required, the Contractor shall provide this within 5 working days and shall allow a further 5 working days for instruction. If inadequate information is provided, or information is not provided in the required format, the alternative shall not be approved.

Execution
Embedded services: Submit proposals for embedding services in concrete walls or floors, or chasing into concrete or masonry walls.

Acceptance of substrate: Submit installers' statements verifying that the substrate is satisfactory for receiving the installation.

1.9 MANDATORY INSPECTIONS TO BE PROVIDED BY CONTRACTOR

The following inspection stages are mandatory. The contractor shall be responsible for engaging an independent and suitably competent person to undertake inspections and to issue a compliance certificate at the stages listed below. All costs associated with these requirements (including inspection and certification) will be at the contractor's expense. The Contractor will notify the Superintendent of upcoming inspections 2 weeks prior to the inspection or activity occurring.

A "suitably competent person" is defined as either:

- A Queensland Registered Professional Engineer acting within their field of competence and as registered.
- A nationally accredited building surveyor, accredited at level 1, 2 or 3 as appropriate to building being inspected.
- In respect of matters relevant to Fire Safety Installations, including passive fire barriers and active fire systems, a person holding the appropriate QBCC Fire Occupational Licence to "certify" the relevant Fire Safety Installation.
- In respect of any "aspect" of building work or building component installation (other than a fire safety installation) – the person responsible for the undertaking of that work, or installation of that component, who holds the appropriate QBCC Licence to undertake that work. Or where there is no QBCC licence, the relevant license from authority that regulates that class of work (e.g. electrical).
- Any other person as previously approved by the building surveyor responsible for the building assessment. Note – agreement as to the suitability and acceptability of the proposed person must be in place prior to the inspection being undertaken.
- As otherwise noted for specific inspection requirements nominated below.

A "compliance certificate" is defined as:

- a fully and correctly completed Form 16, or equivalent industry standard document;
- be signed by:
  - the person holding the license; or
  - in the case of a company;
    - the "nominee" named on the license; or
    - a person authorised in writing by the "nominee";
- be issued in hard-copy in the "original" form or as an electronic document with a traceable electronic signature – not as a copy, scan or fax; and
- provided within 5 days of the relevant activity or inspection being completed.

Site inspection prior to commencing work
Set-out of site:

- Prior to the commencement of excavations for footings.
- Inspection and Certificate to be by a Queensland Registered Consulting Cadastral Surveyor - Surveyors Board of Queensland (SBQ).

Footings and Compacted Ground:

- All necessary excavation organisation and placement of reinforcement prior to placement of permanent materials.
- Inspection and Certificate to be by a Queensland Registered Professional Engineer.

Slab:

- Reinforcement in place; and
- Services positioned prior to placement of concrete; and
- Inspection and Certificate to be by a Queensland Registered Professional Engineer.

Suspended slab:

- All necessary formwork, block-outs, expansion joints, steel reinforcement, services and fire collars (and similar devices) installed prior to placement of concrete.
- Inspection to be undertaken by both:
  - Inspection and Certificate to be by a Queensland Registered Professional Engineer.
  - And where applicable, a person holding a fire occupational licence relevant to each device required for the protection of slab penetrations.

Pre-Sheet:

- Frame complete.
- Roof complete with covering.
- All plumbing and electrical rough-in complete.
- External brick-veneer complete prior to internal lining.

Fire Walls:

- For concrete walls (pre-cast, cast in-situ, tilt-up etc):
  - With all formwork, block-outs, expansion joints, steel reinforcement, services and fire collars (and similar devices) installed prior to placement of concrete; and
  - After stripping of formwork, or erection into location on site.
- For dry wall systems:
  - Frame with all service rough-ins complete; and
  - During sheeting operations.
- For concrete block wall systems:

. with all services rough-in complete, and block-outs, expansion joints, steel reinforcement, services and fire collars (and similar devices) installed prior to core-filling operations; and

. while core-filling is occurring.

Prior to Practical Completion: This inspection to be accompanied by issue to the Superintendent of:

- Queensland Fire and Emergency Services inspection completed (where relevant).
- Plumbing and Drainage Compliance Certificate from the relevant Local Government.
- all certificates from inspections as nominated above.
- installation compliance statements and test records for all services relevant to fire safety systems.

1.10 TESTS

Provide and pay the costs of all labour, material and incidentals involved in specified tests.

Give the Superintendent sufficient notice so that designated tests may be witnessed.

Minimum notice:

- 2 working days for site tests; and
- 5 working days for local pre-delivery tests.

Testing authorities
General: Except for site tests, have tests carried out by a NATA registered testing organisation and submit test reports.

Reports: Submit copies of test reports, including certificates for type tests, showing the observations and results of tests and conformance or non-conformance with requirements.

Site tests: Use instruments calibrated by authorities accredited by a registered testing authority.

Endorsement
If tests are to be carried out on parts of the works, do not conceal those parts and do not commence further work on those parts until the tests have been satisfactorily completed and compliance verified.

2 PRODUCTS

2.1 GENERAL

Manufacturers' or suppliers' recommendations
Provide, including select (if no selection is given), transport, deliver, store, handle, protect, finish, adjust and prepare for use, manufactured items in accordance with the current written recommendations and instructions of the manufacturer or supplier.

Proprietary items / systems / assemblies: Assemble, install or fix to substrate in accordance with the current written recommendations and instructions of the manufacturer or supplier.

Project modifications: Advise of activities that supplement, or are contrary to, manufacturers' or suppliers' written recommendations and instructions.

Sealed containers
General: If materials or products are supplied by the manufacturer in closed or sealed containers or packages, bring the materials or products to point of use in the original containers or packages.

Sources policy
General: Unless otherwise specified, use products manufactured in Australia or New Zealand, and comprising materials and components manufactured in Australia or New Zealand, unless no such products satisfy project requirements.

Advertising
In addition to any other advertising for subcontract work and supplies, ensure advertisement in local and regional press.

2.2 PROPRIETARY ITEMS

Definition: A proprietary item is any item identified by graphic representation on the Drawings, or by naming in the Specification and identified by one or more of the following:

- manufacturer; supplier; installer; applicator; trade name; product brand name; catalogue or reference number; and the like.

Use proprietary items in accordance with current manufacturer's recommendations.

2.3 WORKMANSHIP

Demolished and re-constructed any work considered inferior by the Superintendent.

2.4 ALTERNATIVE MATERIAL OR WORK

Place orders for materials as soon as practicable and take all necessary measures to ensure delivery on time.

Where materials specified herein are unavailable or cannot reasonably be provided in time to meet the program, notify the Superintendent in writing immediately.

If alternative products to those specified are proposed, the Contractor is to take responsibility for providing the approved alternative.

2.5 SELECTION AND HANDLING OF PRODUCTS

Where colours and finishes are involved, request approval of selection from the Superintendent.

Handle manufactured items with care and in accordance with the current written recommendations and instructions of the manufacturer or supplier.

Submit the manufacturer's recommendations and instructions if requested by the Superintendent's Representative and advise of conflicts with other requirements.

Product certification: If products must comply with product certification schemes, use them in accordance with the certification requirements.

2.6 MATERIALS AND COMPONENTS

Consistency
General: For each material or product use the same manufacturer or source and provide consistent type, size, quality and appearance.

Protective coverings
Protect the Works from the weather, dust and any cause during the progress of the Works. Remove all protective coverings on completion.

Corrosion resistance
General: Conform to the following corrosivity category with regard to worksection corrosion resistance tables.

Corrosivity category	Low	Medium	High
Location: Distance to mean high water mark	More than 10 km from water subject to	1 to 10 km from water subject to	200 to 1000 m from water subject to

Corrosivity category	Low	Medium	High
	breaking surf, or More than 1 km from salt water not subject to breaking surf	breaking surf, or 100 to 1000 m from salt water not subject to breaking surf, or Non-heavy industrial areas	breaking surf, or 0 to 100 m from salt water not subject to breaking surf, or Heavy industrial areas

Situation
The following classification of situation applies to tables in the worksection corrosion resistance tables.

- Internal:

. Building fabric protected from salt and moisture by vapour barriers, sarking, sheathing and building wraps.

- External:

. Includes external leaf and air spaces behind external leaf brickwork or blockwork walls.

Galvanizing
Severe conditions: Galvanize mild steel components (including fasteners) to AS 1214 or AS/NZS 4680 as appropriate, if:

- Exposed to weather.
- Embedded in masonry.
- Exposed to or in air spaces behind external leaf of masonry walls.

In contact with chemically treated timber, other than CCA.

Sustainable timber
Timber shall be either reused / post-consumer recycled or sourced from forests or plantations certified to the Australian Forestry Standard (AFS), Forest Stewardship Council (FSC), or other international scheme endorsed by the Program for the Endorsement of Forest Certification (PEFC).

Tropical hardwoods or timber-based products such as veneers, edgings and manufactured boards from non-sustainable sources or sources of unknown origin are prohibited from use in the Works.

If timber with AFS, FSC or equivalent trade-marking is not able to be sourced, alternate timber or timber-based products from a known well-managed forest source may be submitted for acceptance. Unless otherwise directed by the Superintendent, provide at least the following documentation:

- The species and country of origin.
- The identity of the concession / plantation.
- Details of forestry policies pursued by the concession / plantation to confirm that a sustainable resource policy is followed.
- Full shipping documents to confirm chain of custody from the concession / plantation to an Australian supplier's premises.

All plywood shall be manufactured from softwood or temperate hardwoods from certified sustainable sources and shall achieve specified formaldehyde emissions requirements.

Approval: Provide the Superintendent with information on timber and timber-based products proposed for use in the Works. Obtain written acceptance from the Superintendent prior to procurement. Acceptance shall be at the Superintendent's sole discretion. Provide at least the following information, arranged in tabular form:

- Country of origin.
- Trade name.
- Botanical name.
- Wood product volume category A (m^3).
- Wood product volume category B (m^3).
- Wood product volume category R (m^3).
- Total volume (m^3) where timber is:

. Category A: From an AFS, FSC or other certified forest or plantation endorsed by the PEFC.

. Category B: From a known certifiable forest.

Category R: Recycled material.

Formaldehyde minimization
Unless otherwise approved by the Superintendent, use only engineered wood products, veneers and plywood products certified to contain minimal formaldehyde levels as nominated.

Compliance of engineered wood products: Type test to AS 4266.16 (2004) "Method 16: Formaldehyde Emission -Desiccator method" to demonstrate formaldehyde levels equal to or less than:

- E1 – 1.0 mg/L.

Veneer and plywood products shall be tested to AS/NZS 2098.11 (2005) "Method 11: Methods of test for veneer and plywood – Determination of formaldehyde emissions for plywood" and shall also demonstrate a level equal to or lesser than the levels specified.

Hazardous materials
The following materials shall not be used and, where found in a hazardous materials survey, shall be removed in accordance with current legislation.

- Asbestos or asbestos-containing products as defined in the:

. National Occupational Health & Safety Commission publication "Asbestos: Code of Practice and Guidance Notes" or any statutory modification or re-enactment thereof.

. Occupation Health & Safety (Asbestos) regulations 2003 or any later statutory modification or re-enactment thereof.

. Work Safe Australia Synthetic Mineral Fibre National Standard and National Code of Practice.

Lead based paints and primers as defined in the:

. AS 4361 'Guide to Lead Paint Management.

. Australian Federal Government Department of Environment and Heritage Fact Sheet on Lead.

Polychlorinated Biphenyls (PCB's) as defined in the ANZECC Polychlorinated Biphenyls Management Plan.

3 EXECUTION

3.1 GENERAL

Before commencing work on the contract, ascertain what restrictions, if any, apply to the various parts of the Works.

3.2 APPROVAL OF INSTALLER

If the installation is required by a manufacturer's approved installer, submit the manufacturer's written approval of the installing firm to protect the product warranty.

3.3 DRILLING, CUTTING AND FASTENING

The breaking or cutting of completed work must be avoided wherever possible.

No drilling, cutting or application of heat to structural or reinforcing steel is permitted except as expressly stated in these documents or for which later approval is given by the Superintendent.

Cutting or drilling of reinforced concrete must be only in positions and to the extent approved by the Superintendent.

Explosives powered fastenings shall not be of greater diameter or have greater penetration than permitted by the Superintendent.

3.4 INSTALLATION OF SERVICES

Arrange services so that services running together are parallel with each other and with adjacent building elements.

Coordinate the various service trades in the location of service routes, openings, holes, chases and grooves and the positions of all floor outlets, traps, conduits, pipes, cables and the like in connection with the installation of work.

Exposed wall mounted services to be neatly grouped and covered with a pressed metal cover plate.

Conceal services with proprietary lockable metal cabinets, enclosures, covers and the like in visually prominent locations, and in areas at risk of likely tampering or damage.

Under suspended ground floors, keep services at least 150mm clear above ground surface, additional to insulation, and ensure access is not impeded.

3.5 SERVICES CONNECTIONS

Statutory authorities' requirements
If the authorities elect to perform or supply part of the works, make the necessary arrangements.

Install equipment supplied, but not installed, by the authorities.

Connections
Connect to utility service provider services or service points. Excavate to locate and expose connection points. On completion reinstate the surfaces and facilities which have been disturbed.

3.6 BUILDING PENETRATIONS

Piping sleeves
General: Provide metal or UPVC sleeves formed from pipe sections, for piping penetrations through building elements.

Finish: Prime paint ferrous surfaces.

Fire rated building elements
Seal penetrations using a system to AS 4072.1.

Non-fire rated building elements
Seal penetrations around conduits and sleeves. Seal around cables within sleeves.

If the building element is acoustic rated, maintain the rating.

Provide the approved termite barrier to penetrations through ground slabs.

Limitations
General: Do not penetrate or fix to the following without approval:

- Structural building elements including external walls, fire walls, floor slabs and beams.
- Membrane elements including damp-proof courses, waterproofing membranes and roof coverings.

Termite barriers
Membranes: If approval is given to penetrate membranes, provide a waterproof seal between the membrane and the penetrating component.

3.7 PIPING

Cleaning
Protection: Before installation, remove loose scale, burrs, fins and obstructions.

Installation
General: Install piping in straight lines at uniform grades with no sags. Arrange to prevent air locks. Provide sufficient unions, flanges and isolating valves to allow removal of piping and fittings for maintenance or replacement of plant.

Arrangement: Arrange and support piping so that it remains free from vibrations whilst permitting necessary movements. Minimise the number of joints.

Spacing: Provide at least 25mm clear between pipes and between pipes and building elements, additional to insulation.

Dissimilar metals: Join dissimilar metals using fittings of electrolytically compatible material.

3.8 UNDER-BUILDING (UNDERCROFT) CARPARKING AREA

Maintain minimum clear heights for vehicle clearances, as follows:

Height clearances required:

- Carpark entrance, paths of vehicle travel: 2200mm min.
- Accessible parking spaces: 2500mm min.
- Common parking spaces: 2100mm min.

3.9 VIBRATION SUPPRESSION

General
Minimise the transmission of vibration and noise from rotating, reciprocating and/or impacting equipment to other building elements. The operations are not to affect neighbouring properties.

3.10 FINISHES

Piping
General: Finish exposed piping, including fittings and supports, as follows:

- In internal locations such as toilet and kitchen areas: Chrome plate copper piping to AS 1192 service condition 2, bright.
- Externally, and steel piping and iron fittings internally: Paint.

- In concealed but accessible spaces (including cupboards and non-habitable enclosed spaces): Leave copper and plastic unpainted except for identification marking. Prime steel piping and iron fittings.

  Valves: Finish valves to match connected piping.

3.11 MARKING

Labels

Type: Select from the following:

- For indoor applications only, engraved two-colour laminated plastic.
- Engraved and black filled lettering on stainless steel or brass, minimum thickness 1mm.
- Cast metal.

Electrical

Permanently mark (label) all operable control devices, indicators, isolating switches and outlets to provide a ready means of identification.

3.12 FALL PREVENTION SYSTEM

Required where regular servicing/maintenance is scheduled for roof installed equipment. Provide a proprietary fall prevention/arrest system of single-point anchor devices on roof to be used by others for harness-based work at height. The anchor system layout shall be designed to suit applicable roof, installation fully certified and in compliance with the requirements of the Queensland Workplace Health and Safety Act.

Standard: To AS/NZS 1891.4, AS/NZS 5532, and AN/NZS 4488

4 COMPLETION

4.1 GENERAL

Samples

Remove unincorporated samples on completion.

Contractor's submissions

Within two (2) weeks after practical completion, submit three (3) copies of designated documents, in both hard and soft formats.

Warrantees

General: Name the principal as warrantee. Register with manufacturers as necessary. Retain copies delivered with components and equipment.

Commencement: Commence warranty periods at practical completion or at acceptance of installation, if acceptance is not concurrent with practical completion.

Written warranties are required:

- where called for by the Contract Documents;
- on all items included the Schedules of Appliances and;
- where offered by the manufacturers.

Refer: Warranty Schedule to this worksection.

Plant / Equipment Register

Contractor to complete register (available from the Superintendent), providing description and details of plant/equipment installed on project site. Submit completed register to Principal.

4.2 FINAL CLEAN UP

At the stage of Practical Completion and prior to handing over to the Superintendent:

- Remove temporary equipment, accommodation, hoardings and protective coverings. Disconnect and seal any temporary services unless otherwise required.
- Make good damage to adjoining properties, pathways, pavements, roadways, gutters and fencing caused by the execution of the Works.
- Clean and test all services and installations including drains and gutters, checking and oiling of all locks, hinges and moving parts of hardware, easing all doors and windows and rectify all defects.
- Employ professional cleaners to carry out the following cleaning work. Undertake by individual dwelling unit and after each unit is completed, lock up.
- Clean all windows, both inside and out.
- Remove all render or other spots on metal sashes, box sections and other surfaces.
- Dust all walls, ledges and projections, clean out all cupboards.
- Wash if necessary to clean all painted surfaces.
- Wash out and clean and dry wet area floors, fittings, mirrors, walls, sanitary fixtures, floor wastes and the like.
- Wash down all stairs.
- Clean and polish hardware, and laminated surfaces.
- Clean external surfaces and areas.
- Remove metal filings and the like from roofs.
- Remove all paints spots from floors and walls.
- Wash and dry all concrete floors and concrete slab areas.
- Clean and polish all hardware, ironmongery and other fittings.
- Clean out all ducts, cupboards, etc.
- Hand over to the Superintendent all keys properly tabulated to identify the same by room number or other appropriate title and having individually engraved labels.

Vermin

Employ an approved firm of pest exterminators and provide a certificate from the firm stating that the complete building is free of vermin.

4.3 AS-BUILT DRAWINGS

Services

Submit the as-built hydraulics plan and other services drawings separately. Show dimensions, types and location of equipment, cables, piping and ductwork in relation to permanent site features and other underground services. Include relationship to building structure and other services, and changes made during commissioning and the maintenance period.

Format

Submit electronic copies in both PDF and DWG or compatible format. Use the same borders and title block as the contract drawings. Template may be supplied by the Project Manager on application.

4.4 OPERATION AND MAINTENANCE MANUALS

General

Submit 3 copies of final volumes of operation and maintenance manuals for installations with other

required documentation at Practical Completion in accordance with the Handover Checklist.

Contents – general
Include the following:

- Drawings and technical data: As necessary for the efficient operation and maintenance of the installation.
- Equipment descriptions:
  - . Name, address and telephone and facsimile numbers of the manufacturer and supplier of items of equipment installed, together with catalogue list numbers.
  - . Schedules (system by system) of equipment, stating locations, duties, performance figures and dates of manufacture. Provide a unique code number cross-referenced to the record and diagrammatic drawings and schedules, including spare parts schedule, for each item of equipment installed.
- Maintenance procedures:
  - . Manufacturer's technical literature as appropriate. Register with manufacturer as necessary. Retain and hand over in the manual, copies delivered with appliances and equipment.
  - . Safe trouble-shooting, disassembly, repair and reassembly, cleaning, alignment and adjustment, balancing and checking procedures. Provide logical step-by-step sequence of instructions for each procedure.
- Drawings:
- As-built drawings, full size.

4.5 TRAINING

Operation
Immediately after practical completion, explain and demonstrate to the principal's staff the purpose, function and operation of the installations.

Maintenance
Immediately after practical completion, explain and demonstrate to the principal's staff the purpose, function and maintenance of the installations.

4.6 COMPLETION TESTS

General
Carry out acceptance tests and final tests.

Hydraulic site tests
Preparation for pressure testing: Securely anchor pipes and fittings in position to prevent movement during tests. Leave pipe joints exposed to enable observation during tests. Disconnect equipment which is not designed to carry the test pressure.

4.7 MAINTENANCE

General
General: During the maintenance period, carry out periodic inspections and maintenance work as recommended by manufacturers of supplied equipment, and promptly rectify faults.

Emergencies: Attend emergency calls promptly.

Maintenance records
Referenced documents: If referenced documents or technical sections require that log books or records be submitted, include this material in the maintenance records.

Certification: On satisfactory completion of the installation, submit certificates stating that each installation is operating correctly.

030 ENVIRONMENTAL REQUIREMENTS

1 GENERAL

1.1 OUTLINE DESCRIPTION

Application
This worksection applies to all activities that are required to be undertaken in compliance with the Environmental Protection Act 1994 and subordinate legislation, and with due regard to work, health and safety requirements associated with such work.

1.2 CROSS REFERENCES

General
Refer to the *Preliminaries* and *General Requirements* worksections.

2 EXECUTION

2.1 STATUTORY REQUIREMENTS

General
Comply with the following as applicable:

- *Environmental Protection Act 1994*.
- *Environmental Protection (Air) Policy 2008*.
- *Environmental Protection (Noise) Policy 2008*.
- *Environmental Protection (Water) Policy 2009*.
- *Environmental Protection Regulation 2008*.
- *Waste Reduction and Recycling Act 2011*.
- *Land Protection (Pest and Stock Route Management) Act 2002*.
- *Aboriginal Cultural Heritage Act 2003*.
- *Vegetation Management Act 1999*.
- *Nature Conservation Act 1992*.
- *Water Act 2000*.
- *Planning Act 2016*
- *Planning Regulation 2017*
- *Coastal Protection and Management Act 1995*.
- *Fisheries Act 1994*.
- *Environment Protection and Biodiversity Conservation Act 1999*.

Reference guidelines
Where applicable, comply with requirements of the following guideline documents:

- *Best Practice Erosion and Sediment Control (Books 1 -4)*, International Erosion Control Association (IECA) Australasia, November 2008.
- *Monitoring and Sampling Manual 2009, Environmental Protection (Water) Policy 2009 – Version 2* (Department of Environment and Resource Management, 2010).
- *AS 4970 Protection of Trees on Development Sites*.
- *Queensland Acid Sulphate Soil Technical Manual: Soil Management Guidelines v4.0* (Department of Science, Information Technology, Innovation and the Arts, 2014).

2.2 CONSTRUCTION MANAGEMENT PLAN (ENVIRONMENTAL)

Submission
Prepare a Construction Management Plan for the site:

- detailing the planned sequence, methodology and program proposed for undertaking and environmental management of all work under the Contract; and
- conforming to the requirements of the Contract.

Submit the Construction Management Plan to the Superintendent within 7 days of the date of the Letter of Acceptance, or at such later time as might be agreed, and prior to proceeding with any work under the Contract.

Liability of Principal limited
Receipt of the Construction Management Plan shall in no way relieve the Contractor of responsibility under the Contract to ensure compliance with environmental legislation and any approvals issued by the Environmental Protection Agency or other statutory authority as may be required in respect to work under the Contract.

Details
Address, as a minimum requirement, the following topics in the Construction Management Plan:

- order of work under the Contract;
- Stormwater Management Plan
- Soil Erosion and Sediment Control Plan;
- earthworks controls;
- Stock Piling Area Plan;
- dust control;
- noise control;
- weed control;
- temporary fencing, barricading and/or other access controls;
- temporary sanitary and waste services;
- storage of plant and materials, including any chemicals, fuels or other hazardous substances;
- engagement of a competent Environmental Officer;
- environmental training of employees and subcontractors where appropriate;
- any other items necessary to protect the surrounding environment.

Audits
The Superintendent may undertake, or direct, audits of the work under the Contract against the accepted Construction Management Plan (Environmental), the Specification, and legislation, at any time. The Contractor shall bring the work under the Contract into compliance with all Contractual requirements, if necessary, within the time notified after the audit.

2.3 ENVIRONMENTAL HARM OR BREACHES

Responsibility
If an incident or non-compliance occurs, which may constitute an environmental harm or breach under the provisions of the Environmental Protection Act, immediately attend to the incident or non-compliance. Contain or prevent the likelihood of an environmental harm or breach and protect public health and safety.

Notify the Superintendent immediately that such an incident or non-compliance occurs. Register each such incident with the Environmental Protection Agency and any other relevant statutory authority as necessary.

Restoration
If an incident or non-compliance occurs, comply with directions given by all relevant statutory authorities and the Superintendent, whether or not an

environmental harm or breach is deemed to have occurred.

All costs and delays, including those related to restoration, that result from the incident or non-compliance shall be wholly borne by the Contractor, if the Principal determines that the incident or non-compliance resulted from an act or omission of the Contractor.

2.4 GENERAL ENVIRONMENTAL CONTROLS

Dust control
Restrict dust caused by the Works to a minimum.

Noise control
Take all practical precautions to minimise noise resulting from work under the Contract. Fit all construction equipment with noise suppressors and manage use so noise is minimised.

Runoff
Control runoff to minimise sediment loss from the site and pollution of natural waterways and municipal drainage systems. Additionally, comply with specific Local Authority requirements in addition to governing statutory requirements.

Fire protection
Burning of refuse or other materials or lighting of any fires is not permitted.

Storage on site
Store materials and equipment on site to prevent damage to the site and minimise hazards to persons, materials and equipment. Keep storage areas neat and tidy.

Site activities
Do not form new tracks, alter existing tracks, erect camps, remove trees or shrubs, cut fences, water, sewerage, power or telecommunication lines, or perform other activities not specified or indicated on the drawings or otherwise required under the Contract without prior approval by the Superintendent.

Disposal of wastes
Dispose of all construction wastes, site refuse and any solid or liquid contaminants resulting from work under the Contract in accordance with statutory and local authority requirements.

Acid sulphate soil
Treat and manage any disturbed or oxidised acid sulphate soil in accordance with the current *Queensland Acid Sulphate Soil Technical Manual: Soil Management Guidelines* document. This will ensure any disturbance to acid sulphate soils is managed to prevent impacts to the coastal environment and public safety.

2.5 EXISTING FLORA

Protection
Protect from damage all trees and other plants which are shown or specified to be retained or need not be removed or damaged for construction operations.

Tree protection
Tree protection zone: To AS 4970 Section 3.

Tree protective measures: To AS 4970 Section 4.

Work near trees
Harmful materials: Keep the area within the dripline free of sheds and paths, construction material and debris.

Work under trees: Do not remove topsoil from, or add topsoil to, the area within the dripline of the trees.

Hand methods: Use hand methods to locate, expose and cleanly remove the roots on the line of excavation.

2.6 VEGETATION CLEARING

Extent
Contain the extent of vegetation clearing to the limits specified or indicated on the drawings or otherwise approved by the Superintendent.

Disposal
Unless otherwise approved, no off-site disposal or burning of cleared vegetation is permitted. Put all cleared vegetation through a chipper and stockpile for re-use as mulch where directed. Materials may be reused in conjunction with environmental control measures if suitable. Dispose of excess or unwanted material in accordance with Local Authority requirements and guidelines.

2.7 SOIL EROSION AND SEDIMENT CONTROL

General
Undertake all work under the Contract to prevent erosion, contamination and sedimentation of the site, surrounding areas and drainage systems. Do not commence work on site prior to submitting a Soil Erosion and Sediment Control Plan to the Superintendent.

Control measures
Adopt such control measures as may be necessary, including the following where applicable:

- staging of operations and sequence of work under the Contract (e.g. clearing, stripping, rehabilitation);
- restoration of disturbed areas in progress with the work under the Contract;
- use of mulch materials to protect disturbed or exposed areas where suitable;
- provision of temporary drains and catch drains;
- application of diversion, dispersal and/or retention measures to concentrated flows to control and dissipate stormwater through the site without damage;
- spreader banks or other structures to disperse concentrated runoff;
- silt traps to prevent discharge sediment material to downstream areas;
- temporary grassing or other treatments (e.g. contour ploughing/bunding) to disturbed areas and long-term stockpiles; and
- silt fencing.

Maintenance
Continually inspect and maintain control measures throughout the course of the work under the Contract and during the Defects Liability Period and following each incidence of rain. Rearrange and reposition control measures as required to maintain their efficacy. Handle and dispose of sediment collected by control measures in an approved manner.

Removal
Remove all temporary control measures following rehabilitation or when otherwise no longer required.

2.8 IMPORTED SOIL MATERIALS

Testing

Imported soil materials shall be sampled and tested or otherwise obtained from a certified source as being free from contaminants. Testing from non-certified sources shall be at a minimum rate of 1 sample per 50 m^3 or as otherwise approved by the Environmental Protection Agency or Superintendent. Supply all test results and/or certificates to the Superintendent for verification prior to any site delivery of materials.

2.9 HEALTH PROTECTION

Precautions

Take the precautions necessary to protect the health of persons on or within the vicinity of the site from conditions which are or may be dangerous to health, including the noxious effects of dust, fumes, liquids, infection, fire explosion or other hazards.

Hazardous materials

Notify the Superintendent immediately hazardous materials or conditions are found – refer *Preliminaries*.

040 ADHESIVES, SEALANTS AND FASTENERS

1 GENERAL

1.1 CROSS REFERENCES

General
Refer to the *General Requirements* worksection.

Related worksections
Conform to the relevant related worksections.

1.2 INSPECTION

Notice
Inspection: Give notice so that inspection may be made of joints and penetrations prepared for the application of sealants.

1.3 PERFORMANCE

Adhesives and sealants
General: Provide adhesives and sealants capable of transmitting imposed loads, sufficient to ensure the rigidity of the assembly, or integrity of the joint and which will not cause discolouration of finished surfaces.

Compatibility: Do not use sealants or adhesives that are incompatible with the products to which they are applied.

Movement: Where an adhered or sealed joint may be subject to movement, select a system accredited to accommodate the projected movement under the conditions of service.

Refurbishment: Use sealants that can be safely removed and prepared for refurbishment.

Volatile Organic Compounds (VOCs)
Use low VOC emitting adhesives and sealants.

Adhesives and sealants: 50 g/litre or less.

Fasteners
Provide fasteners accredited for the particular use, capable of transmitting imposed loads and maintaining the rigidity of the assembly.

2 PRODUCTS

2.1 ADHESIVES

Standards
Mastic adhesive: To AS 2329.

Polymer emulsion adhesive for timber: To AS 2754.2, not inferior to Type 3.

High strength adhesive tape
General description: A foam of cross linked polyethylene or closed cell acrylic coated both sides with a high-performance acrylic adhesive system, encased in release liners of paper or polyester.

Product classification: Ensure product suitability for the following substrates:

- Firm high strength foam tapes for high energy surfaces including most bare metals such as stainless steel and aluminium.
- Conformable high strength foam for medium energy surfaces including many plastics and paints, and bare metals.
- Conformable high strength foam for lower energy surfaces including many plastics, most paints and powder coatings, and bare metals.

Thickness: Select the tape to ensure a mismatch between surfaces does not exceed half the tape thickness under the applied lamination pressure.

2.2 SEALANTS

Standards
General: To ISO 11600.

External masonry joints
General: Provide sealant and bond breaking backing materials compatible with each other and the substrate and which are non-staining to masonry. Do not use bituminous materials with absorbent masonry units.

Bond breaking backing:

- Bond breaking materials: Non-adhesive to sealant, or faced with a non-adhering material.
- Foamed materials: Closed-cell or impregnated, not water-absorbing.

Fire rated control joints
General: Provide sealant materials that maintain the nominated fire-resistant rating.

Fire stopping: To AS 4072.1.

Pointing and bedding
General: Provide sealants for fast moving joints in light weight building elements that are compatible with the contact materials.

Bond breaking backing:

- Bond breaking materials: Non-adhesive to sealant, or faced with a non-adhering material.
- Foamed materials: Closed-cell or impregnated, not water-absorbing.

Floor movement joints
General: Provide trafficable sealants for that are compatible with the contact materials.

Bond breaking backing:

- Bond breaking materials: Non-adhesive to sealant, or faced with a non-adhering material.
- Foamed materials: Closed-cell or impregnated, not water-absorbing.

2.3 FASTENERS

General
Masonry anchors: Proprietary expansion or chemical type.

Plain washers: To AS 1237.1.

- Provide washers to the heads and nuts of bolts, and the nuts of coach bolts.

Plugs: Proprietary purpose-made plastic.

Powder-actuated fasteners: To AS/NZS 1873.4.

Stainless steel fasteners: To ASTM A240/240M.

Steel nails: To AS 2334.

- Length: At least 2.5 x the thickness of the member being secured, and at least 4 x the thickness if the member is plywood or building board < 10mm thick.

Unified hexagon bolts, screws and nuts: To AS/NZS 2465.

Fasteners in CCA treated timber: Epoxy coated or stainless steel.

Bolts
Coach bolts: To AS/NZS 1390.

Hexagon bolts Grades A and B: To AS 1110.1.

Hexagon bolts Grade C: To AS 1111.1.

Corrosion resistance
Corrosivity category: To the *General Requirements* worksection.

Steel products: Conform to the **Corrosion resistance table** or provide proprietary products with metallic and/or organic coatings of equivalent corrosion resistance.

Fixing of aluminium balustrades
Stainless 316.

Finishes
Electroplating:

- Metric thread: To AS 1897.
- Imperial thread: To AS 4397.

Galvanizing:

- Threaded fasteners: To AS 1214.
- Other fasteners: To AS/NZS 4680.

Mild steel fasteners: Galvanize if:

- Embedded in masonry.
- In external timbers.
- In contact with chemically treated timber, other than CCA treated timber.

Epoxy coated:

- CCA Treated timber.

Nuts
Hexagon chamfered thin nuts Grades A and B: To AS 1112.4.

Hexagon nuts Grade C: To AS 1112.3.

Hexagon nuts Style 1 Grades A and B: To AS 1112.1.

Hexagon nuts Style 2 Grades A and B: To AS 1112.2.

Screws
Coach screws: To AS/NZS 1393.

Hexagon screws Grades A and B: To AS 1110.2.

Hexagon screws: Grade C To AS 1111.2.

Hexagon socket screws: To AS 1420 and AS/NZS 1421.

Machine screws: To AS/NZS 1427.

Self-drilling screws: To AS 3566.1.

Self-tapping screws:

- Crossed recessed countersunk (flat – common head style): To AS/NZS 4407.
- Crossed recessed pan: To AS/NZS 4406.
- Crossed recessed raised countersunk (oval): To AS/NZS 4408.
- Hexagon: To AS/NZS 4402.
- Hexagon flange: To AS/NZS 4410.
- Hexagon washer: To AS/NZS 4409.
- Slotted countersunk (flat – common head style): To AS/NZS 4404.
- Slotted pan: To AS/NZS 4403.
- Slotted raised countersunk (oval – common head style): To AS/NZS 4405.

Blind rivets
Description: Expanding end type with snap mandrel.

Type: Closed end for external application, open end for internal application.

End material:

- Aluminium base alloy for metallic coated or Colorbond coated steel.
- Stainless steel for stainless steel sheet.
- Copper for copper sheet.

Size:

- For sheet metal to sheet metal: 3mm.
- For sheet metal to supports, brackets and rolled steel angles: 4.8mm.

Performance
Loads: Provide fasteners capable of transmitting the loads imposed, and sufficient to ensure the rigidity of the assembly.

Corrosion resistance table – low corrosivity category

Situation	Self drilling screws to AS 3566.2 Class	Threaded fasteners and anchors		Powder actuated fasteners	
		Material	Minimum local metallic coating thickness (μm)	Material grade	Minimum local metallic coating thickness (μm)
Internal	1	Electroplated zinc	4	Electroplated zinc	4
External	3	Electroplated zinc or Hot-dip galvanized	30	Stainless steel 316	

Corrosion resistance table – medium corrosivity category

Situation	Self drilling screws to AS 3566.2 Class	Threaded fasteners and anchors		Powder actuated fasteners	
		Material	Minimum local metallic coating thickness (μm)	Material grade	Minimum local metallic coating thickness (μm)
Internal	2	Electroplated zinc	12	Electroplated zinc	12
External	4	Hot-dip galvanized	50	Stainless steel 316	

Corrosion resistance table – high corrosivity category

Situation	**Self drilling screws to AS 3566.2 Class**	**Threaded fasteners and anchors**		**Powder actuated fasteners**	
		Material	**Minimum local metallic coating thickness (μm)**	**Material grade**	**Minimum local metallic coating thickness (μm)**
Internal	3	Electroplated zinc or Hot-dip galvanized	30	Stainless steel 316	
External	Stainless steel 316	Stainless steel 316		Stainless steel 316	

050 METALS AND PREFINISHES

1 GENERAL

1.1 CROSS REFERENCES

General
Refer to the *General Requirements* worksection.

Related worksections
Refer to the following worksections:

- *Structural Steel*;
- *Metal Fixtures*;
- *Doors and Hatches*;
- *Windows*;
- *Landscaping*;
- *Brick and Blockwork*;
- *Light Timber Framing*;
- *Light Steel Framing*.

2 MATERIALS AND COMPONENTS

2.1 METALS

Steel
Structural bars and sections: To AS/NZS 3679.1.

Sheet: To AS/NZS 1595.

Steel for prefinishes
Electric Resistance Welded (ERW) pipe: To AS 1450 "bright".

Cold rolled bar: To AS 1443 "bright".

Cold rolled sheet: To AS 1595.

- Designation: CA2S-E.

Coated steel
Galvanized structural hollow sections: To AS 1163.

(Note: Manufactured hollow section components to be fully galvanised inside and out after fabrication.

Site Welding: Not permitted. Joining of galvanized components on site to be by mechanical means only.

See relevant worksections).

Zinc-coated sheet: To AS 1397.

- Coating class for sheet: Comply with the recommendations of AS 1397 Appendix D.
- Perforated metal sheet to be zinc coated after perforating or cutting and prior to powder coating or other pre-finishing.

Thickness: Metal thicknesses specified are base metal thicknesses.

Stainless steel
Plate, sheet and strip: To ASTM A240/A240M.

Bars: To ASTM A276/A276M.

Welded pipe (round, square, rectangular): To ASTM A554.

Aluminium and aluminium alloys
Drawn rod, bar and strip: To AS/NZS 1865.

Extrusions: To AS/NZS 1866.

Drawn pipe: To AS/NZS 1867.

Plate and sheets: To AS/NZS 1734.

3 METAL FINISHING

3.1 WORKMANSHIP

Preparation
General: Before applying decorative or protective prefinishes to metal components, complete welding, cutting, drilling and other fabrication, and prepare the surface using a suitable method.

Standard: To AS 1627 series.

Priming steel surfaces: Where site painting is specified to otherwise uncoated mild steel or similar surfaces:

- prime after fabrication and before delivery to the works; and
- after installation, repair damaged priming and complete the coverage to unprimed surfaces.

Welding
Steel: To AS/NZS 1554.1.

Aluminium: To AS 1665.

Stainless steel: To AS/NZS 1554.6.

Brazing
General: Ensure brazed joints have sufficient lap to provide a mechanically sound joint. For butt joints do not rely on the filler metal fillet only.

Filler metal: To AS 1167.1.

Finishing
Site welding is not permitted.

Visible joints: Finish visible joints made by welding, brazing or soldering using methods appropriate to the class of work (including grinding or buffing) before further treatment such as painting, galvanizing or electroplating. Ensure self-finished metals are without surface colour variations after jointing.

3.2 ELECTROPLATING

Electroplated coatings
Zinc on iron or steel: To AS 1789.

Chromium on metals: To AS 1192.

Nickel on metals: To AS 1192.

Service condition number: At least 2.

3.3 GALVANIZING

Galvanizing
Fabricated ferrous articles: To AS/NZS 4680.

Ferrous hollow sections by a continuous or specialised process: To AS/NZS 4792.

- Minimum coating class: HDG300.

Ferrous open sections by an in-line process: To AS/NZS 4791.

- Minimum coating class: ILG200.

Steel wire: To AS/NZS 4534.

- Minimum coating class: W10Z.

Components in contact with concrete
Passivate galvanized surfaces to be cast into or in contact with concrete by dipping in 0.2% sodium dichromate solution.

3.4 ANODISING

Anodising
Standard: To AS 1231.

Class:

- Indoor applications: At least AA10.
- Outdoor applications: At least AA25.

3.5 POWDER COATING

Thermoset powder coating
Standards: To AS 3715 or AS/NZS 4506, as appropriate.

Internal use: APAS-P-155/1 or 4.

External use: APAS-P-155/2 or 5.

Finish: Full gloss.

Preparation

General: Use chemical pre-treatments. If recommended, provide conversion coatings.

Unprotected steel: Remove rust to AS 1627.4 Class 2½, clean by immersing in trichloroethylene or an alkaline solution, and apply a coat of iron phosphate.

Galvanized steel: Clean by immersing in a suitable alkaline or acidic solution, apply a zinc phosphate chemical conversion coating, rinse and degrease.

Aluminium: Pre-treat as recommended in AS 3715 Appendix B, including the application of a conversion coating.

3.6 PREPAINTING

Prepainted metal products

Standard: To AS/NZS 2728.

Product type: Not lower than the type appropriate to the field of application.

Product finish: Refer to trade worksections and *Schedule of Materials and Finishes* in Multi Trade Schedules.

060 TERMITE CONTROL

1 GENERAL

1.1 TERMITE MANAGEMENT

Requirement
Provide a termite management system based on physical / non-chemical termite barriers to all new construction work. Approved termite management systems shall be consistent with Contract requirements and capable of protecting all primary building elements from subterranean termite attack for their design life, provided the manufacturers' recommended inspection and maintenance practices are followed.

Definition
As well as structural timber members, primary building elements are defined in NCC 2016 Volume 2 as including all door jambs, window frames and reveals, architraves and skirtings.

1.2 CROSS REFERENCES

General
Refer to the *General Requirements* worksection.

1.3 STANDARD

General
Termite barriers: To AS 3660.1.

Product appraisal
Mandatory requirement: Termite management systems used shall hold a current Code Mark or Certificate of Conformity including the expected life of the installation of at least 50 years required under the Queensland variation to the NCC.

2 QUALITY

2.1 INSPECTION

Witness points
Give sufficient notice so that inspection may be made of the completed termite barriers by the supplier.

3 MATERIALS AND COMPONENTS

3.1 PHYSICAL BARRIERS

Concrete slab as part barrier
Standard: To AS 3660.1 Section 4.

Termite protection at slab edges: Expose sound off-form slab edges minimum 75mm above finished ground level and without rendering, tiling, cladding or concealment by flashing. Protect slab edges at ramped entrances and abutments with carport slabs and pathways as for slab joints i.e. with embedment of a tested and approved barrier system component.

Slab services penetrations
Barrier type: Same as perimeter treatment or a tested and approved total system component.

Cap and strip shields
Projection: Install so that no edge is less than 55mm from the vertical face of the wall or pier.

Material: Galvanized steel.

3.2 PROPRIETARY SLAB ON GROUND SYSTEMS

Woven stainless steel mesh barriers
Standard: To AS 3660.1 Section 6.

Protection shall consist of approved continuous lapped stainless steel mesh termite barrier material used in conjunction with reinforced slab and masonry wall elements as part of an integrated physical barrier system. Proprietary systems shall use ultra marine grade stainless steel wire interwoven for strength into a fine mesh with maximum apertures sufficient to prevent passage by termite species endemic to South-East Queensland (or other region as directed).

Graded stone particles barriers
Standard: To AS 3660.1 Section 7.

Capping for graded particle systems
Reinforced Concrete Strip 450mm x 100mm deep, Broom finish with tooled edge.

Physical barriers with a chemical impregnation (composite products)
Mandatory requirement: Contractor to provide a Material Safety Data Sheet declaring the product is not classified as hazardous according to the criteria of National Occupational Health and Safety Commission Australia and not a dangerous good according to the Australian Dangerous Goods code.

3.3 SUB-FLOOR VENTILATION

Requirement
For all forms of raised floor construction, provide sufficient clearance (i.e. at least 400mm) beneath structural members in accordance with NCC Volume 2, Figure 3.4.1 Diagram b. Sufficient clearance for access is a Principal's requirement to permit regular structural integrity inspections, irrespective of the requirement for physical inspection of any proposed termite management system.

4 INSTALLATION

4.1 PHYSICAL BARRIERS

Provide the physical barrier to the manufacturer's recommendations to protect:

- Service Penetrations.
- Cavity brick walls including internal leaf gaps.
- 200 concrete blockworks/retaining walls.
- Brick veneer walls.
- Joins in the concrete slab.
- Junctions with external paving where paving is less than 75mm below floor slab or weep holes.
- Any location required to complete the installation.

Extent
Use a proprietary system installed as a Physical Barrier for a "Partial Installation" - Perimeter and penetrations to the requirements of AS 3660. Proprietary systems shall be installed in strict accordance with the manufacturer's written recommendations, including ancillary parging and other installation measures as required.

Approved Subcontractors
The work must be performed by an approved specialist subcontractor, approved and licensed by the manufacturer.

Certification
Furnish a Certificate and a warranty satisfactory to the Principal from the subcontractor to the Principal.

4.2 APPLIED CHEMICAL SOIL BARRIERS

Not to be used in new construction.

5 COMPLETION

5.1 COMPLETION

Termite barrier notice
Provide two durable notices. Permanently fix one in a prominent location in accordance with NCC B1.4(i)(ii) or NCC 3.1.3.2(b) and AS 3660.1 Appendix A.

Include the other in the project Maintenance Manual along with the warranty.

Warranty
Terms: Provide a warranty in accordance with AS 3660.1 valid for a period of 10 years and covering:

- Reinstallation necessitated by termite attack.
- Replacement of timber attacked by termites.
- Removal and reinstatement of building contents, whether built-in or not, as necessary to replace affected timber.

Completion inspection
At the end of the defects liability period, inspect the termite control systems and submit a report on their efficacy and status.

070 TIMBER FINISHES AND TREATMENT

1 GENERAL

1.1 CROSS REFERENCES

General
Refer to the *General Requirements* worksection.

Related worksections
Refer to the following worksections*:*

- *Light Timber Framing*;
- *Timber Fixtures*;
- *Fencing*;
- *Landscape*;
- *Schedule of Materials and Finishes*.

1.2 INTERPRETATION

Definitions
Plywood: To AS/NZS 4491.

"Standard trade common names": To AS 1148 and AS 2543.

Groups of timbers: Terms employed for that purpose in relevant Australian standards.

2 QUALITY

2.1 SUBMISSIONS

Materials
Rainforest species: Submit source certification.

Pressure preservative treatment: For timber required to be pressure treated, submit a certificate or other satisfactory evidence showing that the timber has been treated.

3 MATERIALS

3.1 TIMBER

Sustainability
Requirement: Refer to this specification section *020 GENERAL REQUIREMENTS* – Clause *2.6 Materials and Components – Sustainable Timber.*

Durability
General: Provide preservative-treated timber as documented. If preservative-treated timber is not documented, provide timbers having natural durability appropriate to the conditions of use, or preservative-treated timber of equivalent durability.

Natural durability classification: To AS 5604.

Timber quality: Free of core wood (material within 50mm of the tree's centre) and free of splits, checks, loose knots and cavities. Free of sapwood (lighter coloured wood found on the outer layer of the tree.

Lyctus susceptible timbers
Do not provide timbers containing Lyctus susceptible sapwood.

Preservative treatment
Standard: To AS 1604.1

Where the preservative-treatment has been compromised due to timber working, reinstate the equal level of treatment protection, including where appropriate, deemed to satisfy BCA requirements and AS 3660.1

Water-repellent treatment
Repellent: To APAS-M-96.

Moisture content
Tolerance: Make milled and dressed products from timbers seasoned:

- to within 3% of the equilibrium moisture content appropriate to the timber and its intended conditions of use;
- to 10 - 15% moisture content; and
- with no more than 3% difference between any 2 pieces in any one group.

Test: To AS/NZS 1080.1.

Protection: Protect timber and timber products stored on site from moisture and weather. For milled, prefinished, prefabricated, and similar elements which are protected in the final structure, provide temporary weather protection until the permanent covering is in place.

Finished sizes
General: Provide milled timbers with actual dimensions which are at least the stated dimensions, except for dimensions qualified by a term such as "nominal" or "out of" to which industry standards for finished sizes apply.

Unseasoned timber
If unseasoned timber is used, or if variations in moisture are likely, allow for shrinkage, swelling and differential movement.

Surface finish (hardwood and softwood)
Standard: To AS 2796.1 Table B1.

3.2 VENEERS

Timber veneer
Veneer quality: To AS/NZS 2270.

Grades (minimum requirement):

- Select grade, veneer quality A, for visible surfaces to have clear finish or to have no coated finish.
- General purpose grade, veneer quality B, for other visible surfaces.

Vinyl veneer
Type: Proprietary unbacked vinyl fabric factory-bonded to the designated surface.

Veneered item: Proprietary Sliding Wardrobe doors where specified to be vinyl finish.

Type and pattern: Refer to the following worksections.

- *Timber Fixtures*;
- *Doors and Hatches*;
- *Schedule of Materials and Finishes*.

4 EXECUTION

4.1 WORKMANSHIP

Ploughing
Back plough boards liable to warp (e.g. if exposed externally on one face). Make the width, depth and distribution of ploughs appropriate to the dimensions of the board and degree of exposure.

Chamfer arrises
Chamfer arrises to rough sawn posts, rails, battens, etc to decorative, shade or privacy screens or structures and the like to avoid splintering.

Painting
Edges: Chamfer edges of work to receive paint or similar coatings.

Priming: For woodwork exposed to the weather or to be painted, prime hidden surfaces before assembly.

080 DEMOLITION

1 GENERAL

1.1 CROSS REFERENCES

General

Refer to the *General Requirements* and *Environmental Requirements* worksections.

1.2 STANDARD

General

Demolition: To AS 2601 - The demolition of structures.

1.3 INTERPRETATION

Demolished materials classes

Salvaged for re-use: Demolished materials scheduled for re-use in the works.

Salvaged for disposal: Demolished materials scheduled for re-use elsewhere.

Demolished for re-use: Non-scheduled demolished materials proposed by contractor for re-use in the works.

Demolished for removal: Other demolished materials.

2 QUALITY

2.1 INSPECTION

Witness points

Give sufficient notice to the Superintendent so that inspection may be made of the following:

- structures after stripping and removal of roof coverings and other external cladding.
- underground structures after demolition above them
- excavations remaining after removal of underground work.

Hold points

Give sufficient notice to the Superintendent so that inspection may be made of the following:

- adjoining structures before commencement of demolition
- existing services before disconnection or diversion
- trees specified to be retained before commencement of demolition.
- site after removal of demolished materials
- services after re-connection or diversion
- adjoining structures after completion of demolition.

2.2 EXPLOSIVES

Restrictions

Do not use explosives unless:

- prior approval has been given.
- any conditions of approval are observed.
- the use complies with AS 2187.2.

Records

Submit copies of blasting records.

3 MATERIALS AND COMPONENTS

3.1 DEMOLISHED MATERIALS

Reuse of demolished materials is not permitted.

Demolished materials

Ownership: Ownership of demolished materials is described in the **Demolished materials classes table**.

Re-use: If it is proposed to re-use demolished materials in the works, submit proposals.

Salvage: Recover without damage materials to be salvaged.

Removal: Remove from the site demolished materials which are the property of the contractor. Do not burn or bury on site.

Transit: Prevent spillage of demolishing materials in transit.

4 EXECUTION

4.1 SUPPORT

Temporary support

Existing buildings: Until permanent support is provided, provide temporary support for sections of existing buildings which are to be altered and which normally rely for support on work to be demolished.

Ground support: Support excavations for demolition of underground structures.

Adjacent structures: Provide supports to adjacent structures where necessary, sufficient to prevent damage resulting from the works.

- Lateral supports: Provide lateral support at least that given by the structure to be demolished, using shoring.
- Vertical supports: Provide vertical support where necessary using piling or, underpinning or both.

4.2 ADJOINING PROPERTY

Notice

Give notice of intention to commence demolition to owners and/or occupants of adjoining property, give them an outline description of the type and extent of the work, and make necessary arrangements with them.

Known encroachments

Do not demolish or damage adjoining property shown on the Drawings as encroachments on to the site.

Revealed encroachments

Should demolition reveal encroachments of adjoining property on to the site or encroachments of existing site structures on to adjoining property, and should such encroachments be not referred to in the Contract, obtain instructions immediately such encroachments are revealed.

4.3 PROTECTION

Temporary protection

Temporary Screens: Fill the whole of temporary openings or other spaces where shown on the Drawings or directed with temporary screens.

Weather protection

If walls or roofs are opened for alterations and additions or the surfaces of adjoining buildings are exposed, provide temporary covers to prevent water penetration. Provide covers to protect existing plant and equipment and materials intended for re-use.

Health and Safety protection

Take the precautions necessary to protect the health and safety of persons on or within the vicinity of the site from conditions which are or may be dangerous, including the noxious effects of dust, fumes, liquids, infection, fire, explosion, or other hazards and protection of excavations and temporary storing of demolished materials.

Dust protection
Provide dust-proof screens, bulkheads and covers to protect existing finishes and the immediate environment from dust and debris.

Security
If a wall or roof is opened for alterations and additions, provide security against unauthorised entry to the building.

4.4 HAZARDOUS MATERIALS

Notify the Superintendent immediately hazardous materials or conditions are found – refer *Preliminaries*.

5 COMPLETION

5.1 COMPLETION

Support
Temporary support: Clear away at completion of demolition.

Leave site clean and ready for building, free of debris due to demolition and other refuse.

085 CONSTRUCTION WASTE MANAGEMENT

1 GENERAL

1.1 AIMS

Responsibilities

Undertake the reduction, reuse, recycling and disposal of waste building and civil infrastructure materials in accordance with this worksection and to demonstrate best practice for ecologically sustainable development.

1.2 CROSS REFERENCES

General

Conform to the *Preliminaries, General Requirements* and *Environmental Requirements* worksections.

Associated worksections

Conform also to the *Demolition* and *Asbestos Removal* worksections (as applicable).

1.3 COMPLIANCE WITH STATUTORY AND OTHER REQUIREMENTS

Statutory requirements

Comply with the following legislation as applicable:

- Environmental Protection Act 1994.
- Environmental Protection (Waste Management) Policy 2000.
- Environmental Protection (Waste Management) Regulation 2000.
- Environmental Protection Regulation 2008.

Reference guides

- Waste Management Association of Australia.

1.4 SUBMISSIONS

Recycling Management Plan

Prepare a Recycling Management Plan to achieve the nominated reuse / recycling targets as well as to maintain sufficient waste tracking records for the Works. Incorporate this Plan into the Construction Management Plan (Environmental) as a discrete sub-element for record-keeping and audit purposes. Submit within 7 days of acceptance, or at such later time as may be agreed with the Superintendent, but prior to commencement of any work under the Contract.

Details

Incorporate at least the following information in the Recycling Management Plan:

- Commitment to the nominated reuse / recycling target and overall strategy for how this will be achieved.
- Nomination of an appropriately experienced individual to act as Waste Management Officer (WMO), who may or may not be the Environmental Management Officer (EMO), and oversee all waste management practices and processes, including training, supervision, reporting and auditing during the Contract period.
- Nomination of Waste Subcontractor(s) for recycling and timing of waste collection services.
- Identification of waste streams and confirmation that materials identified for recycling can be recycled in a cost-efficient manner and that local recyclers are available and prepared to take such materials.
- Strategies and methodology for minimising resource use and waste generation and maximising reuse / recycling of building and civil infrastructure waste (see indicative trade-based template at the end of this worksection).
- Strategies and practices for segregation, containment, storage, collection and disposal mechanisms for each category of waste.
- Strategies and practices for segregation, containment, storage, safe handling and disposal mechanisms for hazardous and liquid wastes (which do not form part of target amounts).
- Measurement techniques for the weight (or volume where appropriate) of each material to be reused / recycled or disposed of.
- Recording and reporting procedures for waste management. Records must be kept by the Contractor to demonstrate the actual percentage of waste recycled by weight and these must be reported to the Superintendent monthly and at Practical Completion (see indicative templates with required reporting information at the end of this worksection).
- Training and induction of employees and Subcontractors in waste management as appropriate.
- Waste management monitoring and auditing procedures for all persons engaged in the Works, including Subcontractors.
- Site plan indicating location of waste storage / separation area(s).
- Any other items considered warranted to adhere to the waste management hierarchy.

2 EXECUTION

2.1 WASTE REUSE AND RECYCLING SYSTEM

Requirement

Maximise the reuse or recycling of demolition and construction waste by all persons engaged in the Works, including Subcontractors and materials suppliers. The target for this project is to reuse or recycle minimum 40% by weight of each waste material stream and of the total demolition and construction waste materials that would otherwise be disposed of to landfill. Develop and implement a Recycling Management Plan to ensure this reuse / recycling target is achieved and that sufficient waste tracking records are maintained for the Works. Submit the Recycling Management Plan to the Superintendent and gain the Superintendent's acceptance of proposed waste management implementation and reporting strategies before proceeding with the Works.

Where practical, sort waste materials prior to their removal from site. Follow the waste management hierarchy as outlined in the Environmental Protection (Waste Management) Policy 2000. Liaise with local authorities, commercial recycling organisations and community groups where the potential for recycling is evident.

Ensure that suppliers of building materials, components and systems also participate in recycling programs and otherwise assist in minimising generation of waste associated with the Works.

Maintain sufficient records in approved format to demonstrate total percentages of waste reused or recycled by weight. Make these results available to the Superintendent each month in accordance with the accepted reporting process.

Disposal of wastes

Dispose of demolition and construction wastes that cannot be reused or recycled, as well as site refuse

and any solid or liquid contaminants resulting from work under the Contract, in accordance with statutory and local authority requirements.

Maintain records of all waste transport and disposal. Provide these records to the Superintendent progressively so that the Superintendent holds the full project waste disposal history on or before Practical Completion.

Materials separation

Where practical, establish areas for sorting and segregating demolition and construction wastes on site, using colour-coded and clearly marked containers for identified waste stream materials. Record these areas and the sorting / segregation process in the Recycling Management Plan.

Where on-site sorting is impractical or the management of demolition and construction waste recycling is otherwise outsourced, include equivalent details of off-site recycling procedures within the Recycling Management Plan.

Identified waste stream materials may include some or all of:

- Cardboard.
- Timber.
- Ferrous metals.
- Non-ferrous metals.
- Soft plastic.
- Polystyrene.
- Insulation.
- Concrete.
- Glass.
- Bricks.
- Ceiling tiles.
- Carpet.
- Plaster.
- Fabric.
- Other waste materials applicable to individual projects.

Training

Conduct sufficient training for all persons engaged in the Works, including Subcontractors and materials suppliers as appropriate, to ensure satisfactory understanding of waste management protocols outlined in the Recycling Management Plan and required to be implemented under the Contract.

Record keeping and reporting

Maintain records to demonstrate the actual percentage (by weight) of each material reused / recycled / disposed of and corresponding evidence of where these materials were used / sold / disposed of. Make these results available to the Superintendent each month in the form of a Waste Management Performance Report (see sample template at the end of this worksection). Compile this information into an overall Waste Management Performance Summary on or before Practical Completion (see sample template at the end of this worksection).

Records for each separable portion of the Works which are to be made available to the Superintendent include:

- the weight (or volume where applicable) of all outgoing loads for each waste / resource stream generated;
- the actual percentage (by weight) of each waste / resource stream reused, recycled or dumped;
- the destination of each waste stream (i.e. reuse application, licensed resource recovery / recycling facility, or landfill) and the name of the relevant recycler / Waste Subcontractor;
- supporting evidence, including receipts from resource recovery / recycling facilities and landfill sites;
- monthly Waste Management Performance Reports, to include:
  - updates on the waste management performance (percentage of waste reused / recycled) to date in comparison with nominated targets;
  - evidence of total waste generated and total waste disposed to landfill to date;
  - measures to improve performance if requirements are not being achieved (with corresponding amendments to the Recycling Management Plan as required);
- an overall Waste Management Performance Summary upon completion, clearly indicating the percentage of project waste materials (by weight) which were reused or recycled; and
- certification (signed and dated) of all results and reports by the nominated Waste Management Officer confirming that nominated waste management requirements have been met.

Project waste auditing

Environmental audits of the Works may be organized by the Superintendent to confirm compliance with the accepted Recycling Management Plan, statutory requirements and other Contract requirements.

090 SITE PREPARATION

1 GENERAL

1.1 CROSS REFERENCES

General
Refer to the *General Requirements* and to the *Environmental Requirements* worksections.

Standard
AS 3798 - Guidelines on earthworks for commercial and residential developments.

2 QUALITY

2.1 INSPECTION

Witness points
Give sufficient notice so that inspection may be made of the following:

- Enclosures to trees to be retained.
- Trees to be removed.

3 SITE MANAGEMENT

3.1 TREES TO BE RETAINED

Marking
General: Mark trees and shrubs to be retained using suitable non-injurious, easily visible, and removable means of identification.

Tags: 100 x 50mm zincanneal tags painted yellow and lettered to conform to the tree number on the drawings. Secure tags to trees using loose galvanized steel wire bands.

Trees to be retained: Refer to drawings.

Protection and repair
Protection: Protect from damage the trees and shrubs to be retained, including those beyond the site area, both above and below ground.

Repair: Repair trees damaged during the work.

Damage: Prevent damage to tree bark. Do not attach stays, guys and the like to trees.

Tree enclosures
General: Provide temporary protective enclosures or guards at the drip line.

Wire enclosures: Four strands of fencing wire, or plastic mesh barrier, supported on star pickets spaced at not more than 4 m.

Mesh enclosures: F62 reinforcing mesh 1800mm high wired to 2400mm long star pickets, driven 600mm into the ground, spaced 1800mm apart at a minimum distance of 1 m from the tree trunk.

Sheeting to excavations: Where excavations are to be made near trees, add continuous 900mm high corrugated galvanized steel sheeting, bedded 150mm into the ground, wired to the enclosure.

Harmful materials
Do not store or otherwise place bulk materials and harmful materials under or within 1.0 metres of the dripline of each of the trees. Do not place spoil from excavations against trees or within the dripline of each of the trees. Prevent wind-blown materials such as cement from harming trees.

Work on trees
If it is proposed to perform work on trees, give notice and obtain instructions. The work is to be performed by an approved arboriculturist in the presence of the Principal's Representative if required by the Superintendent.

Removal
If a tree is damaged and repair work is considered impractical, or is attempted and fails, give notice and obtain instructions.

Removal and replacement due to negligence
If repair work is impracticable, or is attempted and is rejected, remove the tree and root system as directed, make good the ground plane, replace the tree and its establishment at no extra cost to the Principal with a replacement tree of the species and size nominated by the Principal's Project Landscape Architect.

Compacted ground
Avoid compaction of the ground under trees. If compaction nevertheless occurs, for example from the operation of constructional plant, loosen the soil to a depth of **75mm** by hand methods.

Existing trees in grassed areas
Where roots of existing trees project above finished topsoil level in areas to be grassed, increase topsoil to a depth of 100mm over roots to provide an even, mowable grade over the whole area. Obtain prior advice from the Superintendent's Representative if drainage would be adversely affected by raising the finished ground level.

3.2 WORK NEAR TREES

Work under trees
General: Do not remove topsoil from, or add topsoil to, the area within the drip line of the trees.

Excavation: If excavation is required near trees to be retained, give notice and obtain instructions. Open up excavations under tree canopies for as short a period as possible.

Hand methods: Use hand methods to locate, expose and cleanly remove the roots on the line of excavation. If it is necessary to excavate within the drip line, use hand methods such that root systems are preserved intact and undamaged.

Roots: Do not cut tree roots exceeding 50mm diameter unless otherwise directed. Where it is necessary to cut tree roots, use means such that, the cutting does not unduly disturb the remaining root system. Immediately after cutting, apply an approved bituminous fungicidal sealant to the cut surface to prevent the incursion of rot or disease.

Backfilling: Backfill to excavations around tree roots with topsoil mixture as specified *In Landscaping* worksection 'Topsoil'.

3.3 EXISTING SERVICES

Marking
Before commencing earthworks, locate and mark existing underground services in the areas which will be affected by the groundworks operations including clearing, excavating and trenching.

Excavation
Do not excavate by machine within 1 m of existing underground services.

3.4 ENVIRONMENTAL PROTECTION

Refer to *Environmental Requirements* worksection.

Erosion control
General: Plan and carry out the work so as to avoid erosion, contamination, and sedimentation of the site, surrounding areas, and drainage systems.

Dewatering

General: Keep groundworks free of water. Provide and maintain slopes, crowns and drains on excavations and embankments to ensure free drainage. Place construction, including fill, masonry, concrete and services, on ground from which free water has been removed. Prevent water flow over freshly laid work.

4 SITE CLEARING

4.1 SITE CLEARING

Extent

General: Clear only the following site areas:

- Areas to be occupied by works such as buildings, paving, excavation, regrading and landscaping, including growth and trees on or near the site boundary whose root systems can be damaged by retaining walls etc. Negotiate with neighbours where trees on their site may be damaged by the works.
- Other areas designated to be cleared.

Contractor's site areas: If not included within the areas specified above, clear generally only to the extent necessary for the performance of the works.

Clearing operations

Removal: Remove everything on or above the site surface, including rubbish, scrap, grass, vegetable matter and organic debris, scrub, trees, timber, stumps, boulders, and rubble.

Grubbing: Grub out stumps and roots over 75mm diameter to a minimum depth of 500mm below subgrade under buildings, embankments, or paving, or 300mm below finished surface in unpaved areas.

Old works: Remove old works, including slabs, foundations, paving, drains and manholes found on the surface.

Existing grass: Remove grass to a depth just sufficient to include the root zone.

4.2 SPOIL

Off site disposal

General: Remove surplus excavated material and surplus site clearance material from the site.

5 COMPLETION

5.1 COMPLETION

Temporary works

Tree enclosures: Remove temporary tree enclosures at completion.

Tree marking: Remove temporary marks and tags at completion.

100 EARTHWORKS

1 GENERAL

1.1 RESPONSIBILITIES

General

Provide all earthworks as required by the Works.

1.2 CROSS REFERENCES

General

Refer to the *General Requirements* worksection, and the *Geotechnical Report* for the site as required by the Contract.

Related worksections

Refer to the following worksections:

- *Environmental Requirements*;
- *Site Preparation*;
- *Demolition*;
- *Paving*;
- *Plumbing and Drainage* (for trenching);
- *Landscaping*.

1.3 INTERPRETATION

General

To AS 1348.1. Road design and construction.

AS 3798-Guidelines on earthworks for commercial and residential developments.

Definitions Description and classification of soils: To AS 1726- Geotechnical site investigations.

Discrepancy

A difference between contract information about the site and conditions encountered on the site, including but not limited to discrepancies concerning:

- the nature or quantity of the material to be excavated or placed;
- existing site levels; and
- services or other obstructions beneath the site surface.

Line of influence

A line extending downward and outward from the bottom edge of a footing, slab or pavement and defining the extent of foundation material having influence on the stability or support of the footings, slab or pavement.

Rock

Monolithic material with volume greater than 0.5m^3 which cannot be removed until broken up by the mechanical means listed below:

Type of Excavation	Rock Class	Mechanical Means Required to Break Up
Bulk	A1	A single ripper mounted on a crawler tractor with a flywheel output of not less than 164 kW, ripping in two directions
Bulk	A2	A single ripper mounted on a crawler tractor, with a flywheel output of not less than 425 kW, ripping in two directions
Trench	B	A tractor mounted hydraulic excavator similar to a Caterpillar 225, with a maximum break-outforce (manufacturer's rating) of not less than 110 kN applied to a 610mm nominal outside width bucket

Bulk Excavation: Any open excavation accessible to the means specified.

Detailed Excavation: Trenches and pits for foundations, services and the like, but excluding tunnelling, bored holes, and excavation for underpinning.

Other than rock
Any material encountered other than the material defined as rock.

Bad ground
Ground unsuitable for the purposes of the Works including fill liable to subsidence, ground containing cavities, faults or fissures, ground contaminated by harmful substances and ground which is or becomes soft, wet or unstable.

Services
Pipes, cables, ducts, associated structures or similar objects, including electrical, communication and control cables, drains, sewers, water pipes, gas pipes, and the like.

Subgrade
The trimmed or prepared portion of the formation on which the pavement or slab is constructed.

1.4 SITE INVESTIGATION

Notice
The Principal does not warrant, guarantee or make any representation with respect to, and the Contractor warrants that it has not placed any reliance upon the accuracy or adequacy of, any information or data made available or provided to the Contractor as to the Site or sub-surface conditions. Without limitation, the Contractor may not make a claim against the Principal in respect of any fact, matter or thing arising out of or in any way connected with the information or data provided to the Contractor whether under the Contract or, in so far as is permitted by law, pursuant to any other principle of law. No information in respect of the Site or sub-surface conditions which is provided to the Contractor by the Principal, the Superintendent or their respective employees, consultants or agents will form part of the Contract.

If the following are encountered, give notice immediately to the SR and obtain instructions before carrying out any further work in the affected area:

- Bad ground.
- Discrepancies.
- Rock.
- Springs, seepages.
- Topsoil > 100mm deep.

1.5 RECORDS OF MEASUREMENT

Excavation and backfilling
Agreed quantities: If a schedule of rates applies, provisional quantities are specified, or there are variations to the contract levels or dimensions of excavations, do not commence backfilling or place permanent works in the excavation until the following have been agreed and recorded:

- Depths of excavations related to the datum.
- Final plan dimensions of excavations.
- Quantities of excavations in rock.
- Quantities of fill and topsoil, imports being recorded separately.

1.6 ROCK EXCAVATION

Costing
Unless otherwise stated, all excavation is deemed to be in 'other than rock'.

Rates
The rates for rock classes in the Schedule of Provisional Allowances, Schedule of Rates or Bill of Quantities if any are ‘extra over' the cost of excavation in 'other than rock'. If rock, as defined, is encountered, the appropriate rate shall be applied to the actual quantity of rock necessarily and reasonably excavated, or the quantity measured in accordance with the Australian Standard Method of Measurement, whichever is the less, and the resulting amount added to the contract sum.

The amount shall be calculated at a rate per m^3, over and above the respective unit cost of common bulk or detailed excavation.

Where footings or piers are required to be founded in rock, the Contractor is to scabble rock to a horizontal surface and drill for anchors or dowels as directed.

Rock
Level and class: If rock is to be measured for payment purposes, whether as extra over excavation of material other than rock or for adjustment of provisional measurements, do not remove the rock until the commencing levels and the classes of rock have been determined.

Certified records
Provide a copy of the agreed records of measurement certified by the Contractor and the Superintendent.

2 QUALITY

2.1 INSPECTION

Witness points
Give sufficient notice so that inspection may be made of the following:

- Items to be measured;

- Excavation completed to contract levels or founding material;
- Excavation completed to contract levels;
- Filling completed to contract levels;
- Services laid in trenches and ready for backfilling;
- Stockpiled topsoil prior to placing.

2.2 TESTS

Geotechnical testing authority
General: Use an independent testing laboratory certified for this work by an organisation accredited by JAS-ANZ.

Level of responsibility to AS 3798 Appendix B: Level 1.

Testing
Compaction (density): Test for compliance.

Refer: *Minimum Relative Compaction Table* herein.

Retesting: Rework and retest areas which do not achieve the required density until that density is achieved.

Field density test locations
Fill: Test the areas of fill which are to support non-spanning concrete ground slabs, roads and paved areas.

Field density test frequency
Site area > 1500 m^2: At least:

- 1 test per layer or 200mm thickness per material type per 2500 m^2; or
- 1 test per 500 m^3 distributed evenly throughout full depth and area; or
- 3 tests per visit;

whichever requires the most tests.

Site area 500 – 1500 m^2: At least:

- 1 test per layer or 200mm thickness per 1000m^2; or
- 1 test per 200m^3 distributed evenly throughout full depth and area; or
- 1 test per allotment per layer;

whichever requires the most tests.

Site area < 500m^2: At least:

- 1 test per layer or 200mm thickness per 500m^2; or
- 1 test per 100m^3 distributed evenly throughout full depth and area; or
- 3 tests per visit;

whichever requires the most tests.

Confined operations: 1 test per 2 layers per 50m^2.

2.3 SUBMISSIONS

Tests
Imported fill: Submit certification or test results which establish the compliance of imported fill with the contract.

3 MATERIALS AND COMPONENTS

3.1 FILL

Fill material
General: Provide inorganic, non-perishable material in accordance with Section 4 of AS 3798 "Guidelines on earthworks for commercial and residential developments" and as specified below.

Sulphur content: Do not provide filling with sulphur content exceeding 0.5% within 500mm of cement bound elements (for example concrete structures or masonry) unless such elements are protected by impermeable membranes or equivalent means.

Structural fill
Excluded materials:

- Organic soils.
- Materials contaminated through past site usage.
- Materials which contain substances which can be dissolved or leached out, or which undergo volume change or loss of strength when disturbed and exposed to moisture.
- Silts or silt-like materials.
- Fill containing wood, metal, plastic, boulders or other deleterious material.
- Clays of high plasticity.
- Material containing large particles after compaction.
- Overwet materials.
- Gravels or rock fill which leave voids.
- Saline soils.
- Carbonate soils.
- Demolition rubble.

Sources
Provide fill imported on to the site from suitable sources unless the fill type can be provided from:

- spoil recovered from the excavations; or
- borrow material from designated borrow pits.

Fill types
General fill: Well graded material, maximum particle size 75mm, plasticity index ≤ 55%.

Select fill: Granular material complying with the following:

- Maximum particle size: 75mm.
- Proportion passing 0.075mm sieve: 25% maximum.
- Plasticity index: < 2%, > 15%.

Hardcore: Graded hard material capable of being compacted to an even stable surface.

- Maximum particle size: 120mm.
- Proportion exceeding particle size of 50mm: 75% minimum.

Embankment fill: Graded material for road embankments with maximum particle size determined by location and layer thickness, but in any case, not exceeding two-thirds of the compacted layer thickness.

Hand-packed hardcore: Hardcore packed by hand to an even surface before compaction.

4 EXCAVATING

4.1 STRIPPING

General
Extent: Areas to be cut and areas to be filled and areas to be occupied by structures, pavements, embankments and the like.

Materials to be stripped:

- Soils not suited to support loads or to be incorporated in fills.
- Topsoils, where unsuitable and where needed for subsequent revegetation.

Maximum depth: 100mm.

Restrictions on clearing and stripping:

Stripped material stockpiles

Topsoil: Stockpile site topsoil approved for re-use and imported topsoil where necessary. Establish stockpiles to sizes and in locations as directed to heights not exceeding 1.5 m. Provide adequate drainage and erosion protection. Do not burn off or remove plant growth which may occur during storage. Do not allow traffic on stockpiles. If a stockpile is to remain for more than four weeks, sow with temporary grass. Protect the topsoil stockpiles from contamination by other excavated material, weeds and building debris.

4.2 EXCAVATION

Extent

Site surface: Excavate over the site to give correct levels and profiles as the basis for construction, paving, filling, and landscaping. Make allowance for compaction or settlement.

Footings: Excavate for footings, pits, wells, and shafts, to the required sizes and depths. Confirm that bearing capacity is adequate.

Crawl space: Provide clear space under timber floor bearers.

- Minimum clearance: 400mm.

Existing footings

If excavation is required below the line of influence of an existing footing, use methods which maintain the support of the footing and ensure that the structure and finishes supported by the footing are not damaged.

4.3 EXPLOSIVES

General

Do not use explosives unless approved by the Superintendent in writing.

Application For Approval: If the Contractor considers that explosives could be used without endangering persons or damaging other properties and that their use would benefit the requirements of the Contract, a formal written application may be submitted for consideration. The application shall include the following information:

- name of the specialist subcontractor proposed to be engaged;
- types of explosives proposed to be used;
- protective and safety methods to be provided;
- proposed design patterns and sequences of blasting;
- proposed sizes of charges;
- times proposed for each series of blasting;
- estimated effect of each series of blasting (including possible effects of ground shock and flying debris).

Approval Conditions: Approval, if given, shall be subject to compliance with AS 2187 and 2188, and to such conditions as the Superintendent may impose, which may include changes to the Contractor's proposals.

Records: Provide copies of blasting records to the Superintendent as required.

4.4 BEARING SURFACES

General

Provide even plane bearing surfaces for loadbearing elements including footings. Step to accommodate level changes. Make the steps to the appropriate courses if supporting masonry.

4.5 REINSTATEMENT OF EXCAVATION

General

Where excavation exceeds the required depth, or deteriorates, reinstate to the correct depth, level and bearing value.

4.6 ADJACENT STRUCTURES

Temporary supports

General: Provide supports to adjacent structures where necessary, sufficient to prevent damage arising from the works.

Lateral supports: Provide lateral support using shoring.

Vertical supports: Provide vertical support where necessary using piling or underpinning or both.

5 PLACING AND COMPACTION

5.1 PREPARATION FOR FILLING

General

Prepare the ground surface before placing fill (including topsoil fill), ground slabs or load bearing elements. Shape to assist drainage. Remove materials which will inhibit or prevent satisfactory placement of fill layers, loose material, debris and organic matter. Compact the ground exposed after stripping to achieve the required density of overlying fill, if any.

Benching

If fill is to be placed on a surface which slopes more than 1:4, bench the surface to form a key for the fill. As each layer of fill is placed, cut the existing ground surface progressively to form a series of horizontal steps > 1 m in width and > 100mm deep. Recompact the excavated material as part of the filling. Shape to provide free drainage.

Under earth mounds

Cultivate the ground to a depth of 200mm before mound formation.

5.2 PLACING FILL

General

Layers: Place fill in near horizontal layers of uniform thickness, deposited systematically across the fill area.

Place filling in layers not exceeding 100mm thickness when measured loose under buildings, and 75 to 150mm compacted thickness under pavements, and compact each layer as specified in 'COMPACTION' herein.

Extent: Place and compact fill to the designated dimensions, levels, grades, and cross sections so that the surface is always self-draining.

Edges: At junctions of fill and existing surfaces, do not feather the edges.

Mix: Place fill in a uniform mixture.

Previous fill: Before placing subsequent fill layers, ensure that previously accepted layers still conform to requirements, including moisture content.

Placing at structures

General: Place and compact fill in layers simultaneously on both sides of structures, culverts and pipelines to avoid differential loading. Carefully place first layers of fill over the top of structures.

Concrete: Do not place fill against concrete until the concrete has been in place for fourteen days.

Depth of fill to be placed over pipes or culverts (mm): Refer *Service Trenching*.

Moisture content

Moisture content: Adjust the moisture content of fill during compaction within the range of 85 – 115% of the optimum moisture content determined by AS 1289.5.1.1 or AS 1289.5.2.1 as appropriate, in order to achieve the required density. Ensure the moisture distribution is uniform and avoid saturation at the specified density.

Rain: If rain is likely, crown the placed fill, seal using plant with rubber tyres or smooth wheels, and grade to prevent ponding.

5.3 COMPACTING FILL

Tolerances

Finish the surface to the required level, grade, and shape within the following tolerances:

- Under slabs and loadbearing elements: + 0, - 25mm.
- Other ground surfaces: + or -50mm, provided the area remains free draining and matches adjacent construction where required. Provide smoothness as normally produced by a scraper blade.

Density

General: Compact each layer of fill to the required depth and density, as a systematic construction operation. Shape surfaces to provide drainage and prevent ponding.

Exposed ground surface: After stripping, compact to at least 150mm deep.

Maximum rock and lump size in layer after compaction: 2/3 compacted layer thickness.

Fill batter faces: Either compact separately or overfill and cut back. Form roughened surfaces to the faces.

Protection: Protect the works from damage by or during compaction operations. Compact by hand if necessary to prevent damage or disturbance to services, pipe joints, and the like.

Minimum relative compaction: Refer to table below.

5.4 VIBRATION SUPPRESSION

General

Minimise the transmission of vibration and noise from rotating, reciprocating and/or impacting equipment to other building elements. The operations are not to affect neighbouring properties.

5.5 GRADING

External areas

Grade to give falls away from buildings, minimum 1:100.

Subfloor areas

General: Grade the ground surface under suspended floors to drain ground or surface water away from buildings without ponding.

6 COMPLETION

6.1 TEMPORARY WORKS

Temporary supports: Remove temporary supports to adjacent structures at completion.

7 MINIMUM RELATIVE COMPACTION TABLE

Location	Cohesive soils. Minimum dry density ratio (standard compaction) to AS 1289.5.1.1 (std) or AS 1289.5.2.1 (mod)	Cohesionless soils. Minimum density index to AS 1289.5.6.1
Residential:		
- Lot fill, house sites.	95 std	65
Pavements:		
- Fill to support pavements	95 std	65
- Subgrade to 300mm deep	98 std	80
- Sub-base courses	95 mod	N/A
- Base course, heavily loaded	98 mod	N/A
- Base course, other	95 mod	N/A

Compaction Test Report: Engineer or Testing Authority Certificate required.

105 SERVICE TRENCHING

1 GENERAL

1.1 RESPONSIBILITIES

General
Provide trenching for underground services as required by the Works.

Design
Steel shoring and trench lining systems: To AS 4744.1.

Hydraulic shoring and trench lining equipment: To AS 5047.

1.2 CROSS REFERENCES

General
Conform to the following:

- *General Requirements*;
- *Environmental Requirements*;
- *Site Preparation*;
- *Earthworks.*

1.3 STANDARDS

General
Earthworks: To AS 3798.

1.4 SUBMISSIONS

General
Extent: Submit a plan of trench works noting the location and type of service.

Notice: Advise proposed duration of open excavation.

Construction: Submit details of proposed equipment and method of excavation.

Stability: If shuttering and/or bracing of the sides of a trench is required for safety and stability, provide proposals.

Geotechnical data: Provide a geotechnical report supporting the procedures proposed for trenching and/or boring.

Hazards: Identify WHS hazards that may be encountered with deep trenches including toxic gases and liquids.

Boring: Submit proposals for the following:

- Limits on length
- Existence of other services and method of protection
- Access to properties outside the site
- Council permits
- Service interruptions including a plan for minimising unintended interruptions.

Off-site disposal
Submit the locations and evidence of compliance with the relevant authorities for the disposal of material required to be removed from the site.

1.5 INSPECTION

Notice
Give notice so that inspection may be made at the following stages:

- Service trenches excavated before laying the service.
- Services laid in trenches and ready for backfilling.

2 PRODUCTS

2.1 FILL MATERIALS

General
Provide fill materials, including borrow or imported fill, in accordance with the *Earthworks* worksection.

3 EXECUTION

3.1 EXISTING SERVICES

Location
Before commencing service trenching, locate and mark existing underground services in the areas which will be affected by the service trenching operations.

Utility services: Contact DIAL BEFORE YOU DIG to identify location of underground utility services pipes and cables.

Excavation
Do not excavate by machine within 1m of existing underground services.

3.2 EXISTING SURFACES

Concrete and asphalt pavements
Method: Sawcut trench set out lines for the full depths of the bound pavement layers except where the set-out line is located along expansion joints.

Removal of concrete and asphalt: Break out concrete or asphalt pavement material between the trench set out lines, remove and dispose of off-site.

Grass
Removal method: Neatly cut grass turf between trench set-out lines into 300mm squares.

Grass suitable for re-use: Take up and store the turf and water during the storage period, otherwise remove and dispose of it off-site.

Small plants, shrubs and trees
Small plants required for re-planting: Take up and store. Wrap the root ball in a hessian or plastic bag with drain holes and water during the storage period.

Unsuitable vegetation: Remove and dispose of off-site.

3.3 EXCAVATING

Site preparation
Refer to the *Earthworks* worksection.

Excavation
Excavate for underground services in conformance with the *Earthworks* worksection and the following:

- To required lines and levels, with uniform grades.
- Straight between access chambers, inspection points and junctions.
- With stable sides.
- Width tolerance: ± 50mm, unless constrained by adjacent structures.

Trench widths
Keep trench widths to the minimum, consistent with the laying and bedding of the relevant service and construction of access chambers and pits.

Trench depths
As required by the relevant service and its bedding method.

Adjacent to footings: If excavation is necessary below the zone of influence of the underside of adjacent footings, give notice and provide support for the footings as instructed.

Obstructions
Clear trenches of sharp projections. Cut back roots encountered in trenches to at least 600mm clear of services. Remove other obstructions including stumps and boulders which may interfere with services or bedding.

Tree protection: To AS 4970.

Dewatering
Keep trenches free of water. Place bedding material, services and backfilling on firm ground, free of surface water.

Pumping: Provide pump-out from adjacent sumps or install well points.

Excess excavation
If trench excavation exceeds the correct depth, reinstate to the correct depth and bearing value using compacted bedding material or sand stabilised with 1 part of cement to 20 parts of sand by volume.

Stockpiles
Excavated material for backfill: If required, segregate the earth and rock material and stockpile, for re-use in backfilling operations.

Locations: Do not stockpile excavated material against tree trunks, buildings, fences or obstruct the free flow of water along gutters where stockpiling is permitted along the line of the trench excavation.

Disposal: If stockpiling is not permitted, dispose of excavated material off-site.

Unsuitable material
Disposal: Remove unsuitable material from the bottom of the trench or at foundation level and dispose of off-site. Replace with backfill material in general accordance with requirements of the *Earthworks* worksection.

Boring
Subcontractor: If under road boring is required instead of trenches, engage a suitably qualified subcontractor to do the work.

3.4 TRENCH BACKFILL

General
Place fill in general accordance with requirements of the *Earthworks* worksection.

Timing: Backfill service trenches as soon as possible after laying and bedding the service, if possible on the same working day.

Marking services: Underground marking tape to AS/NZS 2648.1.

Bedding, haunch, side and overlay zones
Installation and material: To the particular utility authority or utility service requirements. Secure pipes against floatation.

Overlay zone thickness: Maximum 300mm immediately over the utility service.

Topsoil areas: Complete the backfilling with at least 100mm of topsoil.

Material in reactive clay areas: In sites classified M, M-D, H1, H1-D, H2, H2-D, E or E-D to AS 2870, re-use excavated site material at a moisture content within ± 1% of that of the adjoining in situ clay.

Selected material zone
Extent: The section of trench within the zone, if applicable.

Backfill material: Selected material free from stones larger than 100mm maximum dimension and the fraction passing a 19mm Australian Standard sieve to have a 4 day soaked CBR value, in conformance with AS 1289.6.1.2, and not less than that of the adjacent selected material zone.

Trees
Backfill minimum 300mm thick around tree roots with a topsoil mixture. Place and compact in layers of 150mm minimum depth to a dry density equal to that of the surrounding soil.

Do not place backfill above the original ground surface around tree trunks or over the root zone.

Watering: Thoroughly water immediately after backfilling the tree root zone.

Compaction
Control moisture within backfill in general accordance with requirements of the *Earthworks* worksection.

Layers: Compact all material in layers not exceeding 150mm compacted thickness. Compact each layer to the required relative compaction before starting the next layer.

Compaction: Refer to the *Earthworks* worksection and AS 3798 Section 5.

Frequency of testing: To AS 3798 clause 8.7.

Precautions: If compacting adjacent to utility services, use compaction methods which do not cause damage or misalignment.

Density tests
Testing authority: Carry out density tests of pipe bedding and backfilling by a registered testing authority.

Test methods: Conform to the following:

- Compaction control tests: To AS 1289.5.4.1 or AS 1289.5.7.1.
- Field dry density: AS 1289.5.3.2 or AS 1289.5.3.5.
- Standard maximum dry density: AS 1289.5.1.1.
- Dry density ratio: AS 1289.5.4.1.
- Density index: AS 1289.5.6.1.

3.5 SURFACE RESTORATION

Subbase and base
Material: Crushed rock, DGS20 or DGB20 material configured in layers and depths to match existing and adjacent work.

Compaction: Uniformly compact each layer of the subbase and base courses over the full area and depth within the trench to a relative compaction of 100% when tested in conformance with AS 1289.5.4.1.

Compaction test frequency: Minimum 1 / every second layer / 50m² of restoration surface area.

Pathways and paved areas generally
Restoration materials: Consistent with the surface existing before commencement of the work.

Subbase: 150mm crushed stone DGB20 compacted to 100% relative compaction in conformance with AS 1289.5.4.1.

Lippage at patches: Match the surface level at any point along the patch's edge with the adjoining footpath surface within ± 5mm.

Concrete surfaces
Conform to the following:

- Prime coat the cut edges of the existing surfaces with cement slurry. Lay and compact concrete so that the edges are flush and the centre is cambered 10 mm above the adjoining existing surfaces.
- Material: 25 MPa concrete.
- Surface finish and pattern: Match existing adjoining work.
- Minimum thickness: 75mm or the adjacent pavement thickness, whichever is thicker.
- Reinforcement and dowels: If required, provide steel reinforcement with dowels into the adjacent concrete.
- Expansion joints: 15mm thick preformed jointing material of bituminous fibreboard placed where new concrete abuts existing concrete and in line with joints in existing concrete.
- Control joints:
  . Form control joints strictly in line with the control joints in existing concrete.
  . Around electricity supply poles: Terminate the concrete paving 200mm from the pole and fill the resulting space with cold mix asphalt.

Curing: Cure by keeping continuously wet for 7 days.

Landscaped areas

In topsoil areas: Complete the backfilling with topsoil for at least the top 100mm.

Lawn: Re-lay stockpiled turf. If existing turf is no longer viable, re-sow the lawn over the trench and other disturbed areas.

Planted areas: Overfill to allow for settlement.

110 CONCRETE

1 GENERAL

1.1 CROSS REFERENCES

General

Refer to the *General Requirements* worksection.

1.2 RELATED WORKSECTIONS

Refer to the following worksections:

- *Termite Control*;
- *Plumbing and Drainage*;
- *Paving*;
- *Landscaping*.

Refer to *Painting* worksection for proprietary textured finishes.

2 CERTIFICATION

2.1 REQUIREMENT

Upon completion of concrete works provide to the Superintendent certification by a practising professional structural engineer registered under the Professional Engineers Act 2002 (Queensland) (Contractor's Certifying Consultant) that:

(i) All tests to concrete works and concrete materials required under the Contract have been completed and

(ii) Completed concrete works conform in all respects to the Drawings and Specifications.

Refer also to WORKS CERTIFIED BY CONTRACTOR'S CERTIFYING CONSULTANTS – *PRELIMINARIES*.

THE CERTIFYING PRACTISING QUEENSLAND REGISTERED PROFESSIONAL STRUCTURAL ENGINEER IS TO BE ENGAGED BY THE CONTRACTOR.

2.2 COST

The costs of testing concrete works and concrete materials and the costs of certification of concrete works to the extent shown on the Drawings and Specification are included in the Contract Sum.

2.3 NOTIFICATION

Upon appointment, notify the Superintendent of the name, registration number under the Professional Engineers Act (2002), address and telephone number of the engineer who shall certify the conformity of the concrete works to the Drawings and Specification.

3 QUALITY

3.1 INSPECTION

Witness points

Give sufficient notice so that inspection may be made of the following:

- Membrane or film underlay installed on the base.
- Completed formwork.
- Reinforcement in place.
- Termite Barrier in Place.
- Commencement of concrete placing.

3.2 REJECTION

Remove rejected concrete from the site.

4 IN SITU CONCRETE

4.1 STANDARDS

General

Materials and construction: To AS 3600.

Concrete: To AS 1379.

Residential slabs and footings: AS 2870.

This standard sets out the requirements for the classification of a site and the design and construction of a footing system for a single dwelling house, townhouse or the like which may be detached or separated by a party wall or common wall but not situated vertically above or below another dwelling.

4.2 CONCRETE TESTS

Concrete testing methods

Sampling, identification and testing: To AS 1012. Sample the concrete on site, at the point of discharge from the agitator.

Test authority: Concrete to be tested at testing laboratory registered with National Association of Testing Authorities. Supply original copies of test certificates to the Superintendent for approval.

Performance tests

General: Sample, test and assess the concrete for compliance.

Standard: To AS 1379.

Spread the site sampling evenly throughout the pour. For concrete in columns and bearing walls, take one sample per batch. Use at least 2 specimens from each sample.

- Specimen size: 200 x 100mm diameter but, if aggregate size exceeds 20mm, 300 x 150mm diameter.

Slump: Test at least one sample from each batch before placing concrete from that batch in the work.

Sampling and testing frequency table

Number of batches for each type and grade of concrete per day	Minimum number of samples
1	1
2-5	2
6-10	3
11-20	4
Each additional 10	1 additional

4.3 UNDERLAYS, MEMBRANES

Base preparation

Provide a working base of platform material, unless otherwise shown on the Drawings or approved by the Superintendent. Provide an even surface free of any projections likely to damage film underlays and adequate to provide a firm base for reinforcement supports, or any other items to be supported.

Base types, as follows:

- Graded stone base: Blind with sufficient sand to create a smooth surface free from hard projections. Wet the sand just before laying the underlay.
- Concrete working base: Remove projections above the plane surface, and loose material.

Thickness: Minimum: 50mm.

Polymeric film underlay

General: Under internal slabs on ground including integral ground beams and footings, provide a vapour barrier or, in areas prone to rising damp or salt attack, a damp-proofing membrane.

Standard: Vapour barriers and damp-proofing membranes: To AS 2870.

Material: 200 micrometer thick high impact resistant polythene film, Premium Orange, IR3.

Installation: Lay over the base, lap joints at least 200mm and seal the laps and penetrations with waterproof adhesive tape. Face the laps away from the direction of concrete pour. Take the underlay up vertical faces as far as the damp proof course where applicable and fix at the top by tape sealing. Locate vertical laps only on vertical or inclined surfaces. Patch or seal punctures or tears before pouring concrete.

4.4 CONCRETE MATERIALS

General

Cementitious materials: Dry and uncontaminated.

Aggregate: Unsegregated and uncontaminated.

Admixtures: No deterioration.

Bagged cement

Standard: To AS 3972.

Type: GP.

Age: Less than 6 months old.

Chemical admixtures

Contents: Free of chlorides, fluorides and nitrates.

4.5 CONCRETE

Concrete performance

General: Mix must work readily into corners and angles, and around reinforcement, without segregation or excess free water on the surface, producing sound concrete, with minimal plastic settlement and shrinkage cracking.

Drying shrinkage (maximum including tolerances): 0.65mm for concrete up to and including strength grade 32; 0.7mm for higher strength grades.

4.6 READY MIXED SUPPLY

Method: Use the batch production process. Deliver in agitator trucks.

Addition of water: Do not add water at the site after starting discharge.

4.7 CORES, FIXINGS AND EMBEDDED ITEMS

Take responsibility for co-ordinating the provision of core holes and embedment requirements of all trades whether or not shown on the Contract Drawings.

Adjoining elements

For adjoining elements to be fixed to or supported on the concrete, provide for the required fixings. Where applicable provide for temporary support of the adjoining elements during construction of the concrete.

Structural integrity

Fix cores and embedded items to prevent movement during concrete placing. In locating cores, fixings and embedded items, do not cut or displace reinforcement, or cut or core hardened concrete. Ensure that embedded pipes and conduits do not adversely affect structural integrity.

Placement

Maximum deviation from correct positions:

- Cores and embedded items generally: > 10mm.
- Fixings including anchor bolts: < 3mm.
- Anchor bolt groups for structural steel: To AS 4100.

Water tracking: Ensure fixings do not allow water to track to reinforcement.

Inserted fixings

Limitation: Use fixings inserted by drilling (including masonry anchors and the like), or by explosive tools, only if specified.

Protection

General: Grease threads. Cover and protect embedded items against damage.

Corrosion: Galvanise inserts, anchor bolts and embedded fixings.

4.8 PLACING AND CURING

Concrete working base

Material: N20 concrete. Lay over the base or subgrade and screed to the required level.

Finish: Membrane support: Wood float finish or equivalent.

Surface tolerance: ± 5mm from the correct plane, ± 5mm from a 2 m straight edge.

Placing and compaction

Placing:

- General: Use placing methods which minimise plastic settlement and shrinkage cracking. Avoid segregation. Avoid loss of materials. Between construction joints, maintain a plastic concrete edge.
- Layers: Place concrete in layers ≤ 300mm thick, such that each succeeding layer is compacted before previous layer has taken initial set.
- Placing slabs and pavements: Place concrete uniformly over the width of the slab so that the face is generally vertical and normal to the direction of placing.
- Construction joints: Thoroughly roughen hard concrete joint surfaces. Remove loose or soft material, foreign matter and laitance. Dampen joint surface using clean water and coat with neat cement slurry.

Compaction:

- General: Remove air bubbles and fully compact the mix.
- Methods: Use immersion and screed vibrators accompanied by hand methods as appropriate.
- Vibrators: Do not allow vibrators to come into contact with partially hardened concrete, or reinforcement embedded in it. Do not use vibrators to move concrete along the forms. Avoid over-vibration that may cause segregation.

Curing

General:

- Protection: Protect fresh concrete, during the curing period, from premature drying and from excessively hot or cold temperatures. Protect fresh concrete from physical and thermal shock, from traffic likely to damage the surface, and from rain. If temperature of surrounding air is > 35ºC, protect from wind and sun until the concrete can be covered. Maintain at a

reasonably constant temperature with minimum moisture loss, during the curing period. Prevent rapid drying out at the end of the curing period.

- Curing period: Cure continuously from initial set until the total cumulative number of days or fractions of days, during which the air temperature in contact with the concrete is above 10°C, is at least the following:
  - Fully enclosed internal surfaces/Early high-strength cement concrete: 3 days.
  - Other surfaces/Ordinary Portland cement concrete: 7 days.

Curing compounds
Standard: To AS 3799.

Substrates: Do not use wax-based or chlorinated rubber-based curing compounds on surfaces forming substrates to concrete toppings and cement-based render. Do not use PVA compounds.

Application: Provide a uniform continuous flexible coating without visible breaks or pinholes, which remains unbroken at least seven days after application.

Set-downs
Set down in wet areas.

Refer to structural drawings.

Unless specified otherwise on the drawings, provide:

- Min.50mm slab set down in bathrooms where finished falls to hobless showers are required.
- Min. 50mm (nominal) slab set down in laundries where finished falls to floor waste are required.

Threshold levels
For Silver, Gold, and Platinum levels of accommodation or where wheelchair access is required:

Comply with AS 1428.1 requirements and drawings, where there is a difference in finished floor levels at external door thresholds and external sliding glass doors.

Finish
Finish floor slabs in living and bedroom areas to be suitable for the application of sheet vinyl flooring.

Do not apply surface treatments which will inhibit a positive bond of these applied finishes.

4.9 JOINTS

Construction joints
Joint preparation: Roughen and clean the hardened concrete joint surface, remove loose or soft material, free water, foreign matter, and laitance. Dampen the surface just before placing the fresh concrete.

Expansion joints
Joint filling:

- Preparation: Before filling, dry and clean the joint surfaces, and prime.
- Joint filling: Fill with jointing materials. Finish visible jointing material neatly flush with adjoining surfaces.
- Watertightness: Apply the jointing material so that joints subject to ingress of water are made watertight. Location of watertight joints as shown on the drawings.

Movement joints
Location: Construct movement joints in the locations and to the details shown on the Drawings.

Joint filling: Fill movement joints with jointing materials of the types shown and as recommended by the material manufacturers and in accordance with their instructions for the location and type of joint, compatible when used together, non-staining to concrete in visible locations, and finished neatly flush with adjoining surfaces.

Control joints
Requirement: Where shown on the Drawings. Form groove in slab either with a grooving tool, by sawing, or by inserting an approved proprietary premoulded strip.

5 CONCRETE FORMWORK

5.1 STANDARD

General
Formwork design: To AS 3610.

Formwork construction: To AS 3610.

5.2 MATERIALS AND COMPONENTS

Form linings and facings
Compatible with finishes applied to concrete.

Void formers
Unwaxed cardboard or fibreboard, collapsible on absorption of moisture.

Steel reinforcement decking
Material: Hot dipped zinc-coated sheet steel to AS 1397, minimum G500 - Z200, which acts as both permanent formwork and positive tensile reinforcing steel in one-way reinforced concrete slab construction.

Design requirements: To AS 1538. Ensure the product is consistent with all applicable WH&S construction practices, including sufficient protection from glare for all persons likely to be affected by glare while installing or accessing the decking.

Use proprietary products which include anti-glare coating to the inside of formwork.

5.3 EXECUTION

Formwork
Permanent loading: Do not place permanent loads, including masonry walls, on the concrete structure while it is still supported by formwork.

Dimensional tolerances
Position: Construct formwork so that the position of finished concrete is within the tolerances stated in the Position tolerances table below.

Position tolerances table

Surface finish class to AS 3610	1	2	3	4	5
Maximum deviation from correct position (mm)	10	15	20	25	40

Formed surface finish
Visually important surfaces: For concrete of surface finish classes 1, 2 or 3, set out the formwork to give a regular arrangement of panels, joints, bolt holes, and similar visible elements in the formed surface. Form 45° bevels, 25mm on the face on corners and angles.

Integral finishes: The minimum standard of finishes to formed concrete surfaces shall be as follows (based on AS 3610 - table 3.3.1 classes):

Concrete element or surface	Form work class	Colour control
Concrete surfaces exposed to view, including surfaces to be painted or coated with textured finishes, and surfaces not otherwise specified	2	Refer AS 3610
Surfaces to be cement render finished, gypsum plaster finished, or hidden by ceiling lining/cladding	4	Not applicable
Surfaces permanently concealed (eg. footings)	5	Not applicable

Steel reinforcement decking
Installation:

- General: Fix sheeting to structural steel supports with puddle welds, or with welded shear studs in composite construction.

Propping: Provide temporary propping during concrete placing and curing.

5.4 STRIPPING AND REMOVAL

Formwork removal
Extent: Remove formwork, other than steel reinforcement decking, including formwork in concealed locations.

6 CONCRETE REINFORCEMENT

6.1 STANDARDS

General
Reinforcing bars: To AS 1302.

Reinforcing wire: To AS 1303.

Reinforcing fabric: To AS 1304.

6.2 MATERIALS AND COMPONENTS

Reinforcement
General:

- Identification: Ensure that the grade and origin of reinforcement is readily identifiable.
- Surface condition: Free of material which would reduce the bond between the reinforcement and concrete.

Dowels
Standard: To AS 1302 grade 250R.

General: Provide each dowel in one piece, straight, with square cut ends free from burrs. Apply 2 coats of bitumen emulsion to half the length of the dowel at one end.

Tie wire: Galvanised in external and corrosive areas.

Bending:

- General: Bend and straighten reinforcement without damaging it.
- Hot bending: To AS 3600.

Protective coated reinforcement
Extent: For concrete elements containing protective coated reinforcement, provide the same coating type to all that element's reinforcement and embedded ferrous metal items, including tie wires, stools, spacers, stirrups, plates, and ferrules, and protect other embedded metals with a suitable coating.

Galvanising:

- Coating (minimum): 700 g/m^2.
- Preparation: Pickling to AS 1627.5.

Damage: If damage occurs to the coating replace the damaged reinforcement.

6.3 EXECUTION

Reinforcement supports
Support types generally: Provide purpose-made concrete, metal or plastic supports, adequate to withstand construction and traffic loads, and in the form of chairs, spacers, stools, hangers and ties.

Fixing reinforcement
Fixing requirements generally: Secure the reinforcement against displacement by tying at intersections with either annealed iron 1.25mm diameter (minimum) wire ties, or clips. Bend the ends of wire ties away from nearby faces of forms so that the ties do not project into the concrete cover.

Welding generally: Do not weld reinforcement.

- within 75mm of a bend with an internal radius < 6 bar diameters; or
- at points which have been re-bent.

Standard: To AS 1554.3.

7 CONCRETE FINISHES

7.1 DEFINITION

Applied finishes include finishes as laid, wrought finishes on formed surfaces, separate applied finishes placed monolithically on green concrete surfaces, and separate applied finishes keyed or adhered to hardened or partially hardened surfaces.

Refer to *Painting* worksection for proprietary textured finishes.

Cementitious toppings
Toppings comprising aggregate bound with cement.

7.2 EXECUTION

Tolerances
Tolerance classes: Determine tolerance classes using a straight edge placed anywhere on the surface in any direction.

Tolerances class table

Class	Measurement	Maximum deviation (mm)
A	3 m straight edge	3
B	3 m straight edge	6
C	600mm straight edge	6

Surface modifiers
Surface hardeners:

- Suitable for Cementitious toppings or as laid surfaces.
- Apply to clean surfaces. Do not apply to non-slip topping.

Seal stripper: Thoroughly clean the surface before the application of finishes to masonry and cementitious floors. Remove wax (buffable, self-polishing and acrylic paste types), heavy duty polymer finishes, and clear resin sealer using a seal stripper.

Unformed surfaces
Screeding: Strike off, consolidate and level slab surfaces to finished levels, to tolerance class C unless specified otherwise.

Placing:

- Process: Spread the topping mix, compact, float to the designated tolerance class and finish.
- Thickness: 20 ± 5mm.
- Monolithic placing: Spread the topping mix as soon as surface water has disappeared from the base.
- Monolithic placing on hardened surfaces: If toppings are to be applied to hardened concrete surfaces, scabble the surface to remove the surface layer and expose the aggregate. Thoroughly dampen the surface and leave free of standing water. Immediately before placing, either scrub a coat of neat cement grout into the surface, or apply an adhesive.
- Placing over membranes: Over waterproof membranes, place cementitious toppings at least 45mm thick. Reinforce with 50 x 50 x 1.6mm galvanised wire netting lapped 150mm at joints.

Curing: Prevent cracking or crazing resulting from drying shrinkage, without impairing the adhesion of subsequent finishes.

7.3 GRANOLITHIC TOPPINGS

Mix
Ratio: 1:1:1.5 cement:fine aggregate:5mm coarse aggregate.

Water:cement ratio: 0.5 maximum.

Slump: 50mm maximum.

Placing
Monolithic placing: Compact and float.

Adhesive
An approved commercial.

Integral margins
Integrally form margins in the topping material.

Coved skirtings
General: Where detailed or specified on the drawings, form coves in the topping material, and finish the top to a neatly struck line. Mitre internal and external angles.

Finishing methods
Scored or Scratch Finish (Broomed Finish): After screeding, give the surface a coarse scored texture using a stiff brush or rake drawn across the surface before final set.

Machine floated finish: After screeding consolidate the surface using a machine float. Hand float in locations inaccessible to the machine float. Cut and fill to tolerance class B and refloat immediately to a uniform, smooth, granular texture.

Steel trowelled finish: After machine floating, use power trowels to produce a smooth surface relatively free from defects. Then, when the surface has hardened sufficiently, use steel hand trowels to produce the final consolidated finish free of trowel marks and uniform in texture and appearance, to tolerance class A. Where floor coverings are to be installed, remove defects that would show through them.

Wood float finish: Produce the final finish using a wood float.

Non-Slip Broom finish: After floating draw a broom or hessian belt across the surface to produce a coarse even-textured slip-resistant transverse-scored surface.

Sponge finish: After machine floating, obtain an even textured sand finish by wiping the surface using a damp sponge.

Non-Slip Finish: Blend silicone carbide granules or aluminium oxide (size range 595 microns to 1410 microns) with portland cement in the proportions recommended by the supplier. After screeding, apply the blend at the rate of 1 kg/m² in two operations.

Firstly apply approximately two-thirds of the granule cement blend to the surface by a method that ensures even coverage without segregation. Begin machine floating immediately after application of the first 'dry-shake'. When the granules have been embedded by floating, broadcast the remainder of the blend at right angles to the previous application. Machine float immediately.

Scored Non-Slip Finish: Alternatively, non-slip finish may be achieved through permanently grooving stair treads and landings.

Coloured and patterned finishes
Pattern paving: Proprietary treatment producing integral coloured and patterned surface for in situ paving and ground slabs.

Coloured concrete
Add pigment concentrates of high tinting strength inorganic oxides to the mixing as recommended by the manufacturer, to the desired colour.

Colour to be integral with the slab concrete or topping screed.

Apply and cure using experienced tradesmen to achieve uniformity in the colour and final appearance.

Provide a 1m sq sample panel on site and obtain the approval of colour and finish from the SR before proceeding with the work.

7.4 LOCATIONS / FINISHES

General application
Steel trowelled: To all internal concrete floors other than tiled areas.

Non-slip wood floated: To all external undercover areas, patio, carports, stores and the like, including under-croft carparking areas.

Broomed: To external exposed areas, paths, car tracks, slabs at doorways and the like.

Concrete slab colour
Exposed edges: Off-form

Undersides of suspended concrete slabs/exit stairs/stairways/elevated landings, ramps, and platforms: Off-form, finished with proprietary textured paint system finishes.

Surfaces under concrete balconies suspended slabs: Off-form, finished with proprietary textured paint system finishes.

Refer: The Drawings, *Section 310 Painting*, and the Materials and Finishes Schedules in *Multi Trade Schedule*.

7.5 STAIRS NON-SLIP

Stair nosings
Provide purpose-made non-slip stair nosings to concrete stairs, compliant to AS 1428.1 for access

and luminance contrast. Refer to Section - 220 Hardware for particulars.

Slip resistance:
Standard: AS 4586.

Nosing Strip: R11/P4 minimum.

7.6 ACCESSIBILITY CAR PARKING BAYS

Requirement
Do not provide Accessibility (Disabled) logos where disabled car parking bays are provided, unless required elsewhere in the Specification and/or Drawings.

120 LIGHT TIMBER FRAMING

1 GENERAL

1.1 CROSS REFERENCES

General
Refer to the *General Requirements* worksection.
Refer to the drawings for design requirements.

Related worksections
Refer to the following worksections:

- *Adhesives, Sealants and Fasteners*;
- *Termite Control*;
- *Timber Finishes and Treatment*.

1.2 STANDARD

General
Light timber framing: To AS 1684 Parts 2, 3 or 4, as appropriate.

Design: To AS 1720.1.

2 QUALITY

2.1 INSPECTION

Witness points
Give sufficient notice so that the following may be inspected:

Structural woodwork after erection but before it is covered.

Mandatory inspections
Refer *GENERAL REQUIREMENTS - Mandatory Inspections*.

2.2 SUBMISSIONS

Design
High wind areas: If the locality is a high wind area which is not catered for in AS 1684 computations, submit details, certified by a suitably qualified person, of the necessary additional structural provisions.

Shop drawings
General: For items designed by the contractor, submit shop/design drawings certified by a structural engineer to AS 1720.1 for the span, spacing, and loading, and showing the following:

- Arrangement of members.
- Location of the members in the building.
- Loading parameters and bracing lengths assumed in the design.
- Species, stress grade, strength group and joint group of timber.
- Size of each member.
- Tolerances on member sizes.
- Joint details including connector plates.
- Lifting points.
- Method of fixing and bracing.
- Preservative treatment, if any.
- Long term deflection.
- Moisture content at time of manufacture.
- Method of fabrication.

Trusses: Show the following additional information:

- Camber in bottom cord.

Materials
Identification:

- Certification: Submit a supplier's certificate (which may be included on an invoice or delivery docket) verifying that the timber complies with the specification.
- Inspection: Submit the inspection authority's certificate verifying that the timber complies with the specification.

Moisture content: Submit evidence of moisture content.

3 MATERIALS AND COMPONENTS

3.1 TIMBER

Refer to the Materials and Finishes Schedule and the drawings for requirements.

Sustainability
Requirement: Refer to this specification section *020 GENERAL REQUIREMENTS* – Clause *2.6 Materials and Components – Sustainable Timber.*

Timber grades
Structural timbers: Appearance grade if exposed to view in the finished work otherwise stud grade or lintel grade, as appropriate.

Structural timber grading standards
Hardwood: To AS 2082.

Softwood: To AS 2858.

Mechanical stress grading: To AS/NZS 1748.

Machine proof-grading: To AS 3519.

Identification
Method: Identify timber using branding, certification or both.

Branding: Brand structural timber, under the authority of a recognised product certification program applicable to the product. Locate the brand mark on faces or edges which will be concealed in the works. Include the following data:

- Stress grade.
- Method of grading.
- "Seasoned" or "s".
- The certification mark of the product certification program.
- The applicable standard.

Recognised product certification programs:

- Pine framing: Pine Australia Quality Control Scheme.
- Finger jointed structural timber: Pine Australia Quality Control Scheme.

Certification:

- Any inspection Authority charges shall be borne by the Contractor.

Moisture Content: Refer Timber finishes and treatment Section.

3.2 SHEET PRODUCTS

Structural plywood
Standard: To AS/NZS 2269.

Bond: Type A.

Flooring: Tongued and grooved.

Hardboard
Standard: To AS/NZS 1859.4.

Identification
Method: Identify plywood using branding, certification or both.

Branding: Brand structural plywood, under the authority of a recognised product certification

program applicable to the product. Locate the brand mark on faces or edges which will be concealed in the works. Include the following data:

- Stress grade.
- Method of grading.
- The certification mark of the product certification program.
- The applicable standard.

Recognised product certification programs:

- Plywood: Plywood Association of Australia (PAA) Quality Control and Product Certification Scheme.
- Blockboard: Plywood Association of Australia (PAA) Quality Control and Product Certification Scheme.

3.3 COMPONENTS

Mild steel post bases
Minimum dimensions:

- Stirrup: 75mm wide x 6mm thick.
- Dowel: 20mm diameter heavy tube.

Location: To timber posts supported off concrete slabs or footings.

Finish: Galvanize after fabrication.

Galvanised steel lintels: Proprietary item to manufacturer's requirements.

Fasteners
Installation: Do not split or otherwise damage the timber.

Coating: Before placing bolts in contact with CCA treated timber, coat the shank of the bolt in a grease or bituminous coating.

4 FRAMING

4.1 WALL FRAMING

Wall framing
Gauging: Provide gauged timbers in studs, noggings and plates for double faced walls.

Timber species or group: Refer to Schedule of Requirements - *Materials and Finishes Schedule.*

Additional support members
General: Provide additional support in the form of noggings, trimmers and studs for fixing lining, cladding, hardware, accessories, fixtures and fittings as required.

Maximum spacing of noggings: 1350mm centres.

Structural plywood reinforcement required for Silver, Gold, and Platinum levels of accommodation
Provide 12mm structural plywood to walls requiring additional support for fixing specified hardware or future hardware in bathrooms, ensuites and toilets, in accordance with AS 4299 or as shown on the drawings, whichever is the greater.

Alternatively, where minimum room size/s is maintained, the entire wall/s encompassing support zones, may be lined with 12mm structural plywood for reinforcement.

Vermin barriers
Brick veneer barrier (suspended timber floors): Close nail 10mm galvanised steel wire mesh to the underside of the bottom plate of external stud walls, extending across the cavity for building into brickwork.

Stud wall barrier: Aluminium/zinc-coated steel sheet, 600mm wide x 0.6mm thick, fixed to each side of the external stud wall frame at the base. Lap joints 25mm.

Damp-proof courses
Material: To AS/NZS 2904.

- Type: Aluminium core.

General: Provide damp-proof courses under the bottom plate of stud walls built off slabs or masonry dwarf walls, as follows:

- External walls (not brick veneer): Turn up at least 75mm on the inside and tack. Project 10mm beyond the external slab edge or dwarf wall and turn down at 45o.
- Walls of bathrooms, shower rooms and laundries: Turn up at least 150mm on the "wet" side and tack to studs.

Installation: Lay in long lengths. Lap full width at angles and intersections and at least 150mm at joints.

Junctions: Preserve continuity of damp-proofing at junctions of damp-proof courses, sarkings and waterproof membranes.

Location: At least 150mm above adjacent finished ground level.

Flashings
Material: To AS/NZS 2904.

- Type: Embossed PVC.

Location: Provide flashings to external openings sufficient to prevent the entry of moisture. Form trays at the ends of sill flashings.

Brick veneer construction: Extend across cavities and build into brickwork.

4.2 ROOF AND CEILING FRAMING

Wall plates
Refer to the drawings for details. Otherwise, comply with the following:

- Fixing: Fix timber wall plates to masonry, with either straps or bolts.
- Steel zinc-coated straps: In cavities. Build bottom end 75mm into brickwork, 1200mm below plate. Bend top end over plate and fix with galvanized fastenings.
- Coating class: Z275.
- Size: 25 x 1mm or 30 x 0.8mm.
- Bolts: 12mm diameter hot-dip galvanized steel, embedded at least 150mm into the wall structure of solid masonry external walling or the top bond beam of loadbearing hollow block external walling.
    - Maximum spacing: Refer to drawings.

Nailing strips
Where timber joists, rafters or purlins bear on steel members, provide 50mm thick nailing strips bolted to the flange of the steel member at 450mm maximum centres.

Strutted framing
General: Construct traditional timber pitched roof framing consisting of rafters and ceiling joists supported at intermediate points by a system of under purlins strutted off walls or strutting beams and braced by collar ties, and ceiling hanging beams.

Blocking: Where the depth of rafters or purlins is at least 4 x width, provide solid blocking between them

at the support points and at 1.8 m maximum intervals between supports.

Supports for water containers
Standard: AS/NZS 3500.4 clause 5.5.

Where a water container or heater is located in the roof space, provide a support platform engineered to suit.

Where solar water heater tank/s and collector panel/s are located on the roof, unless the roof frame is specifically designed to carry the additional loads imposed, provide additional support engineered to suit.

Additional support
Provide a frame member behind every joint in fibre cement sheeting or lining.

Cypress pine: AS 1810.

Australian grown conifers, other than radiata pine and cypress pine: AS 1787.

4.3 TRUSSES

Fabrication
Assembly: Factory assemble trusses.

Camber: 10mm upward in bottom chord.

Connections: Connector plates pressed to contact with the truss members. No knots in plate area.

Joints: No gaps greater than 2mm.

Overhangs: Free from spring or splits.

Bow in chords (maximum): Where L is chord length, L/200 or 50mm, whichever is less.

Supports for water containers
Standard: AS/NZS 3500.4 clause 5.5.

Where a water container or heater is located in the roof space, provide a support platform engineered to suit.

Where solar water heater tank/s and collector panel/s are located on the roof, unless the trusses are specifically designed to carry the additional loads imposed, provide additional support engineered to suit.

Marking
Permanently mark each truss, on faces or edges which will be concealed in the works, to show:

- manufacturer;
- timber species;
- grade;
- location;
- pitch and span;
- support points; and
- trusses designed for additional loading such as water heater support.

Installation
General: To AS 4440.

Support: Support trusses on bottom chord at two points only, unless designed for additional support.

Plumb: Plumb to within H/200, where H is the height.

Vertical movement: Over internal walls provide at least 10mm vertical clearance and use bracing methods which allow for vertical movements.

5 COMPLETION

5.1 COMPLETION

Tightening
Tighten bolts, screws and other fixings so that joints and anchorages are secure at practical completion.

130 TIMBER FLOORING AND DECKING

1 GENERAL

1.1 CROSS REFERENCES

General
Refer to the drawings for project requirements.

Refer to the *General Requirements* worksection.

Related worksections
Refer to the following worksections:

- *Timber Finishes and Treatment*;
- *Adhesives, Sealants and Fasteners*;
- *Floor Sanding*;
- *Painting*.

1.2 INTERPRETATION

General
Timber decking: Timber flooring with plain, square, bevel or pencil round edge suitable for pedestrian or light vehicle loadings in balconies, decks and access ways.

1.3 STANDARD

General
Flooring and decking: To AS 1684.2, AS 1684.3 or AS 1684.4, as appropriate.

2 QUALITY

2.1 SUBMISSIONS

Materials
Identification:

- Certification: Submit a supplier's certificate (which may be included on an invoice or delivery docket) verifying that the timber complies with the specification.
- Inspection: Submit the authority's certificate verifying that the timber complies with the specification.

Moisture content: Submit evidence of moisture content.

3 MATERIALS

3.1 MATERIALS

Sustainability
Requirement: Refer to this specification section *020 GENERAL REQUIREMENTS* – Clause *2.6 Materials and Components – Sustainable Timber.*

Identification
Method: Identify timber using branding, certification or both.

Branding: Brand floor boards under the authority of a recognised product certification program applicable to the product. Locate the brand mark on faces or edges which will be concealed in the works. Include the following data:

- Stress grade.
- Method of grading.
- "Seasoned" or "s".
- The certification mark of the product certification program.
- The applicable standard.

Recognised product certification programs:

- Milled radiata pine products: Pine Australia Quality Control Scheme.
- Sawn radiata pine boards: Pine Australia Quality Control Scheme.

Inspection: If neither branding nor certification is adopted, have an independent inspecting authority inspect the timber.

Timber grades
Milled timbers: Where the relevant Australian standard specifies more than one grade, provide the following:

- Timbers for transparent finishes: The highest grade.
- Timber for opaque finish: "Select" grade for hardwood, "Standard" grade for softwood.
- Concealed timber: The lowest grade.

Timber flooring and decking
Seasoned hardwood: AS 2796.1.

Particleboard flooring
Standard: To AS/NZS 1860.1.

Grade: Class 1 flooring.

Plywood flooring
Standard: To AS/NZS 2269.

Type: Bond type A, tongued and grooved.

Fibre cement flooring and decking
Compressed sheets: To AS/NZS 2908.2.

Grade: Type A, Category 5.

4 FLOORING AND DECKING

4.1 SUB FLOORS

Bearers and joists
Fixing details: Refer Schedule of Requirements to this Section.

Joists for sheet flooring to be seasoned timber to prevent popping of screw heads.

If unseasoned timber is used make allowance for shrinkage of the joists.

Subfloor enclosure
Stump battens: Fix battens horizontally or vertically as detailed to external faces of building perimeter stumps. Keep braces and battens 55mm clear of ant caps and 75mm clear of ground.

Access gate: Provide an access gate framed and braced and battened to match the stump battens. Hang on 2 galvanized mild steel hinges. Provide a galvanized mild steel pad bolt.

4.2 FLOORING

Structural sheet flooring
Installation: Fix particleboard and plywood flooring with elastomeric adhesive and nails.

Junctions: Sand junctions lightly to a smooth, level surface to manufacturer's recommendations.

Particleboard flooring
Installation: To AS 1860.

Plywood flooring
Minimum thickness (F8):

- Joist spacing up to 450mm: 14mm.
- Joist spacing 450 - 600mm: 19.5mm.

Minimum thickness (F11):

- Joist spacing up to 450mm: 13mm.
- Joist spacing 450 - 600mm: 18.5mm.

Fibre cement flooring
Installation: Lay the length of the sheets at right angles to the joists and continuous over at least 2 spans. Stagger the end joints and locate them

centrally over joists. Butter edges of sheets with adhesive and firmly butt join together.

Fixing: Fix to joists with corrosion-resistant countersunk screws. Bond sheets to joists at intermediate bearing with square patches of adhesive.

Fixing

On visible flooring, sink the heads of fixings below the surface and fill the sinking flush with a material tinted to match the flooring and compatible with the surface finish.

4.3 DECKING

Timber decking

Timber: Hardwood species of at least durability class 2, or equivalent preservative treated softwood.

Arrises: Chamfered or rounded.

Installation: Lay in long lengths (minimum 3 spans) double nailed at each bearing with galvanized nails driven flush. Stagger joints and make them over joists. Leave 4 mm between edges of boards.

Finishing: Apply the first 2 coats all round before fixing.

140 STRUCTURAL STEEL

1 GENERAL

1.1 CROSS REFERENCES

General
Refer to the *General Requirements* worksection.

Related worksection
Refer to the following worksection:

- *Metals and Prefinishes*.

1.2 STANDARD

General
Materials, construction, fabrication, and erection: To AS 4100.

2 CERTIFICATION

2.1 REQUIREMENT

Upon completion of the structural steelwork and before building in any steel member, provide to the Superintendent certification by a practising professional structural engineer registered under the Professional Engineers Act 2002 (Queensland) (Contractor's Certifying Consultant) that:

- All manufacturer's certificates and test results required under the Contract have been provided to the Superintendent and
- All tests required to be performed on steel supplied to the works have been completed and
- The completed steel work conforms in all respects to the Drawings and Specifications.

Refer also to WORKS CERTIFIED BY CONTRACTOR'S CERTIFYING CONSULTANTS – *PRELIMINARIES*.

THE CERTIFYING PRACTISING QUEENSLAND REGISTERED PROFESSIONAL STRUCTURAL ENGINEER IS TO BE ENGAGED BY THE CONTRACTOR.

2.2 COST

The costs of testing steel and steelwork and the costs of certification of steel work to the extent shown on the Drawings and Specification are included in the Contract Sum.

2.3 NOTIFICATION

Upon appointment, notify the Superintendent of the name, registration number under the Professional Engineers Act (2002), address and telephone number of the engineer who shall certify the conformity of the steelwork to the Drawings and Specification.

3 QUALITY

3.1 INSPECTION

Witness points - off site
Give sufficient notice so that inspection may be made at the following stages:

- Commencement of shop fabrication.
- Surface preparation before shop painting.

Witness points - on site

Give sufficient notice so that inspection may be made at the following stages:

- Steelwork and column bases erected on site, before grouting, encasing, site painting or cladding.

3.2 SUBMISSIONS

Shop drawings
General: Submit shop drawings showing the following information:

- Relevant details of each assembly, component and connection.
- Information relative to fabrication, surface treatment, transport, and erection.

Particular: Include the following information:

Temporary works such as lifting lugs, support points, temporary cleats and bracing which are required for transport and erection of the structural steelwork.

Tests
Steel: Submit evidence that the steel used in the work complies with the cited material standards.

Acceptable evidence: Certified mill test reports, or test certificates issued by the mill.

Materials and components
Masonry anchors: If masonry anchors are required or proposed for the support or fixing of structural steel, submit evidence of the anchor capacity to carry the load.

Execution
Survey certificates:

- Splicing: If splicing of structural members is intended, submit proposals.
- Erection: If members cannot be properly erected, give notice.

4 MATERIALS AND COMPONENTS

4.1 ENVIRONMENTALLY SUSTAINABLE STEELWORK

Conform to requirements of the Australian Steel Institute (ASI) Environmental Sustainability Charter, including:

- Steel: Sourced from steelmakers certified to ISO 14001.

Steelwork: Supplied by fabricators who are members of the ASI Environmental Sustainability Charter or who are certified to ISO 14001.

4.2 STEEL TYPE AND GRADE

Standards
Cold-formed sections: To AS/NZS 4600.

Steel grade table

Type of steel	Grade
Universal beams and columns, parallel flange channels, large angles to AS/NZS 3679.1	300
Flat, small angles, taper flange beams and columns to AS/NZS 3679.1	300
Welded sections to AS/NZS 3679.2	300
Hot rolled plates, floor plates and slabs to AS/NZS 3678	250
Hollow sections to AS 1163:	
- Circular sections less than 265mm outside diameter	C250
- Sections other than the above	C350
Cold formed purlins and girts to AS 1397	G450 Z350

Type of steel	Grade
Steel rails to AS 1085.1	(one grade only)

4.3 MEMBERS

Members
General: Uncontaminated.

4.4 BOLTS

Bolts, nuts and washers

General: Hot-dipped galvanized, corrosion-free, coated in oil and in serviceable condition.

5 EXECUTION

5.1 FABRICATION

Splicing
General: Provide structural members in single lengths.

Beam camber
If beam members have a natural camber within the straightness tolerance, fabricate and erect them with the camber up.

Straightening
Do not injure the material when straightening or flattening members.

Site work – Site welding
Other than work shown on the shop drawings as site work, **do not fabricate or weld structural steel on site or after galvanizing.**

5.2 BOLTING

Connection bolts
For connection bolts not shown on the drawings, provide bolting category 8.8/S.

Foundation bolts
General: Provide each foundation bolt with 2 nuts and 2 oversize washers and provide sufficient thread to permit the levelling nut to be set below the base plate.

Hexagonal commercial bolts: To AS/NZS 1111.

Hexagonal nuts: Class 5.

Extra large flat washers: To AS1237 Appendix A.

Supply only of foundation bolts: Supply for casting in by concreter/ formworker.

5.3 WELDING

General
Standard: To AS/NZS 1554.1.

Weld category
Weld categories to be shown on the drawings: Category GP.

Category SP welds.

Weld type
Weld type not shown on the drawings: 6mm continuous fillet weld made using E48XX electrodes or equivalent.

5.4 ERECTION

Temporary connections
Do not attach cleats except as shown on shop drawings.

Temporary members
Fix temporary members so as not to weaken or deface permanent steelwork.

Hand flame cutting
Do not hand flame cut bolt holes.

Handling
Do not overstress or deform members or components.

Work exposed to view
Welds: Grind smooth but do not reduce the weld below its nominal size.

Shearing, flame cutting and chipping: Perform carefully and accurately.

Corners and edges: Grind fair those corners and edges which are sharp, marred, or roughened.

6 FINISHES

6.1 IDENTIFICATION MARKS

General
Provide marks or other means for identifying each member, and for the setting out, location, erection and connection of the steelwork and compatible with the finish. If the work includes more than one bolting category, mark high-strength structural bolted connections with a 75mm wide flash of colour, clear of holes.

6.2 SURFACE PREPARATION

General
Methods: To AS 1627.

Site connections: After completing the connection, prepare the surface of the connection, adjacent unprimed surfaces and surfaces damaged during erection.

Steel surfaces generally: Remove loose millscale, loose rust, oil, grease, dirt, globules of weld metal, weld slag and other foreign matter. Ensure surfaces are dry.

6.3 PROTECTIVE COATINGS

General
Shop work: Apply the primer coat or protective system to the structural steel before delivery to the site.

Transport and handling: Do not damage the paintwork.

Site work: After erection, repair damage to the shop coating and apply coating omitted at site connections.

Priming
Time delay: Prime the steel surface as soon as possible after surface preparation and before the surface deteriorates, and in any case within 4 hours for shop work and 2 hours for site work. If the surface is contaminated or rust bloomed, repeat surface preparation before priming.

Conditions: Do not prime in adverse ambient conditions.

Fast drying primers: Do not provide fast drying primers where surface preparation is less than class 1.5.

Concrete encasing: Where members are part concrete encased extend the priming 25mm into the surface to be encased.

Prefinishing
Powder coated surfaces to be zinc coated using electroplate or hot zinc spray application. Do not leave perforations, cut edges and worked surfaces unprotected.

6.4 GALVANIZING

All external steel work and lintels: To be hot dip galvanised, smooth finish ready for painting.

Cold worked items: Except for hollow sections, anneal to 650ºC before galvanizing.

Coating mass: Other than nut and bolt thread surfaces:

- Minimum average: 600 g/m^2.

Coating quality: Continuous, adherent, smooth, evenly distributed, free from defects detrimental to the end use of the finished article, such as lumps, blisters, gritty areas, uncoated spots, acids and black spots, dross and flux.

Externally located hollow sections
Provide seal plates with breather holes.

To be hot dip galvanised inside and out after fabrication. Other internal protective applications are not acceptable. Pre-galvanised hollow sections to be fully galvanised inside and out, including applications for fence posts and in un-protected locations.

Friction-type bolted connections
General: Treat contact surfaces to achieve the required slip factor.

Method: Wire brushing or light grit blasting.

6.5 REPAIRS

General
Repair finishes to ensure the full integrity of each phase and each coating.

7 COMPLETION

7.1 COMPLETION

Temporary connections
Remove temporary cleats on completion and restore the surface.

150 LIGHT STEEL FRAMING

1 GENERAL

1.1 CROSS REFERENCES

General
Refer to the *General Requirements* worksection.

Refer to the drawings for design requirements.

Related worksections
Refer to the following worksections:

- *Adhesives, Sealants and Fasteners*;
- *Metals and Prefinishes*.

1.2 STANDARDS

Standards
Design, materials and protection: To AS/NZS 4600. –Cold formed steel structures.

Design: To AS 3623 Domestic metal framing.

Proprietary systems
Construction and detailing in accordance with manufacturer's instructions and in accordance with the NCC and Australian Standards.

2 QUALITY

2.1 INSPECTION

Witness points
Give sufficient notice so that inspection may be made of steel framing erected on site before lining or cladding.

Refer: *Preliminaries*, Schedules of Requirements for mandatory inspections.

2.2 SUBMISSIONS

Design
Floor frame member sizes: Submit a schedule of proposed member sizes, certified by a suitably qualified person as meeting stated project requirements.

Shop drawings
Roof trusses: Submit shop drawings certified by a suitably qualified person:

- stating that the trusses have been designed to AS/NZS 4600 for the span, spacing and loading;
- showing on an elevational diagram the size and section type of each member; and
- specifying the method of assembly, fixing, tying and bracing.

3 MATERIALS AND COMPONENTS

3.1 MATERIALS AND COMPONENTS

Environmentally Sustainable Steelwork
Conform to requirements of the Australian Steel Institute (ASI) Environmental Sustainability Charter, including:

- Steel: Sourced from steelmakers certified to ISO 14001.
- Steelwork: Supplied by fabricators who are members of the ASI Environmental Sustainability Charter or who are certified to ISO 14001.

Corrosion protection
Structural steel hollow sections:

- Coating class (minimum): To NCC 3.4.2.2.

Steel sheet and strip sections:

- Coating class (minimum): Z275 or AZ150.

4 EXECUTION

4.1 CONSTRUCTION GENERALLY

Fabrication
Length: Cut members accurately to length so that they fit firmly against abutting members.

Service holes: Form holes by drilling or punching.

- Bushes: Provide plastic bushes or grommets to site cut holes.
- Swarf: Remove swarf and other debris from cold-formed steel framing immediately.

Fastening
Type: Select from:

- self-drilling, self-tapping screws;
- blind rivets; or
- proprietary clinching system.

Welding
Type: Use the metal inert gas (MIG) technique or carbon arc welding.

Touch up: Clean the weld and coated areas affected by welding and touch up with zinc rich organic primer to APAS 2916.

Prefabricated frames
Protect frames from damage or distortion during storage, transport and erection.

Bracing
Provide diagonal noggings or tensioned straps.

Metal separation
Install lagging to separate non-ferrous service pipes and accessories from the metal framing.

Earthing
Permanent earthing: Required.

Temporary earthing: Provide temporary earthing during erection until the permanent earthing is installed.

CCA treated timber
Do not fix treated timber in contact with cold-formed steel framing.

4.2 WALL FRAMING

Wall studs
General: Provide studs in single lengths without splices. Place a stud under, or within 40mm from, each structural load point from roof or ceiling (except for openings). Provide multiple studs at points of concentrated load.

Nominal frame dimension (stud width) Refer drawings.

Maximum stud spacing: 600mm.

Heads to openings
Provide lintels consisting of either a stiffened top plate or a truss built up from frame members, depending on load and span.

Splicing
Splice plates at ends to maintain continuity and alignment.

Additional support
General: Provide additional support in the form of noggings, trimmers and studs for fixing lining, cladding, hardware, accessories, fixtures and fittings as required.

Maximum spacing of noggings: 1350mm centres.

Structural plywood reinforcement required for Silver, Gold and Platinum levels of accommodation

Provide 12mm structural plywood to walls requiring additional support for fixing specified hardware or future hardware in bathrooms, ensuites and toilets, in accordance with AS 4299 or as shown on the drawings, whichever is the greater.

Alternatively, where minimum room size/s is maintained, the entire wall/s encompassing support zones, may be lined with 12mm structural plywood for reinforcement.

4.3 TRUSSES

Fabrication

Assembly: Factory assemble trusses.

Design parameters

Refer drawings and manufacturers certified shop drawings.

Truss spacing (mm)

Refer drawings.

Supports for water containers

Standard: AS/NZS 3500.4 clause 5.5.

Where a water container or heater is located in the roof space, provide a support platform engineered to suit.

Where solar water heater tank/s and collector panel/s are located on the roof, unless the trusses are specifically designed to carry the additional loads imposed, provide additional support engineered to suit.

Marking

Permanently mark each truss to show:

- manufacturer;
- location;
- support points; and
- trusses designed for additional loading such as water heater support.

Installation

General: Fix to external wall plates, plumb to within H/200, where H is the height. Provide ties and wind bracing.

4.4 FLOOR FRAMING

Floor framing members

Refer to Drawings if applicable.

5 COMPLETION

5.1 CLEANING

On completion of framing remove debris from the cavities of members.

160 BRICK AND BLOCK CONSTRUCTION

1 GENERAL

1.1 CROSS REFERENCES

General
Refer to the *General Requirements* worksection.

Related worksections
Refer to the following worksections:

- *Termite Control* for built-in barriers;
- *Light Timber Framing* for built in items such as roof tie downs etc.;
- *Project Specific Schedules – Materials and Finishes* for face units.

Refer to *Painting* worksection for proprietary textured finishes.

1.2 STANDARDS

General
Materials, construction and detailing: To AS 3700.

Masonry units: To AS/NZS 4455.

- To SAA HB 124.

Built in components: To AS/NZS 2699.

1.3 INTERPRETATION

Definitions
Face units: Masonry units used in facework, including purpose-made units such as squints, sills and thresholds.

Facework: Masonry in which the form, or form and colour, of the face units and joints is visible in the completed works.

2 QUALITY

2.1 INSPECTION

Witness points
Stages: Give sufficient notice so that inspection may be made at the following stages:

- Damp-proof courses, in position.
- Flashings, in position.
- Termite barriers in position.
- Bottoms of cavities, after cleaning out.
- Bottoms of core holes, before grouting.
- Control joints, ready for insertion of joint filler.

2.2 SAMPLES

Masonry unit samples
Submit samples of each type of face masonry illustrating the range of variation available, including colour, texture, surface irregularities, defective arrises, and shape.

Number of each type: 6.

Mark and keep the approved samples on site until the completion of the project. Do not commence laying until approval is received from the Superintendent.

Facework sample panels
General: If specified in Schedule of Requirements, or if alternative face masonry acceptable to the superintendent is proposed, provide in a suitable position a sample panel of each type of facework including face or pointing mortar.

Minimum size (face of panel): Four units long x 6 units high min. in the required pattern (such as stretcher bond).

Ordering
Order all external masonry units required for the whole of the Works at the commencement of the project. Have sufficient pallets of face masonry on site to allow even mixing and distribution of the colour range.

3 MATERIALS AND COMPONENTS

3.1 MATERIALS AND COMPONENTS

Masonry units
Refer Materials and Finishes Schedule and the drawings.

Steel components generally
Durability classification to AS 3700.

Refer to Wall Ties in Cavity Walls for additional Durability Classification requirements within 3 km of salt water.

Mortar materials
Cement type to AS 3972: GP.

White cement: Iron salts content $\leq$ 1%.

Lime: To AS 1672.1.

Sand: Fine aggregate with a low clay content and free from efflorescing salts, selected for colour and grading.

Admixtures: Do not provide admixtures.

Colour
Refer to *Materials and Finishes Schedule and Colour Scheme*.

Mortar mix table

Mortar type to AS 3700	Mortar proportions (cement:lime:sand)	Location
M3	1:0:5 + water thickener	Concrete or calcium silicate masonry
M4	1:0:4 + water thickener	Grouted and reinforced masonry
M4	1:0 - 0.25:3	Underpinning, high strength masonry
M3	1:1:6	Other masonry

4 EXECUTION

4.1 CONSTRUCTION GENERALLY

Cleaning
General: Clean masonry progressively as the work proceeds. Clean facework to remove mortar smears, stains and discolouration. **Do not use acid.**

Concealed work
Joints: Cut flush and leave unstruck.

Sills and thresholds
Bedding: Solidly bed masonry sills and thresholds and lay them so that the top surfaces drain away from the building. Set out so that no unit is cut smaller than 3/4 full width.

Brick: Provide smooth faced bricks on edge to match colour of remainder of brickwork. Set sill bricks at angle between 15^{o} and 30^{o} projecting minimum 20mm.

Fill exposed voids of extruded bricks with mixture of finely crushed matching brick and cement mortar.

Finish cavity brick walls internally at sill with header course.

Threshold levels
For Silver, Gold, and Platinum levels of accommodation or where wheelchair access is required:

Comply with AS 1428.1 requirements and drawings, where there is a difference in finished floor levels at external door thresholds and external sliding glass doors.

Concrete block
Proprietary purpose made concrete sill section to match blockwork.

Concrete capping block fixing
Use a proprietary purpose made concrete bonding agent to adhere capping block to blockwork mixed with mortar to manufacturer's application requirements.

Joints, cutting and perpends
Set out: Set out masonry with joints of uniform width (10mm maximum) including weep holes and minimise cutting of masonry units.

Holes, sleeves and chases: Build in during erection.

Rods
76mm high units: 7 courses to 600mm.

90mm high units: 6 courses to 600mm.

190mm high units: 3 courses to 600mm.

Bonds
Single leaf: Stretcher bond.

Facework: Stretcher bond.

Built in steel door frames
Fill the backs of jambs and heads solid with mortar as the work proceeds.

4.2 BUILT IN ITEMS

Allow for building in accessories including tie down components where appropriate.

5 COMPONENTS

5.1 FACEWORK

Single face walls
Where shown on the drawings.

Double face walls
General: Select face units for uniform width and double-face qualities in single leaf masonry with facework both sides. Before starting, obtain a ruling as to which is the preferred wall face, and favour that face should a compromise be unavoidable.

Commencement
Position: Commence at least 1 full course for blockwork, or 2 full courses for brickwork, below adjacent finished ground level.

Perpends
Alignment: Vertically align perpends in alternate courses.

Perforations
Exposed: Provide solid face units where perforations would otherwise be visible.

Joints
Surface: Work with a jointing tool to a dense smooth surface, except where the surface is to be bagged.

Type: Refer to *Multi-Trade Schedules*.

Colour mixing
General: Where the colour of the face units is visible, evenly distribute the colour range of units. Prevent colour concentrations and "banding".

5.2 SUBFLOOR

Bearer support
Piers: Support bearers on engaged and free-standing masonry piers at 1800mm maximum centres.

Engaged piers:

- Brickwork: 230 x 110mm, bonded to walls.
- Blockwork: 390 x 90mm, bonded to walls.

Free standing piers table

Height (mm)	Brickwork (mm)	Blockwork (mm)
< 1500	230 x 230	390 x 190
1500 - 2700	350 x 350	390 x 390

Access openings
General: In internal walls, leave door width openings beneath doorways to give access to underfloor areas. Allow for access gates to external walls as shown on Drawings or to detail.

Air vents type
Brickwork:

- 3 cut bricks laid vertically and evenly spaced in a 1½ unit wide x 2 course high opening, backed with bronze wire mesh built in.

or:

- Equivalent ventilation by voids arranged horizontally or in a pattern.

Blockwork:

- Vent blocks: Purpose-made vent blocks.
- Concrete framed: Bronze wire mesh in concrete frame 390 x 190mm.

Air vents location
Ventilation rate: At least 7300mm^2 free ventilation area per linear metre of wall.

Location: Within 600mm of corners, elsewhere as required by ventilation rate. To external walls.

Cavity walls: Provide matching vents in the internal leaves located as near as practicable to the vents in the external leaves.

5.3 DAMP-PROOF COURSES

Material
Aluminium core DPC.

Standard: To AS/NZS 2904.

Location
General: Provide damp-proof courses in the following locations, if applicable:

- Walls adjoining infill floor slabs on membranes: In the course above the underside of the slab in internal walls and inner leaves of cavity walls. Project 40mm and dress down over the membrane turned up against the wall.
- Cavity walls built off slabs on ground: In the bottom course of the outer leaf, continuous horizontally across the cavity and up the inner face bedded in mortar, turned 30mm into the inner leaf 1 course above. Project 10mm beyond the external slab edge and turn down at 45º.

- Masonry veneer construction: In the bottom course of the outer leaf, continuous horizontally across the cavity. Fasten to the inner frame 75mm above floor level. Project 10mm beyond the external slab edge and turn down at 45°.
- Internal walls built off slabs on ground: In the first course above floor level.
- At timber floors: In the first course below the level of the underside of ground floor timbers in internal walls and inner leaves of cavity walls.

Installation
General: Lay in long lengths. Lap full width at angles and intersections and at least 150mm at joints. Step as necessary, but not exceeding 2 courses per step. Sandwich damp-proof courses between mortar.

Junctions: Preserve continuity of damp-proofing at junctions of damp-proof courses and waterproof membranes.

Location: At least 150mm above adjacent finished ground level.

5.4 CAVITY WALLS

Minimum cavity width
Masonry walls: 50 ± 10mm.

Masonry veneer walls: 25mm, between the masonry leaf and the loadbearing frame and 40mm between the masonry leaf and sheet bracing.

Openings
Closure: Do not close the cavity at the jambs of external openings.

Flashings material
Standard: To AS/NZS 2904.

Type: Embossed PVC.

Flashings location
General: Provide flashings and weatherings in the following locations, if applicable:

- Floors: Full width of outer leaf immediately above slab or shelf angle, continuous across cavity and up the inner face bedded in mortar, turned 30mm into the inner leaf 2 courses above. Where the slab supports the outer skin and is not rebated, bed the flashing in a suitable sealant.
- Under sills: 30mm into the outer leaf bed joint 1 course below the sill, extending up across the cavity and under the sill.
- Over lintels to openings in cavity walls: Full width of outer leaf immediately above the lintel, continuous across cavity, turned 30mm into the inner leaf 2 courses above. Extend at least 50mm beyond the lintels.
- Over lintels to openings in masonry veneer construction: Full width of outer leaf immediately above the lintel, continuous across cavity. Turn up against the inner frame and fasten to it. Extend at least 50mm beyond the lintels.
- At abutments with structural frames or supports: Vertical flashing in the cavity using 150mm wide material, wedged and grouted into a groove in the frame opposite the cavity.
- At stiles where cavities are closed: Full height flashing extending 75mm beyond the closure into the cavity, interleaved with the sill and head flashing at each end. Fix to frame stiles.

Flashings installation
General: Sandwich flashings between mortar except where on lintels or shelf angles.

Lap sealing: Seal with a bituminous adhesive and sealing compound.

Pointing: Point up joints around flashings, filling voids.

Weepholes
Form: Open perpends.

Maximum spacing: 720mm.

Location: Provide weepholes to external leaves of cavity walls in the course immediately above flashings, and cavity fill, and at the bottoms of unfilled cavities.

Wall ties
Durability classification to AS/NZS 2699.1: except:

Location	Durability Classification
Within 3km of the sea or salt water estuary	R3
Less corrosive environments	R2

Wall ties category table

Classification to AS/NZS 2699.1	Service conditions
Light duty	Masonry veneer
Medium duty	Normal cavity construction and at abutments
Heavy duty	Cavities > 60mm wide

Wall ties installation
Fixing of masonry veneer ties at abutments:

- To timber frames: Screw fix to outer face of timber frames with fixings to AS 3566.1.
- To concrete: Masonry anchors.
- To steel frames: Screw fix to outer face of steel studs with fixings to AS 3566.1.

Space wall ties in conformance with AS 3700 clause 4.10 or AS 4773.2, as appropriate, and at the following locations:

- Not more than 600 mm in each direction.
- Adjacent to vertical lateral supports.
- Adjacent to control joints.
- Around openings.

Embedment of wall ties
Cavities > 60mm wide: 75mm minimum.

Flexible wall ties

Type: Where ties or anchors extend across control joints, use ties or anchors which do not impair the effectiveness of the joint.

Connectors and accessories
Standard: To AS/NZS 2699.2.

Corrosion protection: To AS/NZS 2699.2.

Termite shields and barriers
Provide cap and strip shields to AS 3660.

Allow for and coordinate with certified applicators to place physical Termite Barriers where required.

5.5 FIRE RATED WALLS

General

Construct in accordance with brick or block manufacturer's specifications, where indicated on the drawings to achieve the required fire rating and sound ratings.

Do not chase wall. Services will be concealed by battened plasterboard linings.

Achieve required rating by taking the wall to the underside or the roof sheeting unless shown otherwise on the drawings.

5.6 AUTOCLAVED AERATED CONCRETE WALLS

General

Type: A proprietary system which:

has a current Australian Building Product and Systems Certification Scheme certificate; or

has a current appraisal report issued by the CSIRO Building Products and Systems Appraisals stating that the system is suitable for use in walls in buildings.

5.7 CONTROL JOINTS

Filler material

Type: Provide compatible sealant and bond breaking backing materials which are non-staining to masonry. Do not provide bituminous materials with absorbent masonry units.

Foamed materials: Closed-cell or impregnated, not water-absorbing.

Bond breaking materials: Non-adhesive to sealant, or faced with a non-adhering material.

Primer: Required.

Installation

Cleaning: Clean joints thoroughly before sealing.

Joint width: Refer Drawings.

Sealant depth: 0.67 - 1.0 times joint width.

6 REINFORCEMENT

6.1 MASONRY REINFORCEMENT

Build in reinforcement only where detailed or specified on the drawings.

6.2 BED JOINT REINFORCEMENT

Reinforcement

Build in reinforcement only where detailed or specified on the drawings.

Installation

General: Lap 450mm at splices. Fold and bend at corners so that the longitudinal wires are continuous. Stop 200mm short of control joints.

In brickwork: Extend 450mm beyond each side of openings.

Location: Only where indicated on the drawings.

- In third bed joint above bottom of wall.
- In second bed joint below top of wall.
- In first 2 bed joints above and below openings.
- In first 2 bed joints above and below head and sill flashings to openings.

Maximum vertical intervals: 500mm.

6.3 REINFORCED MASONRY

General

Designation: Masonry strengthened with embedded steel reinforcement, other than bed joint reinforcement.

Cleaning core holes

Blockwork: Provide purpose-made cleanout blocks or machine cut a cleaning hole at the base of each reinforced core. Locate on the side of the wall which is to be rendered or otherwise concealed. Cover the hole with formwork and grout the core.

Bond beams

Type: Provide bond beams made from purpose-made hollow concrete blocks with reinforcement grouted in place.

Reinforcement: Two 12mm diameter galvanized rods.

7 LINTELS

7.1 STEEL LINTELS

Material

Type: Mild steel galvanized to AS/NZS 4680, minimum coating mass 600 g/m^2. Do not cut after galvanizing.

Refer to NCC Figure 3.3.3.5 for acceptable spans, or as specified by the Structural Engineer.

Cold-formed lintels

Type: Proprietary flat-base type designed to AS/NZS 4600.

Type tests: Required.

Tension bars

Type tests: Required.

Installation

General: Provide 1 lintel to each wall leaf. Do not cut on site. Keep lintels 6mm clear of heads and frames. Pack mortar between the angle upstand and supported masonry units.

Minimum bearing each end:

- Span < 1800mm: 150mm.
- Span > 1800mm, < 3000mm: 230mm.

Propping: To prevent deflection or excessive rotation, temporarily prop proprietary cold-formed lintels until the masonry reaches its required strength.

- Minimum propping period: 3 days.

8 FINISHES

8.1 BAGGING

Dry bagging

Preparation: Cut joints flush before bagging.

Application: Apply laying mortar to the surface using a hessian bag or similar. Flush up irregularities but leave the minimum amount of mortar on the surface.

170 INSULATION AND BARRIERS

1 GENERAL

1.1 CROSS REFERENCES

General
Refer to the *General Requirements* worksection.

Related worksections
Refer also to:

- *Roofing*;
- *Cladding*;
- *Plumbing and Drainage*;
- *Electrical and Mechanical Services*.

1.2 STANDARDS

Installation of mineral wool insulation
Comply with the ICANZ Industry Code of Practice for the Safe Use of Glass Wool and Rock Wool Insulation.

Marking: Deliver mineral wool products to site in packaging labelled FBS-1 BIO-SOLUBLE INSULATION.

1.3 INTERPRETATION

Definitions
Terminology: To AS/NZS 4859.1.

AS/NZS 4859.1 relies on ASTM C168 for definitions with some qualifications and some additional definitions and in the NOTE to clause 1.5.1 offers ISO 9229 for additional information.

Fire hazard properties: Means the average specific extinction area, critical radiant flux, Flammability index, Smoke-Developed Index, smoke growth rate index, smoke development rate or Spread-of-Flame Index of a material or assembly that indicate how they behave under specific fire test conditions.

This is the NCC's interpretation of 'Fire hazard properties' at clause A 1.1.

Sarking membrane: Flexible membrane material normally used for waterproofing, vapour proofing or thermal reflectance.

Derived from the NCC clause A 1.1.

FBS-1 Glass wool: Spun fibres of molten glass, utilizing up to 60% recycled waste glass, thermally bonded to form batts, blankets and sheets for thermal and acoustic insulation.

FBS-1 Rock wool: Spun fibres of molten rock thermally bonded to form batts and blankets for thermal and acoustic insulation.

Polyester insulation: Polyester fibres thermally bonded to form batts and blankets.

Vapour barrier: A material or system that adequately impedes the transmission of water vapour under specified conditions.

This definition is from ASTM C168 which uses the term 'water vapour retarded (barrier)'. To qualify as a sarking membrane or vapour barrier, the material or system has to be continuous i.e. any joints in the membrane must be sealed airtight typically with pressure sensitive self-adhesive tape, or with an applied adhesive.

Breathable (vapour permeable) membrane: A flexible membrane material normally used for secondary waterproofing that adequately allows for the transmission of water vapour and has a vapour resistance not more than 0.5 MNs/g.

1.4 SUBMISSIONS

Fire hazard properties
General: Submit evidence of conformance with the following:

- Fire hazard indices for all materials when tested in conformance with AS/NZS 1530.3, including, if the material has a reflective facing, scoring and blackening to AS/NZS 1530.3 clause A6:
  - Spread of flame index: 0.
  - Smoke developed index: ≤ 3.
- Facing materials: Flammability index < 5 when tested in conformance with AS 1530.2.
- Combustibility of insulation materials and facing: Not deemed combustible as determined by AS 1530.1.

Thermal properties
General: Submit evidence of conformance with AS/NZS 4859.1.

2 QUALITY

2.1 INSPECTION

Witness points
Give sufficient notice so that the sarking, vapour barrier and insulation may be inspected before they are covered up or concealed.

3 MATERIALS AND COMPONENTS

3.1 INSULATION MATERIALS

General
Prohibition on metal foil insulation: Metal foil insulation is not specified or permitted adjacent to the ceiling line.

Acoustic / thermal ceiling insulation (to be installed in line with ceiling): Determine R value as deemed-to-satisfy provision in accordance with NCC and/or Building Energy Rating requirements. Approved batt types include glasswool, mineral wool, polyester, and natural wool.

Acoustic / thermal insulation and vapour barrier (to be installed in line with roof sheeting): Determine R value as deemed-to-satisfy provision in accordance with NCC and/or Building Energy Rating requirements. Approved blanket types include reflective foil membrane or "air cell" type insulation or foil membrane in combination with bulk thermal insulation.

Fire hazard properties
General: Fire hazard indices for all materials when tested in conformance with AS/NZS 1530.3:

- Spread of flame index: 0.
- Smoke developed index: ≤ 3.

- Materials with reflective facing: Test to AS/NZS 1530.3 clause 4.12(b) and the recommendations of Appendix A6.

Facing materials: Flammability index < 5 when tested in conformance with AS 1530.2.

Combustibility of insulation materials and facing: Not deemed combustible as determined by AS 1530.1.

Bulk and reflective insulation
Cellulosic fibre (loose fill): To AS/NZS 4859.1 Section 4.

Mineral wool blankets and cut pieces: To AS/NZS 4859.1 Section 7.

Polyester: To AS/NZS 4859.1 Section 6.

Polyisocyanurate (rigid cellular sheets RC/PIR): To AS 1366.2.

Polystyrene (extruded rigid cellular sheets RC/PS-E): To AS 1366.4.

Polystyrene (moulded rigid cellular sheets): To AS 1366.3.

Polyurethane (rigid cellular sheets): To AS 1366.1.

Polyurethane (sprayed): To AS 1366.1 Table 2.

Reflective insulation: To AS/NZS 4859.1 Section 9.

Wet processed fibreboard (including softboard): To AS/NZS 1859.4.

Wool: To AS/NZS 4859.1 Section 5.

Certification: Required.

Certification provider: An organization accredited by the Joint Accreditation System of Australia and New Zealand (JAS-ANZ).

Sarking membranes
Standard: To AS/NZS 4200.1.

Thermal performance: To AS/NZS 4859.1 Section 9.

Breathable (vapour permeable) membrane: Vapour resistance of not more than 0.5 MNs/g when tested to AS/NZS 4200.1

Fasteners and support
General: Metallic-coated steel.

Mesh support to roof insulation
Metallic-coated steel wire netting: To AS 2423 Section 4.

- Size: 45mm mesh x 1mm diameter.

Welded safety mesh: To AS/NZS 4389.

4 EXECUTION

4.1 INSTALLATION GENERALLY

Compliance
Work is to be performed in accordance with the Electrical Safety Act 2002 including Electrical Safety (Installation of Ceiling Insulation) Notice 2010, where applicable.

4.2 GENERAL

Framed wall thermal break strips
Product type: Proprietary item.

Application: To steel or timber framing with lightweight external cladding.

R-value: ≥ 0.2.

Screw fixing: Button head screws at 1 m centres.

Adhesive fixing: Wallboard adhesive ‘walnuts’ at 1 m centres.

Bulk insulation
Installation: To AS 3999 and NCC clause J1.2.

General: Batts, blankets and rigid sheets: Fit tightly between framing members or provide continuous support, such as reflective foil, in suspended locations. If support is not otherwise provided, staple nylon twine to the framing and stretch tight.

Under floors: Adhesive fix sheet materials.

Ensure no gaps except as follows:

- Access holes and vents: Do not obstruct.
- Light fittings and metal flues: Leave a 25mm gap.
- Electrical cables: Ensure 5mm of free air movement.

Loose fill
Not permitted.

Sarking-type material and reflective foil laminate
Standard: To AS/NZS 4200.2.

Fixing of membrane
To timber: Clouts or staples at 300mm maximum centres.

To steel or aluminium: Double sided pressure sensitive tape.

To plywood membrane support: Water based contact adhesive.

Overlap (minimum): 150mm and adhesive fix.

4.3 FLOOR INSULATION

Bulk installation
Product type: Fibre batts.

Batts: Fit tightly between framing members. If support is not otherwise provided, staple nylon twine to the framing and stretch tight.

Below concrete slab on ground
Product type: Rigid cellular extruded sheets.

Laying pattern: Stretcher bond, with edges tightly butted.

Location: Under the damp proof membrane.

Over concrete slab on ground
Product type: Rigid cellular extruded sheets.

Application: Under slab heating.

Substrate preparation: Ensure substrates are as follows:

- Clean and free of any deposit or finish which may impair adhesion or location of tiles.
- Excessive projections are removed.
- Voids and hollows > 10mm with abrupt edges are filled with a cement:sand mix not stronger than the substrate nor weaker than the bedding.

Extent: The entire heated slab.

Laying pattern: Stretcher bond, with edges tightly butted.

Under suspended concrete slab
Product type: Rigid cellular extruded sheets.

Over framed suspended floors
Product type: Rigid cellular extruded sheets.

Under framed suspended floors
Product type: Rigid cellular extruded sheets.

Reflective sarking membrane
Fixing: Install as follows:

- To timber: Proprietary fixings or metallic-coated clouts or staples at 300mm maximum centres.
- To steel: Tek screw with either 20mm diameter washers or fixed through hardboard strips.

Overlap (minimum): 150mm and adhesive tape fix.

Support mesh: 300 x 150mm mesh size of 2mm wire gauge to AS 1639.

4.4 WALL INSULATION

Location
Full extent of external walls except the following:

- Separate garages and out buildings.

General
Provide insulation where necessary to external walls to achieve the R rating requirement of the NCC.

Wall sarking
Location: Provide sarking under cladding which does not provide a permanent weatherproof seal including:

- boards fixed vertically or diagonally;
- boards or planks fixed in exposed locations where wind driven rain can penetrate the joints; and
- unpainted or unsealed cladding.

Installation: Fix to the frame members with broad-head clouts, staples, screws or pop rivets spaced at 300mm maximum centres.

Apply to the outer face of external stud walls from the bottom plate up, over the flashing.

Bulk installation
Product type: Fibre batts.

Batts: Friction fit between framing members. If support is not otherwise provided, staple nylon twine to the framing and stretch tight.

Retrofit masonry walls – internal face
Product type: Rigid cellular extruded sheets.

Preparation: Ensure substrates have:

- Any deposit or finish which may impair adhesion cleaned off.
- Excessive projections hacked off and voids and hollows filled with plaster.
- Tolerance: 6mm in 2400mm.

Substrate correction: Skim plaster.

Installation: Apply boards horizontally with staggered vertical joints, all close butted and without crushing.

Fixing: Proprietary adhesive compatible to both the membrane and the rigid cellular extruded sheets. Apply sufficient pressure to ensure even adhesive distribution.

Final finish: Apply plasterer's scrim to all joints and prepare the surface as required by the manufacturer of the final finish.

Vapour permeable wall wrap
Application: Provide wall wrap behind cladding which does not provide a permanent weatherproof seal or may be subject to condensation forming on the internal face, including the following:

- Boards fixed vertically or diagonally.
- Boards or planks fixed in exposed locations where wind driven rain can penetrate the joints.
- Unpainted or unsealed cladding.
- Behind external cladding in bushfire prone areas to AS 3959.
- Masonry veneer.

Installation: Fix wall wrap to all framing members after being pulled taught over the framing. Apply to run horizontally to the outer face of external stud walls from the bottom plate up, over the flashing. Seal across the wall cavity at the top.

Horizontal laps: At least 150mm wide with the direction of the lap ensuring that water is shed to the outer face of the membrane.

End or vertical overlaps laps: At least 150mm wide made over framing.

Run the wall wrap over openings and leave covered until fenestrations are to be installed. Cut the membrane on a 45-degree diagonal from each corner of the opening and fold the flaps inside and fix to the inside frame of the opening.

If the membrane is used to provide a continuous air tight layer, seal all joints with pressure sensitive adhesive tape.

Fixing to timber frames: Metallic-coated clouts, 20mm long 6-8mm staples or punched multi-point metallic-coated steel brads.

Fixing to steel or aluminium: Tek screw with either 20mm diameter washers or through hardboard strips.

Fixing to plywood: Alternatives:

- Metallic-coated clouts, 20mm long 6-8mm staples or punched multi-point metallic-coated steel brads. Fixing centres: At least 300mm.

Water based contact adhesive with a 50% adhesive cover.

4.5 ROOF INSULATION

Extent
The whole of the roof area, except the following:

- Awnings, roof lights, vents and openings.
- Roofs to outbuildings, unlined carports and garages and semi-enclosed spaces such as awnings.

Vertical enclosure to roof space
Where the roof space has an external vertical enclosure component, such as a section of walling, ensure the vertical components are insulated.

Mesh support to roof insulation
Locations: Provide support to the following:

- Sarking, vapour barrier or reflective thermal insulation membranes laid over roof framing members which are spaced at more than 900mm centres.
- Blanket type thermal insulation laid over roof framing members as sound insulation to metal roofing.

Installing wire netting: Lay over the roof framing providing sufficient slack or sag between members to suit the application.

Fixing wire netting: Staple to timber frame, wire to steel frame.

Installing welded safety mesh: To AS 4389.

Sarking membrane
Roof sarking:

- Installation to AS 2050.
- Location: Provide sarking under tile and shingle roofs.
- Extend to the roof edge and gutters.

Vapour barrier: Lay over the roof support frame with sufficient sag to allow the bulk insulation to achieve its full thickness. Overlap roll edges 150mm and seal all joints with pressure sensitive adhesive tape.

Bulk insulation – metal roofs
Batts: Fit tightly between framing members.

Blanket for sound insulation: Install over the roof support frame, reflective thermal insulation (if any), and mesh support, so that the blanket is in continuous contact with the underside of the metal roofing sheets.

4.6 ROOF INSULATION SYSTEMS

Tiled roofs

Unless otherwise shown on the Drawings, provide the following to all tiled roofs.

Provide reflective foil laminate installed directly over rafters and under roof battens to full extent of enclosed roof and lined eaves and external roofs. Turn down into rain water gutters.

Install ceiling batts between the ceiling joists to achieve the required R rating. Terminate ceiling insulation at external walls. Maintain roof and cavity ventilation.

Do not provide bulk insulation in vented eaves or overhangs.

Do not cover the cavity in cavity walls.

Do not obscure ceiling joists.

Metal sheeted roofs

Unless otherwise shown on the Drawings, provide the following:

- Insulation blanket bonded to reflective foil sheet may be used.
- Reflective foil laminate; lay directly over roof battens. Stretch the foil laminate so as to hold the bulk insulation specified, in contact with the metal roof sheeting; but maintain the full depth of insulation a far as possible.
- Provide mineral wool, polyester or natural wool blanket or approved alternative system, to achieve a minimum thermal resistance in accordance with the NCC requirements for the location and the designed roof system. Do not use loose fill insulations.

4.7 COMPLETION

Warranties

Submit the manufacturer's published product warranties.

180 WATERPROOFING – WET AREAS

1 GENERAL

1.1 CROSS REFERENCES

General
Refer to the *Schedule of Requirements*.

Related worksections
Refer to the following worksections:

- *Tiling*;
- *Plumbing and Drainage*.

2 QUALITY

2.1 SUBMISSIONS

Report
Waterproofing membranes: Submit a project report on preparation, work-in-progress, and completion, including curing times for substrate and membrane.

3 MATERIALS AND COMPONENTS

3.1 MEMBRANES

Asphalt tanking membranes
Waterproof 5mm thick, of bituminoid asphalt materials, reinforced with fabric, with at least one layer in each sheet of an impermeable, non-corroding material.

Single layer membranes
Fix and lap sheets with appropriate proprietary adhesive or by heat welding using a gas torch ("torch on"), self-finished or finished with a proprietary surfacing.

Seamless membranes
Membranes applied in liquid or gel form and air or chemically cured to form a seamless film.

Internally: use liquid acrylic, polyurethane, or rubberised material suitable for use with ceramic tiling. Do not use bitumen-based materials.

Externally: Bitumastic material may be used for planter lining or external works. Do not use acrylic membranes for wall tanking.

4 EXECUTION

4.1 PREPARATION

Substrates for membranes
General: Apply membranes to dry, smooth, firm, continuous surfaces, clean and free from loose or foreign matter. Provide coving or fillets on internal corners.

Round or arris external corners and edges.

Moisture content
Requirement: Verify that the moisture content of the substrate is compatible with the water vapour transmission rate of the membrane system by testing to the recommendations of AS 3740 Appendix F.

Falls
Membrane applied to substrate: Make sure the fall in the substrate conforms to the fall documented for the finish.

BCA (2022), H4D2 for Class 1 buildings and BCA (2022) F2D4 for Class 2 and 3 buildings require falls for certain bathrooms or laundries to the following:.

- Minimum continuous fall of the floor plane to the floor waste: 1:80.
- Minimum continuous fall of the floor plane to the floor waste: 1:50.

4.2 TANKING

Asphalt tanking installation
Standard: To AS CA55.

Tanking and under-slab membrane protection
General: Protect the membrane after installation, with a permanent cover of rigid closed cell extruded polystyrene foam boarding with shiplapped edges, adhered to the membrane with a solvent-free or low melt bitumen adhesive. Provide a maximum 6mm gap at joints between boards.

4.3 WATERPROOFING - WET AREAS

STANDARDS
Standard: To AS 3740 (2021).

Membrane
Type: Proprietary liquid applied or sheet membrane system which:

- has a current Australian Building Product and Systems Certification Scheme certificate; or
- has a current technical opinion issued by the Australian Building Systems Appraisal Council stating that the system is suitable for use as a waterproofing system for use in wet areas, shower recess bases and associated floors and wall/floor junctions which are to be tiled.

Curing time: Application strictly in accordance with manufacturer's recommendations. Do not apply topping or finishes until properly cured according to the manufacturer's instructions. Do not apply to substrate until it is properly cured.

4.4 INSTALLATION

Ambient conditions
Requirement: Do not install in conditions outside the manufacturer's recommendations.

Protection
Damage: Protect membrane from damage during installation and for the period after installation until the membrane achieves its service characteristics that resist damage, and an overlaying finish is installed.

Extent of waterproofing
Waterproof or water-resistant surfaces: To the requirements of BCA (2022) F2D2 or BCA (2022) H4D2, for Class 1 and 10 buildings - as applicable.

Applicators: Use suitably qualified applicators.

Comply with the requirements of AS 3740 and as specified below.

Drainage connections
Floor wastes: Provide floor wastes of sufficient height to accommodate the thickness of floor finishes and bedding at the outlet position. Position leak control flange to drain at membrane level. Turn membrane down 50 mm minimum into the floor waste leak control flanges, and adhere to form a waterproof connection.

External tiling: Provide a waterproof membrane under external floor tiling, to balconies over habitable rooms and enclosed areas, forming a drained tank suitable for continuous immersion. Do not use acrylic membrane Do not run under bounding walls.

Surface Preparation: In accordance with the manufacturer's recommendations.

ENSURE SCREEDS HAVE PROPERLY CURED BEFORE APPLYING MEMBRANES.

Further Work Above Membrane: Ensure that topping work on top of the waterproof membrane is not carried out before the curing time required by the membrane manufacturer has elapsed.

Showers with hobs

General: Provide masonry, concrete or corrosion-resistant metal hobs. Fix securely to the floor, seal against walls and make flush all gaps, joints and intersections before applying the membrane.
Masonry or concrete hob: Extend membrane over the hob and into the room at least 50 mm.

- Autoclaved aerated concrete hobs: Prime before applying the membrane.

Metal hob: Provide metal angle with height at least 15 mm above the finished floor level of the floor outside the shower. Terminate the membrane within 5 mm from the top of the angle. Seal the gap between the shower screen and the angle.

Showers with step-downs

Level of shower area: At least 15 mm below the finished floor level outside the shower.
Framed shower screens:

- Terminate the membrane directly below the floor tiles below the shower screen sill mounted on the upper level of the step-down.
- Support and adhere the membrane to a waterstop angle fixed securely to the substrate.

Frameless shower screens:

- Install a waterstop angle where the base of the shower screen will be installed and across the opening of the shower.
- Install membranes on both sides of the waterstop angle and turn the membranes up against the angle. Extend the membrane at least 50 mm into the adjacent area.
- Finish membrane flush with the underside of tiles.
- Provide a sealant joint between the waterstop angle and tiles.
- Install the shower screen with the inside face flush with the step-down.
- Refer AS 3740 (2021) clause 4.8.2 and Figures 4.8.2(B) and 4.8.2(C).

Showers without hobs or step-downs

Framed shower screens:

- Install a waterstop angle directly below where the base of the shower screen sill will be installed.
- Size the angle so that the vertical leg finishes at least 5 mm above the level of the tiles.
- Amend the finishing height of the membrane above the tile level to at least 10mm for a more secure installation.
- Support and adhere the membrane over the waterstop angle and extend the membrane at least 50 mm into the adjacent area.

- Frameless shower screens:
  - Install a waterstop angle directly below where the base of the shower screen will be installed.
  - Support and adhere the membrane over the waterstop angle and extend the membrane at least 50 mm in to the adjacent area.
  - Install a capping angle over the membrane and vertical leg of the waterstop angle to protect the exposed membrane.
  - Install the shower screen over the capping angle.
- Framed or frameless shower screens with trench drain located below screen:
  - Install a waterstop angle where the outer edge of the trench drain to the perimeter of the shower will be installed.
  - Size the angle so that the vertical leg finishes at the underside of the tiles.
- Support and adhere the membrane over the waterstop angle and terminate the membrane at floor wastes as documented in **Error! Reference source not found.**..
  - Install the trench drain with the shower screen located vertically above it.

Unenclosed showers

Requirement: Extend membrane at least 1500 mm into the room from the shower rose outlet, on the walls and floor.

- Refer AS3740 (2021) clause 4.8.2

Preformed shower bases

Preformed shower bases with integral perimeter upstands:

- Support shower bases to prevent distortion or cracking.
- Recess shower base into walls or batten off wall lining sufficiently to allow water resistant wall finishes to overlap the integral upstands along the top edge of the shower base.
- Maintain the structural integrity of walls that are rebated.

Baths

Baths with integral upstands:

- Recess bath edges into walls or batten off wall lining sufficiently to allow water resistant wall finishes to overlap the integral upstands.
- Maintain the structural integrity of walls that are rebated.
- Baths without integral upstands or with showers over:
- Form a rebate in the wall to receive the bath edge.
- Rendered masonry walls: Form or chase in the render.
- Framed and lined walls: Form in the wall lining with a corrosion-resistant lipped channel.
- Waterproof the wall above and below the rebate, including the rebate, and the floor area under the bath.
- Seal the edge of the bath into the rebate.

Plinth-mounted insert baths and spas:

- Line framed enclosures for insert baths.
- Form an upstand on the inside edge of the enclosure opening to receive the bath with an angle or compressible foam rod.
- Waterproof walls abutting the enclosure, the top of the plinth and the interior and exterior of the enclosure.

- After tiling the walls, top of the plinth and exterior of the enclosure, install the bath with its downturn edge lip outside the upstand formed on the edge of the opening and seal the lip to the tiles.
- Minimum dimension from wall or free edge of the plinth to insert bath: 100 mm.

Taps and spouts

Requirement: Waterproof penetrations for taps and spouts with preformed flange systems or a sealant. Provision for servicing: Install taps so tap washers or ceramic discs can be serviced without damaging the waterproofing or seal.

Wall recesses

Requirement: Support all faces of the recess and line with the same sheet material as the adjacent wall. Fall base of recess towards the shower area. Flash all junctions and waterproof all surfaces.

Refer AS 3740 (2021) clause 4.12.1 and Figure 4.12.4.

Curing of liquid membrane systems

General: To the manufacturer's recommendations.

Curing: Allow membrane to fully cure before tiling to prevent failure.

Overlaying finishes on membranes

Requirement: Protect waterproof membranes with compatible water-resistant surface materials that do not cause damage to the membrane.

Suitable materials: Conform to AS 3740 (2021).

Bonded or partially bonded membranes: If the topping or bedding mortar is to be bonded to the membrane, provide sufficient control joints in the topping or bedding mortar to reduce the movement over the membrane.

4.5 COMPLETION

Reinstatement

Extent: Repair or replace faulty or damaged work. If the work cannot be repaired satisfactorily, replace the whole area affected.

Warranties

Requirement: Provide a written warranty against failure of the membrane, whether through material failure, faulty application or damage caused during construction, for five (5) years from the date of Practical Completion.

190 ROOFING

1 GENERAL

1.1 CROSS REFERENCES

General
Refer to the *General Requirements* worksection.

Related worksections
Refer to the following worksections:

- *Insulation and Barriers*;
- *Plumbing and Drainage – Stormwater*;
- *Project Specific Schedules*;
- *Colour Scheme*.

2 QUALITY

2.1 INSPECTION

Witness points
Give sufficient notice so that inspection may be made of:

- roof structure and tie down; and
- those parts of the roofing, sarking, vapour barrier, insulation and roof plumbing installation which will be covered up or concealed.

Refer to *Preliminaries* for mandatory inspections.

2.2 PERFORMANCE CRITERIA

Minimum requirements
As installed, the roofing system and associated work shall:

- remain intact and waterproof under the local or regional ambient conditions of wind loading and rainfall intensity specified in AS 1170.2 and AS 2180 respectively and for the design conditions specified;
- provide adequate means of dealing with condensation, corrosion, and thermal movement;
- support the normal imposed loads and types of roof access without impairment of performance;
- satisfy any other performance requirements specified.

2.3 MATERIALS AND COMPONENTS

General
Design and installation: To AS 1562.1.

Product type: Zinc/Aluminium on high tensile steel.

Prepainted finish: Pre-finished organic paint, to AS 2728. “Colorbond” or “Multicote” or approved alternative.

Tiling
Standard: To AS 2049.

Tiling Accessories: Provide the accessories, compatible with the tiles, necessary to complete the tiling.

Sheet metal roofing
Refer to Materials and Finishes Schedule for profile and finish.

Prepainted to AS 2728.

Hot-dipped zinc-coated or aluminium/zinc-coated to AS1397 (2001).

Accessories including fascias/barges: Provide material with the same finish as roofing sheets.

Roof plumbing
Metal rainwater goods: To AS/NZS 2179.1.

Pressed metal to same finish as roof sheeting and as specified later.

Fasteners
Self-drilling roof sheeting screws: Corrosion resistance Class 3.

Finish: Prefinish exposed fasteners with an oven baked polymer coating to match the roofing material or provide matching purpose-made plastic caps.

Fastenings to timber battens: Provide fastenings just long enough to penetrate the thickness of the batten without piercing the underside.

Use appropriate non-binding fixings where polyester or natural wool insulation is used over battens and in contact with underside of metal roofing.

3 EXECUTION

3.1 INSTALLATION

Comply with manufacturer’s instructions unless specified otherwise.

Protection
General: Keep the roofing and rainwater system free of debris and loose material during construction and leave them clean and unobstructed on completion. Repair damage to the roofing and rainwater system.

Touch up: If it is necessary to touch up minor damage to prepainted metal roofing, use hand applied paint supplied by the manufacturer. Do not use spray cans where overspray may occur onto undamaged surfaces.

3.2 TILING

Installation
Standard: To AS 2050.

Setting out: Set out the roof to give an even tile gauge in each course, with full or saw cut tiles at verges.

Bedding and pointing: Bed and point accessories, including ridges, hips and verges, in coloured mortar.

- Colour: To match the tiles and accessories.

Tile verge: Finish the verge with cover tiles pointed to the roof tiles. Screw fix to the bargeboard with round head galvanized screws.

Pointed verge: Bed and point tiles on 100 x 5mm fibre cement pointing strip.

Precautions against wind effects: Adopt the precautions given in AS 2050 Appendix A.

Standard
Concrete and Terra Cotta Tiles: To AS 2049.

Existing Tiles: Match existing tiles in material colour, finish and pattern.

Roof Pitch: As shown on the Drawings, but not less than 20^{o} if not indicated.

Tile verge where specified: Provide concrete barge cover tiles to gables and raking barges to skillion roofs. Provide 50 x 38-mm hardwood raking plate/barge support fixed to all roofing battens.

Screw fix barge tile to raking plate with 65 x 3.15mm galvanised round head screws to detail.

Bird proofing: Birdproof valleys with galvanised wire netting or by pointing cut tiles to valley gutters.

3.3 SHEET METAL ROOFING AND WALL CLADDING

General

Type: Provide a proprietary system of preformed sheet and purpose-made accessories, prepainted or zinc/aluminium finish as specified elsewhere.

Ridges and eaves

Treat ends of sheets as follows:

- Project metal sheeting 50mm into gutters.
- Close off ribs at bottom of sheets using mechanical means or with purpose-made fillers or end caps or fix bird wire between bottom batten and fascia.
- Turn pans of sheets up at tops and down into gutters by mechanical means.
- Provide pre-cut notched eaves flashing and bird-proofing where necessary.
- Close off ridges with purpose-made ridge fillers of closed cell polyethylene.

Ridge and barge capping

Finish off along ridge and verge lines with purpose-made ridge capping or barge rolls.

Metal separation

Prevent direct contact between incompatible metals, and between green hardwood or chemically treated timber and aluminium or coated steel, by either:

- applying an anti-corrosion, low moisture transmission coating to contact surfaces; or
- inserting a separation layer.

Roof pitch

Roof pitch to be as shown on the Drawings, but not less than 15^0 for main roof if not indicated.

Environmental conditions

Cyclonic, and terrain category areas; salty or chemically contaminated atmospheric conditions - comply with the additional maximum requirements as recommended by the roofing manufacturer or as otherwise specified.

3.4 SHEET METAL REPLACEMENT ROOFING

Where FC or tile or other heavy roofing is replaced with sheet metal roofing, screw down, repair or replace deteriorated battens and structure. Screw and tie down to the satisfaction of the Superintendent.

Tie down is to be certified by a competent person in accordance with the requirements of the NCC. Exposed structures to be in compliance with the relevant Timber Framing Manual.

3.5 ROOF LIGHTS

Standard

General: To AS 4285.

Description

General: A proprietary vented roof light system including framing, light shaft fixing, trim, accessories, and flashings. Always to bathrooms with roof space over.

Refer: Project Specific Schedules for requirements.

3.6 ROOF VENTILATORS

Description

General: Proprietary weather proof roof mounted static ventilators including fixings, trims and flashings. Size and number to manufacturer's recommendations in accordance with the size of the roof space or as shown on the drawings.

Alternatively: Vented ridge.

Design: To withstand local wind conditions.

Weather proof and bird proof.

Wind driven ventilators with moving components are not acceptable.

Finish: Match adjacent roofing.

Refer: Project Specific Schedules for requirements.

3.7 WINDOW HOODS

Description

General: Provide an awning to each window or as shown on drawings.

Design: To withstand local wind conditions. Refer to AS1170.2 for applicable wind regions.

Construction

All metal construction. Hot dipped galvanised steel frame (powder-coated) with steel roof sheeting. Include fixings, trims and flashings.

Roof sheeting profile: Match roof sheeting.

Base metal:

- BTM 0.43mm
- TCT 0.47 mm min

Finish: Pre-painted to AS 2728

Screening battens: (where applicable) aluminium hollow sections powder-coat finish. Aluminium alloy grade - 6060 min.

Fibre cement roofing elements not acceptable.

Alternative Construction

Type: Proprietary solid aluminium awning. Heka or approved alternative.

Profile: Folded flat sheet with front drip edge/lip and rear flange for support to substrate.

Material: Sheet / plate aluminium.

Finish: Powder-coat (Duratec or approved alternative).

3.8 ROOF PLUMBING

Standard: To AS/NZS 3500.3.

General: Provide the flashings, cappings, gutters, rainwater heads, outlets and downpipes necessary to complete the roof system.

Jointing sheet metal rainwater goods

Butt joints: Make joints over a backing strip of the same material.

Soldered joints: Do not solder aluminium or aluminium/zinc coated steel.

Sealing: Seal fasteners and mechanically fastened joints. Fill the holes of blind rivets with silicone sealant.

Flashings and cappings

Flashing material: To AS/NZS 2904.

Type: matching or compatible with roof covering.

Flexible flashing material

Standard: To AS/NZS 2904.

Tiled roofs: 0.8mm Aluminium (soft alloy grade) *1200–0 temper*.

Metal roofs: 0.55mm Aluminium (soft alloy grade) *1200–0 temper*.

Over flashing to vents and pipework: 0.55mm Aluminium (soft alloy grade) 1200–*0 temper*.

Alternatively, proprietary item of material compatible with roofing.

Step flashing: 0.8mm Aluminium (soft alloy grade) *1200–0 temper*.

Lead flashings must not be used.

Installation: Flash roof junctions, upstands, abutments, and projections through the roof. Preform to required shapes where possible. Notch, scribe, flute or dress down as necessary to follow the profile of adjacent surfaces. Mitre angles and lap joints 150mm in running lengths. Provide matching expansion joints at 6 m maximum intervals.

Upstands: Flash projections above or through the roof with two-part flashings, consisting of a base flashing and a cover flashing, with at least 100mm vertical overlap. Provide for independent movement between the roof and the projection.

Wall abutments: Provide overflashings where roofs abut walls, stepped to the roof slope in masonry and planked cladding, otherwise raking.

- In masonry: Build into the full width of the outer leaf. Turn up within cavity, sloping inward across the cavity and fixed to or built in to the inner leaf at least 75mm above.
- In concrete: Turn 25mm into joints or grooves, wedge at 200mm centres with compatible material and point up.

Fixing to masonry or concrete: Step in courses to the roof slope. Interleave with damp proof course, if any.

Fixing to pipes: Solder, or seal with neutral cured silicone rubber and either:

- secure with a clamping ring; or
- provide a proprietary flexible clamping shoe with attached metal surround flashing.

Gutters and fascias

General: Prefabricate gutters and fascia to the required shape. Form stop ends, downpipe pops, bends and returns. Dress downpipe pops (droppers) into outlets. Provide overflows to prevent back-flooding.

Gutters to be either:

- Minimum 150mm quadrant gutter.
- Pre-painted 0.6mm based metal fixed, at 225mm from corners and at not more than 900mm centres with approved brackets.

In providing fall, back of quadrant gutter is not to be reduced to less than 65mm. Back of quadrant to be at least 10mm higher than front of gutter.

or

Matching gutter and fascia: Provide proprietary metal eaves gutter and accessories formed and prepainted to match the fascia system.

Gutter and sump support: Provide framing and lining to support valley gutters, box gutters and sumps. Line the whole area under the gutters and in-built sumps.

Support: Provide extra fixings in high wind areas.

Lining to be decay resistant and of sufficient strength to support a full gutter or sump.

Valley gutters: Profile to suit the valley boarding. Turn back both edges 180o x 6mm radius. Nail or screw to the valley boarding at the top end to prevent the gutter creeping downwards.

Gratings and guards: Provide removable gratings over rainwater heads and sumps and, where scheduled, leaf guards to gutters and gutter units.

Expansion joints: Provide expansion joints in guttering longer than 30 m.

Fascias: Provide approved 170mm minimum deep metal fascias and barges of prepainted 0.6mm base metal.

Matching fascia/barge: Where the selected eaves gutter is a proprietary high front pattern forming part of a combined system of gutter, fascia and barge, provide the matching proprietary fascias and barge cappings to roof verges and edges.

Leaf guard

Unless otherwise stated, provide a leaf guard as specified below, over each gutter outlet. Unless a leaf sump is provided in the case of water tank catchment.

Wire Mesh Guard: Hemispherical dome of 0.9mm wire mesh at 7mm maximum centres, in a 1.6mm wire frame.

Material: Coating consistent with roofing.

Netting Ball Guard: Wire netting ball larger than the outlet and loose fitted over.

Material: Coating consistent with roofing.

Full Gutter Leaf Guards: Provide full gutter leaf guards only where scheduled or detailed.

Refer *Schedules of Requirements.*

Downpipes

General: Prefabricate downpipes to the required section and shape where possible. Connect heads to gutter outlets and, if applicable, connect feet to rainwater drains.

Downpipes to be either:

- Prepainted steel circular minimum 100mm diameter, or
- Prepainted steel rectangular minimum 105 x 75mm.

Minimum number to discharge from roofs to comply with NCC requirements.

For connection to stormwater line, refer *Plumbing and Drainage 'Stormwater'*.

Access cover: Provide a removable watertight access cover at the foot of each downpipe stack.

Downpipe support: Provide supports and fixings for downpipes. Support down pipes 50mm min clear of wall.

Rainwater disposal

System: Connect and discharge stormwater to the stormwater system. Where connection to stormwater line is impractical, report to the Principal for direction.

4 COMPLETION

4.1 COMPLETION

Spare roof tiles

Number: Provide one spare matching tile for every 50 tiles on the roof. Provide spare accessories in the same ratio.

Location: Stack spares within the roof space.

Designated locations: On or next to lines of supporting walls.

4.2 WARRANTIES

Prior to Practical Completion, provide written warranties indemnifying at no cost to the Principal, the complete installation against defects caused by design, manufacturer, fabrication or installation and the consequences thereof including weather penetration, air infiltration, physical deterioration, undue colour fading, delamination, structural unsoundness, vermin infestation and the like, for a minimum period of 5 years unless otherwise specified after the date of Practical Completion.

200 CLADDING

1 GENERAL

1.1 CROSS REFERENCES

General
Refer to the *General Requirements* worksection.

Related worksections
Refer to the following worksections:

- *Light Timber Framing*;
- *Insulation and Barriers*;
- *Roofing* for Metal Cladding.

2 QUALITY

2.1 INSPECTION

Witness points
Give sufficient notice so that inspection may be made of framing complete with sarking, flashings and services ready to receive cladding.

Refer: *Preliminaries Schedule of Mandatory Inspections*.

3 MATERIALS AND COMPONENTS

3.1 MATERIALS AND COMPONENTS

Plywood and blockboard
Exterior use: To AS/NZS 2271.

Marine plywood: To AS/NZS 2272.

Presealed plywood: Plywood presealed both sides and edges with a machine applied sealer.

Visible surfaces with a clear finish: Veneer quality A.

Other visible surfaces: Veneer quality B.

Hardboard cladding
Standard: To AS/NZS 1859.4.

Type: A proprietary system of hardboard planks.

Exterior cladding: Exterior hardboard.

Sheltered exterior cladding: Tempered hardboard.

Joints and edges: UPVC extrusion.

External corners: Preformed metal joining pieces.

Internal corners: Scribe.

Plank thickness: 9.5 mm.

Timber boards
Seasoned and milled hardwood: To AS 2796.1.

Seasoned cypress pine: To AS 1810.

Softwood: To AS 4785.1.

Grade: To AS 4785.2.

Installation
Cut surfaces: Treat freshly cut surfaces with water repellent before fixing.

Pre-painting: Pre-prime timber board edges and ends.

Single lengths: Provide single lengths when installed vertically. Whenever possible provide single lengths of boards when installed horizontally. Stagger adjacent joints.

Crossings: Fix twice to each crossing, except fix once to each crossing for sawn weatherboard, unseasoned hardwood, and secret nailed profiles.

Nailheads: Treat visible nailheads as follows:

- In stained or clear finishes: Drive flush.
- In opaque finishes: Punch below the surface and fill flush with putty after the surface has been primed.

Joints
Overlapping joints: Lap boards at least 30mm.

End grain joints: Install boards so that butt joints are in compression.

Internal and external corners: Butt against a stop bead of thickness at least that of the cladding.

Fibre cement
Standard: To AS/NZS 2908.2.

Cladding and eaves and soffit linings: Type A Category 3.

Compressed cladding: Type A Category 5.

- Edges: Square.

Plank cladding
General: Provide a proprietary system of single faced fibre cement building planks.

Thickness: 7.5 mm.

Joints and edging: uPVC extrusion.

Corners: Timber stops treated to AS 1604.1.

Sheet cladding
General: Provide a proprietary system of single faced fibre cement sheets.

Thickness: 6 mm.

Arrangement: Set out in even panels with joints coinciding with framing.

Joints and edges: uPVC extrusion.

Sheet cladding (seamless for monolithic render)
General: Provide a proprietary system of single faced fibre cement sheets (pre-primed) with recessed edges along the two long sides for set jointing.

Thickness: 7.5 mm.

Arrangement: Set out in even panels with joints coinciding with framing.

Edges and corners: Proprietary system edge, corner and flashing trims.

Joints: Flush reinforced seamless joints.

Sheet cladding (expressed joint)
General: Provide a proprietary system of single faced fibre cement sheets (pre-primed) with a ship-lap edge joint along the two long sides.

Thickness: 8.5 mm.

Arrangement: Set out in even panels with joints coinciding with framing.

Edges and corners: Proprietary system edge, corner and flashing trims.

Joints: Shiplap with expressed (recessed) joints.

Eaves and soffit lining
General: Provide single faced fibre cement sheet nailed at 150mm centres to bearers at maximum 450mm centres.

Sheet thickness:

- 4.5mm. Up to 450mm span.
- 6mm over 450 up to 600mm span.

Type: Through ventilation of roof space to be provided by the use of approved slotted eaves lining "Décor-vent" Design No. NSR or approved alternative. Slots to be 7mm wide at 75mm centres and in one row adjacent to the fascia or equivalent. Fix to battens on underside of roof framing or to framing for eaves on the flat for brick veneer construction.

Joints: UPVC extrusion.

Beadings UPVC extrusion where necessary.

Installation
Slotted eaves lining to be used, other than in the following locations:

- oversailing box gables soffits;
- eaves soffits over back landings and patios;
- eaves soffits over steps for approximately 900mm from porch, landing etc.;
- eaves soffits to porches, verandahs, etc., where length is less than half the length of the wall.

Keep ventilation slots 75mm clear of pipes or vents projecting through soffits.

Profiled metal sheeting
Refer to *Roofing* worksection.

3.2 PLASTIC CLADDING

Materials
Unplasticised polyvinyl chloride (uPVC) sheet: To AS/NZS 4256.4.

Glass fibre reinforced polyester (GRP) sheet: To AS/NZS 4256.3.

Polycarbonate: To AS/NZS 4256.5.

Installation
Standard: To AS/NZS 1562.3.

3.3 FLASHINGS

Standard: To AS/NZS 2904.

3.4 GABLE VENTS

Refer to drawings for details.

Trim openings to receiving and fixing vents.

Louvre vents must be vermin proof, insect proof and weather proof suitable for the location.

4 EXECUTION

4.1 CONSTRUCTION GENERALLY

Reference
Refer to manufacturer's details where available.

Refer to drawings for locations.

Substrates or framing
Before fixing cladding check and, if necessary, adjust the alignment of substrates or framing.

Fixing
Nail to timber framing, screw to steel framing.

Accessories and trim
Provide accessories and trim necessary to complete the installation.

Structural Movement Control Joints
Provide control joints in wall cladding to allow for structural movement. Position joints as nominated by RPEQ structural engineer.

210 DOORS AND HATCHES

1 GENERAL

1.1 CROSS REFERENCES

General
Refer to the *General Requirements* worksection.

Related worksections
Refer to the following worksections:

Lining

Hardware;

Windows;

Glazing;

Painting.

2 QUALITY

2.1 SUBMISSIONS

Tests
Fire resistant doorsets: Submit certification from an independent testing authority showing compliance with the required fire rating.

Acoustic doorsets: If a doorset has a weighted sound reduction index (R_w) rating, submit certification from an independent testing authority showing compliance with the requirement.

3 MATERIALS

3.1 MATERIALS AND COMPONENTS

Plywood and blockboard
Interior use: To AS/NZS 2270.

Exterior use: To AS/NZS 2271.

Marine plywood: To AS/NZS 2272.

Visible facing surfaces with a clear finish: Veneer quality A.

Other visible facing surfaces: Veneer quality B.

Bond: Type A.

Flashings and weatherings
Standard: To AS/NZS 2904.

General: Provide flashings and weatherings which are corrosion resistant, compatible with the other materials in the installation, and coated with a non-staining compound where necessary.

Jointing materials
Provide recommended jointing and pointing materials which are compatible with each other and with the contact surfaces and non-staining to finished surfaces. Do not provide bituminous materials on absorbent surfaces.

4 EXECUTION

4.1 CONSTRUCTION GENERALLY

Installation
Install doors so that the frames:

are plumb, level, straight and true within acceptable building tolerances;

are adequately fixed or anchored to the building structure; and

will not carry any building loads, including loads caused by structural deflection or shortening.

Joints
Make accurately fitted tight joints so that neither fasteners nor fixing devices such as pins, screws, adhesives and pressure indentations are visible on exposed surfaces.

Operation
Ensure moving parts operate freely and smoothly, without binding or sticking, at correct tensions or operating forces and that they are lubricated where appropriate.

Hinged doorsets in two leaves
Provide rebated meeting stiles or fix equivalent metal "T" stop to one leaf unless the doors are double acting. Chamfer square edged doors as necessary to prevent binding between the leaves.

Insect screen door
General: Where and if specified on the Door Schedule, provide insect screen doors:

consisting of insect screen mesh in a frame matching the doorset material;

sliding or side hung as appropriate to the doorset;

sized and detailed to fully screen the door opening; and

inclusive of the necessary hardware and accessories.

Mesh type: Fibreglass – Black.

Window and door assemblies
If doors are to be installed in window frames as part of a combined window and door assembly, provide a door frame as specified in the *Windows* worksection for the relevant window type, plus appropriate modification, and accessories necessary for the door installation.

Seals
Where and if specified on the Door Schedule, provide purpose-made proprietary seals to meet requirements for weather, draught, smoke and acoustic sealing. Provide fixings, rebates, grooves and clearances as necessary for installation and operation of the seals. Allow seals to unwound from coils to settle before use.

Trim
General: Provide timber mouldings for, architraves, reveal linings, internal window sills, and other internal trim, except where tiles have been returned into sills and reveals of openings and windows. Install to make neat and clean junctions between the frame and the adjoining building surfaces.

Timber: Solid timber at least 19mm thick, mitred at corners.

Flashings and weatherings
Installation: Install flashings, weather bars, drips, storm moulds, caulking and pointing so that water is prevented from penetrating the building between the door frame and the building structure under the prevailing service conditions, including normal structural movement of the building.

Weather bars
Location: Provide a weather bar under hinged external doors with sills at paving level, where external paving is less than 25mm below internal paving finish at junction. Locate under the centres of closed doors in threshold groove in non-rebated thresholds.

Material: Brass or aluminium.

Size: 6mm thick.

Installation: Fix to the base so that the top edge is flush with internal ceramic floor tiles at entrance.

Threshold levels
For Silver, Gold, and Platinum levels of accommodation or where wheelchair access is required:

Comply with AS 1428.1 requirements and drawings, where there is a difference in finished floor levels at external door thresholds and external sliding glass doors.

5 COMPONENTS

5.1 TIMBER DOORS

Standards
Flush doors and joinery doors: To AS 2688.

Installation: To AS 1909.

Fire rated doors: To AS1530.4 and AS1905.1

Door thickness (minimum)
Generally: 35mm internally.

External doors: 40mm.

External Fire doors: As supplied by manufacturers.

Security screen doors: 20mm.

Door heights
Standard 2040mm and less height where required to allow for lift off hinges where required.

Flush doors
Edge strips: Provide edge strips only if specified in the Door Schedule.

Minimum thickness 10mm. Increase overall thickness to at least 15mm to accommodate the full depth of the rebate in rebated doors. Form rebates to suit standard rebated hardware.

Cut outs: If openings are required in flush doors (e.g. for louvres, glazing or security panels) make the cut outs not closer than 120mm to the edges of the doors.

Cellular core and intermediate rail core flush doors:

Provide additional frame material where necessary to take hardware, fastenings and grooves.

Provide a subframe of 25mm minimum width timber around openings for louvres and glazing.

Medium density fibreboard (MDF) is not approved for use, internally or externally.

Laminated plastic facings: 0.8mm minimum thickness, bonded to the door facings.

Standard: To AS/NZS 2924.1.

Priming
Prime timber doors on top and bottom edges before installation.

Flush doors schedule
The following General Door Requirements and Door Size Schedule will apply, unless specified otherwise in the *SCHEDULES TO SECTION 210 DOORS AND HATCHES*.

General Requirements

<table>
<tr><td colspan="5">Door Types</td></tr>
<tr><td></td><td colspan="4">Hollow Core (HC) doors generally.
Solid Core (SC) to external entry door, where security door not required.
Fire rated doors where required under the NCC. (security door not required).</td></tr>
<tr><td colspan="5">Door Elements</td></tr>
<tr><td rowspan="7"></td><td></td><td>Internal</td><td>External</td><td>Fire Doors</td></tr>
<tr><td rowspan="3">Description
(Cross-reference Door Schedule)</td><td>Hollow Core (HC) flush panel</td><td>Hollow Core (HC) flush panel (with security door)</td><td>N/A</td></tr>
<tr><td>Solid Core (SC) flush panel</td><td>Solid Core (SC) flush panel (without security door)</td><td>N/A</td></tr>
<tr><td>N/A</td><td>Fire rated door set</td><td>Comply to NCC requirements</td></tr>
<tr><td>Thickness</td><td>35mm</td><td>40mm</td><td>To manufacturer’s technical specifications and compliance to NCC</td></tr>
<tr><td>Adhesive bond type</td><td></td><td>A Bond</td><td>A Bond</td></tr>
<tr><td rowspan="2">Core material</td><td rowspan="2">Hollow Core (HC) - cellular core or wood curl</td><td>Hollow Core (HC) - cellular core or wood curl</td><td rowspan="2">Solid Core (SC) – to manufacturer’s technical specifications</td></tr>
<tr><td>Solid Core (SC) - block board</td></tr>
</table>

	Facing (both faces)	Pre-primed Tempered Hardboard	Exterior Ply (Paint Grade)	Exterior Ply (Paint Grade)
	Finish	Gloss Paint	Gloss Paint	Gloss Paint
	Frame	Timber (excluding fire-rated doors). Pressed Steel (PS). Corrosion treated for wet areas and coastal zones within 3km. Front and rear entry door frames to include rebate for aluminium security door opening externally.		
	Weather seals	Weather seal to external doors		

Door Size Schedule

Accommodation Level	Clear Opening	Hinged Door Leaf Size H x W	Sliding Door (Internal) Leaf Size H x W	Notes
General	820mm	2040 x 870mm		
Silver	820mm	2040 x 870mm		
Gold	850mm	2040 x 920mm	2040 x 1020mm	
Platinum	^^ 900mm (nom.)	2040 x 920mm	2040 x 1020mm	^^ Note: A reduced clear opening width is acceptable to suit the nominated door leaf size.
Employee's Storeroom, WC and Meter Room (where applicable)	820mm (nom.)	2040 x 870mm min.		Solid Core (SC) flush panel. Grade/finish as listed in this table for 'External' door elements.

5.2 TIMBER DOOR FRAMES

Timber frames and jamb linings
Standard: To AS 2689. *Timber door sets*.

Installation
Standard: To AS 1909.

Heads of fasteners
Conceal where possible, otherwise sink the head below the surface and fill the sinking flush with a material compatible with the surface finish.

Fixing to metal frames
Provide 6mm countersunk metal thread screws.

Fixing to thresholds
Dowel external door frames to thresholds other than timber with 10mm diameter brass dowels 100mm long.

External timber door frames
External timber door frames to be minimum 32mm thick excluding door stops. Rebates to accept a 40mm timber door and a 20mm security door to finish flush with outer edge of frame as specified in AS 2804.1 - Installation of Security Screen Doors. Door frame to be of sufficient width to accept lever hardware of both doors. Levers may be offset to avoid clashing.

Internal timber door frames
Prehung door sets are acceptable in internal locations.

Timber species
External and internal door frames including stops to be approved hardwood to resist damage by wheelchairs.

5.3 SLIDING DOOR FRAMES

General
Suspend sliding doors from overhead tracks and wheel carriages appropriate to the size and mass of the doors.

Accessories
General: Provide overhead track supports and head and jamb linings appropriate to the arrangement of the door, and removable pelmets at the head to allow access to the wheel carriages for adjustment.

Guides and stops: Adjustable nylon floor guides to suit grooved or ungrooved doors, as applicable, and buffer type track stop to limit the travel of the door leaf. Provide a safety device to stop inadvertent total closure of sliding patio doors.

Wheel carriages: Fully adjustable precision ball race type providing smooth quiet operation.

5.4 STEEL DOOR FRAMES

General
Type: Assemble frames from coated steel sections, including necessary accessories such as buffers, strike plates, spreaders, mortar guards, switch boxes, fixing ties or brackets, and cavity flashing with suitable provision for fixing hardware; prefinished with

protective coatings, built in or fixed to prepared openings.

Sections
Rebates: Incorporate rebate, or double rebates where required for side hung doors and security doors used in conjunction as specified under Timber Door Frames.

Coated steel sheet: To AS 1397.

Type, Minimum steel sheet thickness and finish:

Generally: Knock down frames. For internal use 1.1mm zincanneal and primed ready for painting.

External doors and Fire rated doorsets: Welded 1.4mm minimum, ready for priming and paint finish.

Assembly methods
Mechanical: Site assemble from "knocked down" components by mechanical methods, e.g. slot and lug joints.

Welded: Shop assemble fire rated and heavy-duty frames by continuous welding. Grind the welds smooth and cold galvanize the welded joints before shop priming.

Finish
Prefinish: Zinc-iron.

Shop priming generally: Shop prime the sections for the painting system.

Corrosion prevention
Refer to *Painting* worksection for special corrosion protection to steel door frames to bathrooms and external steel door frames within 3 km of ocean or salt water estuary.

Hardware and accessories
General: Provide for fixing hardware including hinges and closers, using 4mm backplates and lugs. Screw fix the hinges into tapped holes in the back plates.

Spreader: Removable spreader bar for frames to be built into masonry construction.

Hardware accessories: Mortar guards and reinforcing plates for the hardware.

Buffers: Two resilient grommet type buffers.

Cavity flashing: For external frames in cavity masonry.

Installation
Building in to masonry: Attach galvanized rod ties to stiles at 600mm maximum centres. Build in and grout up solid.

Installing in existing masonry: To AS 1905.1, Appendix D. Fix with bonded hairpin anchors.

Fixing to stud frames: Clip galvanized brackets to frame stiles at 600mm maximum centres and fasten to the stud frame.

6 SECURITY SCREENS / SECURITY SCREEN DOORS

6.1 STANDARDS

AS 5039 Security screen doors and security window grilles.

AS 5040 Installation of security screen doors and window grilles.

AS 5041 Methods of test - Security screen doors and window grilles.

6.2 FINISH

Powder coated.

Anodised where specified.

Colour: To match window frames unless specified otherwise.

Grille may be Black where mechanically fixed to frame.

Woven security mesh to be black.

Refer Finishes and/or Colour Schedule.

6.3 COMPLIANCE

Only security screen doors certified to AS 5039, will be accepted. Submit the manufacturer's NATA or equivalent test certificate in accordance with the Australian Standard. Comply with the specification requirements for security doors and window grilles.

6.4 CERTIFICATION

At Practical Completion, submit full test certification for the type of door/s and screens supplied, including tested specification.

6.5 SPECIFIC REQUIREMENTS

QBuild approval requirements include, but are not limited to:

General
All construction, fixings, and components to be in accordance with Australian Standards.

Ensure door furniture allows maximum clearance from door jamb to allow easy access.

Provide triple (multi-point) lock to secure.

Keying: Security doors within the same unit to be keyed alike and to the entry doors.

All security door locks to include 'escape' feature for emergency exit.

Door Closer: Not required.

Proprietary polycarbonate security lock guard to doors (indoor side) for aluminium security grille. Not required for stainless steel mesh security screen.

Include insect screening to aluminium security grilles to fully screen the door opening.

Apartments, Detached Houses and Duplexes
Provide woven mesh security screens to be 0.9mm diameter, high tensile 304 grade stainless steel, security mesh, screw clamped/fixed at 125mm spacings into aluminium security screen / door frame. The mesh apertures on average to be 1.5mm x 1.5mm.

6.6 HINGED SECURITY SCREEN DOORS

Type:

An approved aluminium framed side hung security screen door tested and installed to the Australian Standards' requirements, inclusive of door furniture, seal, bug strip, hardware and accessories.

Lock:

Automatic latching on closing.

Lever handle latch (door handle) release (indoor & outdoor sides).

Locking snib (indoor side to operate multi-point lock).

- Single cylinder 5 pin security door dead locks (overrides snib operation) with:
  - non-removable large flat turnsnib (indoor side);

. key (outdoor side).

SLIDING SECURITY SCREEN DOORS

Type: An approved aluminium framed sliding screen door and frame tested and installed to the Australian Standards' requirements, inclusive of door furniture, bug strip, hardware, and accessories.

Lock:

Automatic latching on closing.

Latch (large type) release (indoor & outdoor sides).

Locking snib (indoor side only to operate multi-point lock).

Platinum Level accommodation:

Single cylinder 5 pin security door dead locks (overrides snib multi-point lock operation) with:

. non-removable large flat turnsnib (indoor side);

. key (outdoor side).

7 COMBINATION SECURITY DOORS

7.1 GENERAL

Type: Propriety item.

A solid core entry door with a built-in sliding window panel to open approximately half the door width and with a fixed security grille. Grille to be stainless steel mesh finished black.

Glazing: Colourless obscure glass, Spotswood, or similar.

Note, straight lever hardware is permitted internally on this type of door as D-type levers can clash with the window frame.

Refer: Schedule of Requirements.

ALUMINIUM FRAME DOORSETS

Refer: Section 230 - Windows and Window Schedule for details.

8 FIRE RESISTANT DOORSETS

8.1 STANDARD

Fire resistant door sets: To AS 1905.1.

8.2 DESCRIPTION

A proprietary door set system comprising a fire resistance rated door mounted in a steel door frame, inclusive of the necessary hardware.

Evidence of Compliance: Submit evidence of compliance with the Standard, at the required fire resistance rating, to AS/NZS 1905 Part 1.

Fire Rating: To comply with NCC requirements. 1½ hours or as otherwise specified.

8.3 DOOR LEAF CONSTRUCTION

Internal materials: Inert mineral materials containing no asbestos products.

Framing: Increase the width of door leaf members or provide additional members to accommodate hardware and grooves so that items of furniture are contained within framing members and do not encroach on the core materials.

Frames: Steel.

Timber facings: External paint quality timber face veneers and edge strips.

Metal facings: Where specified in the Door Schedule only, flush faces and edges pressed from metal sheet, welded at joints.

8.4 INSTALLATION

Standard: To AS 1905.1.

9 PROVISION FOR FUTURE INSTALLATIONS

9.1 AUTOMATED DOOR OPENER

Gold and Platinum Level accommodation:

Make provision for future installation of electric automated door opener and associated components, to all self-closing doors (eg fire and smoke proof doors) and acoustic rated aluminium framed glazed sliding doors.

Refer to section *360 Electrical and Mechanical* for requirements.

10 ROOM DIVIDERS / LAUNDRY ALCOVE

10.1 DESCRIPTION

Proprietary system approved top hung domestic panelised or concertina door including necessary operating hardware, handles and accessories, installed to the manufacturer's recommendations.

Closed position: Include proprietary pelmet, receiving channel and latching system.

Open position: Provide recess / compartment for stacked door storage, including proprietary hold-back retaining system. Maintain minimum clearance to opening (refer to drawings).

11 GARAGE DOORS

11.1 ROLLER DOORS

A proprietary system comprising a flexible curtain sliding between vertical guides, raised and lowered by rolling or unrolling around a horizontal drum mounted above the opening, inclusive of the necessary operating gear, hardware, keyed locks and accessories, installed to the manufacturer's recommendations.

11.2 WIND LOADING

The curtain in its closed position shall be capable of withstanding a positive or negative pressure on the surface appropriate to the terrain category of its location, but in any case, not less than 600 Pa for external shutters, without impairment of its ability to function.

11.3 OVERHEAD DOORS

Tilting overhead door: A proprietary system comprising a rigid framed door attached to a tilting mechanism which enables the door to be opened by tilting and retracting into an approximately horizontal overhead position, inclusive of the necessary operating gear, hardware and accessories, installed to the manufacturer's recommendations.

11.4 SECTIONAL OVERHEAD DOOR

A proprietary system comprising a door of linked horizontal panels hinged together, weather lapped at the horizontal joints, fitted with rollers running in side tracks which guide the door when opened to a position above and behind the opening, and inclusive of the necessary operating gear, hardware and accessories, installed to the manufacturer's recommendations.

11.5 OPERATION

Provide motorised doors where specified in the Door Schedule.

Motorised doors shall be capable of manual operation in the event of power failure.

Operating force: The force required to operate the door manually shall not exceed 220 N.

12 DRIVEWAY GATES

12.1 SWING AND SLIDING GATE

Type
Propriety system comprising a single pedestrian gate plus a sliding driveway gate on frames as shown on drawings, and inclusive of the manufacturer's standard operating gear, hardware, and accessories necessary for satisfactory performance.

Wind loading
Install so that the gate, in its closed position, withstands pressure on the surface of at least 550 Pa without impairment of its ability to function under ambient temperature.

Panels
Form standard metal sheet to standard profiles, and fix to rigid metal surround frames.

Gate frame
Type: Rigid braced steel frames capable of resisting the structural design actions without distortion in both vertical and horizontal positions.

Steel frame: Fabricate from metallic-coated steel sections.

Operations
Method of opening and closing the gate:

Direct manual for the single swing gate: By lever handle latch set attached to the gate panel with electrical keypad release connected back to the office.

Motorised for the sliding gate: connect the electrical heavy duty sliding gate openers through heavy duty power transfer hinges if necessary.

Manual operation
Install so that the force required to operate the gate manually does not exceed 220 N.

Motorised operation
General: Provide electric motor to sliding gate opener incorporating limit switch, manual safety stop and reversing mechanism, and overload cut out. For details and operation refer to Electrical Engineers drawings and specification. Operated by keypad entry, vehicle loop detector exit and also by direct push-button or key switch located as directed by the Superintendent. Provide a motorised system that is capable of manual operation in the event of power failure. Locate operating switch within the apartment will be directed by the superintendent.

Automatic safety-stop and reversing: Required.

Intercom:

When applicable, provide intercom system and equipment (include gate release where required).

Liaise with electrical equipment supplier for installation requirements.

Electrical: Connect to communal power supply. Refer to *360 ELECTRICAL AND MECHANICAL SERVICES – 5 EQUIPMENT, Cl. 5.4 MOTORISED GATES* for requirements.

Liaise with Superintendent and electrical equipment supplier/installer for power and equipment requirements.

12.2 SAMPLES

General
Submit two (2) samples of each of the following where applicable:

Sections proposed to be used for frames, panels.

- Finishes to prepared surfaces.
- Colour range samples for prefinished production material.
- Gate manufacturer's standard hardware items.

12.3 SUBMISSIONS

Subcontractors
Submit names and contact details for proposed suppliers and installers.

Shop drawings
Submit names and contact details of each assembly, component and connection and information relevant to fabrication, surface treatment and installation for the following:

whole structure including a single hinged swing gate for pedestrians and a single sliding gate for driveway and all related hardware.

provision of intercom installation, keypad release, sliding gate openers etc.

220 HARDWARE

1 GENERAL

1.1 CROSS REFERENCES

Related worksections

Refer to the following worksections:

General Requirements;

Doors and Hatches;

Windows;

Metal Fixtures;

Metals and Prefinishes;

Landscaping.

2 MATERIALS

2.1 MATERIALS

Metal finishes

Generic items: The following minimums apply to the relevant finishes on hardware items described in generic terms (i.e. not as proprietary items):

Coating class for steel sheet: At least Z275.

Anodising class for internal applications: At least:

. AA15.

. Chromium on Metals AS 1192.

Clear lacquer: Provide a factory applied clear lacquer finish on copper alloy surfaces liable to corrosion.

3 COMPONENTS

3.1 COMPONENTS GENERALLY

General

Hardware specified generically: Provide hardware of sufficient strength and quality to perform its function, appropriate to the intended conditions of use, suitable for use with associated hardware, and fabricated with fixed parts firmly joined.

Operation

Ensure working parts are accurately fitted to smooth close bearings, without binding or sticking, free from rattle or excessive play, lubricated where appropriate.

3.2 SURFACE FINISHES

Provide either bright or satin finish to metal throughout as specified.

Bright Chrome Finish (BC) or Polished Stainless Steel (PSS): Highly polished surface.

Satin Chrome Finish (SC or SCP) or Satin Stainless Steel (SSS) Surface polished to a satin finish.

Window and security screen products generally, powder coated to complement frame or pre-finished.

3.3 MOUNTING HEIGHTS

Operable hardware to be located between 900 to 1100mm above floor level *(for Platinum Level Accommodation – see below)* as follows. Ensure door hardware does not interfere with security door hardware.

Timber doors

Passage sets and key in lever entry locks: 900mm above floor level to centre of lever spindle.

Deadlocks: 1100mm above floor level to centre of cylinder.

Security door locks: 1000mm above floor level to centre of lever spindle.

Sliding timber doors: D-pulls: top fixing at 1100mm above floor level.

Privacy snib: 900mm above floor level to centre of snib.

Aluminium sliding doors

Sliding Doors locks and hardware: 900 to 1100mm above floor level.

Sliding Security door locks and hardware (*Platinum Level Accommodation)*:

900 to 1100mm above floor level.

800 (850 preferred) to 1100mm above floor level.

Refer to Drawing Detail **AHD_G01** for further requirements.

3.4 APPROVED MANUFACTURERS

Supply

Provide specified proprietary items from approved manufacturers.

3.5 HINGES

Butt hinge sizes

General: Minimum sizes are those in **Hinge table A** and **Hinge table B** (not applicable to cupboard doors), in which length (l) is the dimension along the knuckles, not including hinge tips, if any, and width (w) is the dimension across both hinge leaves when opened flat.

Steel, stainless steel, brass, bronze butt hinges for timber doors in timber or steel frames: To **Hinge table A**.

Aluminium hinges for aluminium doors, or for doors of other materials in aluminium frames: To **Hinge table B**.

Hinge table A

Nominal hinge size l x w x t (mm)	Door leaves not exceeding any of the following:		
	Mass (kg)	Width (mm)	Thickness (mm)
70 x 50 x 1.6	16	620	30
85 x 60 x 1.6	20	820	35
100 x 75 x 1.6	30	920	40
100 x 75 x 2.5	50	920	50
100 x 75 x 3.2	70	1020	50
125 x 100 x 3.2*	80	1220	50

* stainless steel only.

Hinge table B

Nominal hinge size l x w x t (mm)	Door leaf not exceeding mass (kg)	Minimum construction	
		Knuckles	Screws/hinge leaf
100 x 70 x 3	30	3	3
100 x 80 x 3.5	50	5	4

Number of hinges

Small door leaves: Door leaves not exceeding any of the following may have 2 hinges each:

2040mm high.

820mm wide.

30 kg mass.

Other door leaves: Provide 3 hinges for leaves between 2040mm and 2340mm high, and 4 for door leaves between 2340mm and 3050mm high. Provide at least 3 hinges for door leaves controlled by door closers.

Fire doors: Proprietary certified door sets.

Awning windows
Hinges per sash: Provide 3 hinges per sash to butt hinge-hung awning or hopper sashes over 1200mm wide or casement sashes over 1200mm high.

Hinge materials
Aluminium hinges: High tensile aluminium with fixed stainless steel pins in nylon bushes, and with nylon washers to each knuckle joint.

Doors fitted with closers: Provide low friction bearing hinges.

Brass hinges: For brass hinges used for door leafs exceeding 30 kg or door leafs controlled by door closers, provide bronze or stainless steel washers to each knuckle joint.

Wide throw
Where necessary provide wide throw hinges to achieve the required door swings in the presence of obstacles such as nibs, deep reveals and architraves.

Hinge pins
Exterior or security doors opening out: Provide fixed pin hinges or security hinges.

3.6 LIFT-OFF HINGES

WC and bathrooms with closet pan
Use propriety brand lift-off hinges to inward swinging hinged doors, where necessary, to meet NCC requirements.

3.7 KEYING

Key material
Pin tumbler locks: Nickel alloy, not brass. Minimum 5 pin.

Lever locks: Malleable cast iron or mild steel.

Identification
Supply each key with a purpose-made plastic or stamped metal label legibly marked to identify the key, attached to the key by a metal ring.

Keying types
External door keys to each dwelling unit to be keyed alike but separate to every other unit.

Master keying: Not required

Restricted keying:

Request direction from Principal prior to installation;

'UR22' 'restricted key' system required for padlocks to employee storeroom and WC, when applicable;

Electricity Distributor 'restricted key' required for padlocks to meter box doors (including doors to meter rooms).

Stamping: Stamp keys and lock cylinders to show the key codes.

Delivery
Contractor to hand over two keys per unit or house to Superintendent' Representative at Practical Completion.

3.8 LOCKS AND LATCHES

Mechanical locksets
Standard: To AS 4145.2.

Furniture
Provide lock and latch furniture suitable for use with the lock or latch to which it is installed.

Strike plates
Use strike plates provided with the locks or latches. Do not provide "universal" strike plates.

3.9 DOOR HARDWARE SCHEDULE

General
Keys: Provide 2 keys only per house or unit (where all doors are keyed alike), including 2 restricted keys (keyed alike) for employee store room and WC locks, when applicable.

Entry Doors and Security Doors: To be keyed alike per house or unit.

Door Stops: Provide self-retaining doorstop to each hinged door, alternatively, a standard door stop plus a Cabin Hook and eye retainer.

Privacy sets
Snib or push button on inside, with slot turn emergency release on outside (pin hole release not acceptable).

For Platinum Level accommodation, refer to this section – '*Bathrooms, bedrooms'* for additional requirements.

Front and rear entry timber doors
Lock/Latch Type:

Single cylinder deadlock with turnsnib (indoor side).

Entry passage set SCP.

Hardware Description:

SCP.

Lever handles and latch: SCP.

Backsets: 70 mm.

Sold core doors without security screen:

Lock/Latch Type:

Single cylinder deadlock with turnsnib (indoor side).

Entry passage set SCP.

Hardware Description: Add door viewer/s (Refer to *3.10 Accessories* for requirements).

Employee Storeroom and WC timber doors
Lock/Latch Type:

Entry passage set SCP;

Hasp and Staple;

Padlock.

Hardware Description:

SCP;

Lever handles and latch: SCP;

Backsets: 70 mm;

Hasp & Staple: surface mount SS or SCP with non-accessible fixings (Heavy-Duty);

Padlock: 'Restricted key' padlock (Heavy-Duty) as directed by Principal.

Electricity Meter Room timber doors
Lock/Latch Type:

Entry passage set SCP;

Hasp and Staple;

Padlock.

Hardware Description:

SCP;

Lever handles and latch: SCP;

Backsets: 70 mm;

Hasp & Staple: surface mount SS or SCP with non-accessible fixings (Heavy-Duty);

Padlock: Electricity Distributor 'restricted key' padlock (Heavy-Duty).

Electricity Meter Box door/s
Hasp and Staple;
Padlock.
Hardware Description:

Hasp & Staple: surface mount SS or SCP with non-accessible fixings (Heavy-Duty);

Padlock: Electricity Distributor 'restricted key' padlock (Heavy-Duty).

Entry passage set SCP.
Fire door set
Standard: To AS 1905.1

Lock/Latch Type:

Fire door rated compliant self-latching lock (no deadlock) with key in lever externally, and lever and large turnsnib (indoor side). (NCC allowed for *Sole Occupancy* units.).

Hardware Description:

SCP.

Accepted Fire Rated closer: SCP.

Backset: 70 mm.

Glazed aluminium sliding doors
Patio/courtyard door, outside entry door including door from adjacent garage or carport requiring locking from outside.

Lock/Latch Type:

Patio/courtyard doors. Snib (indoor side) only, integrated with D-pull.

Entry door, provide turnsnib (indoor side), single 5 Pin cylinder externally.

Coordinate hardware heights to avoid clashing with security door hardware.

Hardware Description:

Approved Latch/lock with internal D-Pull Handles.

For Platinum Level accommodation provide D-pulls inside and out and extended turnsnib internally for disabled.

Finish: Powder coat.

Security screen doors / openable windows
Hinged security doors, Sliding security doors, openable window security screen.

Lock/Latch Type:

Certified doors as per QBuild requirements.

Apartments (Class 2 construction) - Screen doors to be keyed alike and to entry doors in each unit.

Detached Houses & Duplexes (Class 1a single storey construction) - Screen doors and openable window security screen to be keyed alike and to entry doors in each dwelling.

Note: Coordinate Hardware heights to avoid clashing with glazed door hardware.

Hardware Description:

Approved hardware to be supplied by security door manufacturer.

Bedrooms
Lock/Latch Type:

Passage set.

Privacy set for multiple unrelated occupants.

Hardware Description:

Lever Handles SCP.

Bathroom/WCs
Lock/Latch Type:

Privacy sets.

Hardware Description:

Lever handles SCP.

Laundry
Lock/Latch Type: Passage set.

Hardware Description: Lever handles SCP.

Cupboard/pantry, linen, broom
Lock/Latch Type: Passage set.

Hardware Description: Lever handles SCP.

Bathroom, bedrooms
- Platinum Level accommodation with internal sliding doors provide:

  Lock/Latch Type:

  Sliding Door Privacy latch.

  Hardware Description:

  Morticed latch SCP.

  Astra Architectural Hardware Sliding Door bolt SNIBE (with emergency release outside) or approved alternative installed at 900mm above FL.

  2 no 150mm nominal, face fixed D Pulls.
- Platinum Level accommodation with internal hinged doors provide:

  Lock/Latch Type:

  Lever handle passage set, plus a separate privacy mortice flat turn-snib non-indicator bolt immediately below.

  Hardware Description:

  Morticed latch SCP.

  Astra Architectural Hardware Door bolt MN IBE (with emergency release outside) or approved alternative installed at 900mm above FL.

3.10 ACCESSORIES

Bolts
Provide bolts including barrel bolts, flush bolts and tower bolts with keepers, including lock plates, staples, ferrules or floor sockets.

Door viewer/s
Provide door viewer/s to solid timber entry doors where a security screen door is not required.

Platinum Level accommodation: Provide an additional door viewer.

Door viewers in fire door assemblies to comply with AS 1905.1: Fire Resistant Door sets.

Position along centreline of door. Height/s above finished floor:

Single door viewer 1500mm nom. (All accommodation);

Additional door viewer 1100mm nom. (Platinum Level).

Window catches
Windows: Catches required to all windows (not applicable to external sliding doors).

Provide 2 catches per sash to manually latched awning or hopper sashes over 1000mm wide.

Ensure catches to windows are not key lockable.

Mortar guards
For steel door frame installations provide mortar guards designed to enable the full extension of the lock tongue or similar devices and the correct operation of the locking mechanism.

Rebated doors
For mortise locks or latches to rebated doors, provide purpose-made rebated pattern items.

3.11 SASH OPERATORS

Chain winder
Type: A proprietary device capable of opening and closing a projecting sash by means of a chain retracting into a winder box fixed to the sill, self-locking in all positions, manually operable by a sill mounted winding handle without moving the internal insect screen (if fitted).

Remote control operator
Type: A proprietary device for opening or closing louvres or a projecting sash, in banks if required, by means of a mechanical linkage manually or power operated from a convenient level, self-locking in all positions.

3.12 DOOR CONTROLLERS

General
Door controllers specified generically: Provide door controllers, including door closers and automatic door operators where designated, which are suitable for the door type, size, and weight, the door swings required and the operating conditions, including wind pressure.

Fire rated door closers
General: Provide surface mounted door closers tested and certified for use as components of fire door assemblies.

Standard: To AS1905.1, AS1530

Gold and Platinum Level accommodation:

Provide compliant low opening pressure, CAM action door closers to fire doors with backcheck and delayed closing, suitable for people with a physical disability.

Description:

- Adjustable delayed action, closing speed and latching speed
- Hold Open - to be set at an opening angle of 120º wherever achievable.
- opening force to be less than 20N.

Standard: To AS1905.1, AS1530, AS1428.1

Radio remote door controllers
General: Provide a device, comprising a radio receiver and separate transmitter, for activating a automatic door operator so as to open and close the door by remote radio signal.

Receiver: House within a wall unit incorporating a push-button switch permanently illuminated. Mount within the enclosure and connect to power.

Transmitter: Portable battery-powered unit sending a coded signal effective up to not less than 12 m from the receiver.

Key switch: If there is no separate access to the enclosure, provide a key switch mounted externally for opening and closing the door from outside the enclosure without the transmitter. Provide two keys.

3.13 SUNDRY HARDWARE FIXTURES

Window curtain rod holders
Description:

75mm Painted or plastic-coated Mild Steel Flat brackets screw fixed to wall at window head where curtain installation is not required.

Where curtain installation is required, provide brackets as per Schedule 325 Window Coverings in lieu of standard rod holders.

Number and location: To all windows and sliding glazed doors. Provide 3 No. Brackets for rails 1800 mm or more in length.

Shower seat
Description: Approved fold down seat with front support legs for disabled use to AS 1428.1.

Note: Generally, not applicable, and only required by Occupational Therapist (OT) where accommodating specific occupant/s.

Grabrails – Water closet
Gold, and Platinum Level accommodation:

Provide grab rail to side wall nearest to the WC pan, as described and fixed in accordance with AS 1428.1. Refer Figure 42. (i) Option A. Note: Where spatially unachievable the alternative system (ii) Option B of a 90-degree arm may be considered.

304 Grade Stainless Steel Rail with matching metal end brackets to suit.

Concealed fixings.

Number and Locations:

. Unless shown on the drawings provide in rooms designated for accessible needs.

Grabrails - Towel rails
Provide grab rail to act as a towel rail, in all bathrooms as described and fixed in accordance with AS 1428.1.

Type: 32mm dia.

304 Grade Stainless Steel Rail with matching metal end brackets to suit.

Concealed fixings.

Number and Locations:

. 800-820mm nominal height.
. Min. 900 mm rail length (where achieveable), one to each bathroom. Refer to drawings for location. If space insufficent provide 2 x 600mm. Second rail at 1500mm.

Towel rails - Kitchen
Description:

Type: 19 mm dia 304 Grade Stainless Steel Rail with Stainless Steel or Chrome plated metal end brackets to suit.

Sizes: Number and Locations:

. 450 mm rail, one to each kitchen. (Note: kitchens with horizontal rail cupboard pulls do not require an additional towel rail).

Shower Niche
Required to Shower and Bath recess. Refer to drawings and *Specification Section 270 Tiling, Materials and Components* for requirements.

Number required:

1 to each shower and bath recess.

Note: Where installation of bathroom shower niche is not practical or non-compliant (where applicable), then provide a separate soap holder.

Soap holders
General Level accommodation:

Description: Surface Mounted Stainless-Steel with drip holes in base. No loose components accepted.

Number:

. 1 to each bath and shower recess.

. 1 to laundry.

. Location:

. Refer to Drawings.

Silver and Gold Levels accommodation:

Description: Recessed Stainless-Steel soap holders clear of sharp protrusions or recessed ceramic soap holder - *refer to Tiling* worksection.

Number:

. 1 to each bath and shower recess.

Description: Surface Mounted Stainless-Steel with drip holes in base. No loose components accepted.

. Number:

. 1 to laundry

Location:

. Refer to Drawings.

Platinum Level accommodation:

Description: Recessed Stainless-Steel soap holders clear of sharp protrusions or recessed ceramic soap holder - *refer to Tiling* worksection.

Number:

. 1 to each bath and shower recess.

. 1 to laundry (1200mm max. ht.). Note: Where recessed soap holder in laundry cannot be accommodated in standard wall depth, then provide surface mounted soap holder as required for Gold, Silver and General Levels.

Location:

. Refer to Drawings and AS 1428.1, Figure 48.

Toilet roll holders
General, and Silver Levels of accommodation:

Description: Surface Mounted Chrome Plated or Stainless-Steel. Screw fix to wall nogging. No loose components.

Number and location: 1 to each WC.

Gold and Platinum Level accommodation:

Description: Semi-recessed Mounted Chrome Plated, Stainless-Steel or White, clear of sharp protrusions. Screw fix to wall nogging. No loose components. NOTE: Semi-recessed ceramic toilet roll holder alternative - *refer to Tiling* worksection.

Number: 1 to each WC.

Location:

. Drawings and AS 1428.1, Figure 41.

Glazed shower screens
Refer to Specification Section *240 Glazing – Execution, Glazed Shower Screens* for requirements.

Shower curtain rail
Platinum Level accommodation:

Description: Aluminium sliding track hospital style Curtain Rail system similar to Mini-mono Series 9000 or Mactrack ceiling or wall mounted. (No support obstructions to access.) Height to suit shower curtain length, 1800mm min.

Size:

. 1200mm x 1200mm.

. Number and location:

. To each hobless shower recess.

. Location: refer to schedule and drawings.

Shower curtain
Platinum Level accommodation:

Description: Clear PVC or white nylon or acrylic curtain, complete with hangers and weighted at bottom. *Note:* Allow 50mm ±5mmm clearance between bottom of shower curtain and finished floor level.

Number and location: To each shower recess or bath tub with shower over. Length to suit required location.

Bathroom wall cabinet
Number and location: As shown on drawing.

Bathroom mirrors
Description: Refer *Glazing* worksection.

Number and location:

Powder coated aluminium mirror frame.

Colour: White.

Street and unit numbers
Description:

Type: Solid metal with provision for screw fixing (laser cut or cast Aluminium or brass).

Finish: Powder coated Black or White to contrast with the background.

Letter size:

. Street Numbers: 100mm.

. Unit and House Numbers: 65 to 100mm.

Number and location:

Refer Drawings for unit and street numbers.

Unit Numbers to be fixed to wall beside doors. Do not fix behind security screens.

Individual dwelling street numbers
Description: Solid metal as above sized to suit adjacent rail or structure or letterbox.

Letter box numbers for proprietary banks of boxes
Description: Engraved plastic traffolyte strip provided by letterbox manufacturer.

Number and location: Refer to drawings for unit numbers.

Direction signage externally (Wayfinding)
Description: Silver or white reflective lettering on dark coloured background.

Number and location: Locate where shown on the drawings to allow easy night identification.

Required when project incorporates eight (8) units or more, or as directed by Principal.

Clothesline/s
Description: Refer *Metal Fixtures* worksection.

Stair nosings
Refer Sections 110 Concrete, 290 Resilient Finishes, and 320 Timber Fixtures for particular requirements.

Provide purpose-made non-slip stair nosings to stairs, compliant to AS 1428.1 for access and luminance contrast.

Material: Extruded aluminium with carborundum inserts, mechanically fixed and adhered to manufacturers' installation requirements.

Slip resistance:
Standard: AS 4586.

Nosing Strip: R11/P4 minimum.

4 EXECUTION

4.1 INSTALLATION

Fixings
General: Provide materials compatible with the item being fixed, matching where exposed, and of sufficient strength, size and quality to perform their function. Provide a corrosion resistant finish to concealed fixings and match exposed fixings to the material fixed.

Support: Provide appropriate back support (for example lock stiles, blocking, wall noggings and backing plates) for hardware fixings.

Hollow metal sections: Provide backing plates drilled and tapped for screw fixing, or provide rivet nuts with machine thread screws, not self-tapping screws or pop rivets.

Security: Locate exposed fixings to lock furniture on the inside faces of external doors and on the inside faces of internal doors to lockable rooms.

Fixings within wet areas (waterproofed zones)
Penetrations through floor/wall tile for mechanical fixings or fastenings through surface materials are required to be waterproofed to comply with AS 3740 and waterproofing guarantees.

Window hardware
Proprietary window systems: Provide the standard hardware.

Door hardware
Proprietary doorsets: Provide the standard hardware.

Mounting heights: Refer to Hardware Schedule.

Hinges
Timber doorsets: Install butt hinges in housings equal in depth to the thickness of the hinge leaf, except for hinges designed for mounting without housing, which may be used on internal cupboard doors only. Fix with countersunk screws.

Metal frames: Fix hinges using metal thread screws.

Door stops
General: Fix on the skirting or on the floor where possible or at the top of door as appropriate, to prevent the door furniture striking the wall or other surface.

Location: To all doors that will strike the walls or other surface when opened.

Security chains
General: Where specified, fix a proprietary security chain device to the opening side of the door to restrict the opening of the door but allowing visual and verbal communication.

Finish: Chrome plated.

5 COMPLETION

5.1 COMPLETION

Maintenance manual
General: Submit the manufacturer's published recommendations for use, care and maintenance.

Adjustment
General: Leave the hardware properly adjusted with working parts in working order, clean, undamaged, properly adjusted, and lubricated where appropriate.

Automatic door operators: Maintain and adjust the system throughout the defects liability period.

Keys: For locks keyed to differ and locks keyed alike, verify quantities against key records, and deliver to the contract administrator at practical completion.

Number of keys
Provide 1 per lock, including security doors, tagged with the address and unit number.

225 BUILDING AND FIRE SAFETY

1 GENERAL

1.1 AIMS

Responsibilities

General: Provide an Emergency Evacuation Management Plan, including minimum requirements under the Building Fire Safety Regulation 2008 applicable to the Building Classification.

According to the Building Fire Safety Regulation 2008 Part 1 – 4.

'The main objects of the regulation are -

(1) To ensure persons can evacuate buildings safely and quickly if a fire or hazardous materials emergency happens; and

(2) To ensure prescribed Fire Safety Installations for buildings are maintained.'

The contractor is to commission, at least 30 days prior to Handover, a competent person that is a consultant who holds a current certificate of accreditation issued by the Fire Protection Industry Board, applicable to the prescribed fire safety requirements relevant to the Building Classification.

The engaged consultant is to provide:

Fire and Evacuation Plan: Includes but is not limited to:

Evacuation Coordination Procedures;

Instructions for evacuating the building in accordance with the Evacuation Coordination Procedures;

Instructions for operating fire-fighting equipment and alarms in the building;

Procedures for giving instructions and training to person/s occupying/working in the building and to ensure that instruction is given;

Contact details for the Evacuation Coordinator and other person/s responsible for evacuating the building, the Fire Safety Advisor (in a High Occupancy Building), as well as for the person/s responsible for issuing instructions and for developing and reviewing the Fire and Evacuation Plan.

Note: The Principal to provide the name and contact details of the Evacuation coordinator for the project appointed by the Department of Energy and Public Works. The Contractor is required to forward the details onto the commissioned Fire Safety Consultant.

Evacuation Coordinator Training: The Contractor is responsible to arrange coordination of liaising between the Fire Safety Consultant and the Evacuation coordinator for the project.

Fire and Evacuation Signs / Diagrams: Signage for Evacuation Diagram including Evacuation Instructions, to be displayed conspicuously and include the following:

Address of building;

Street Name;

Evacuation Instructions;

The graphic of the floor plans will be marked with all installed fire and emergency response equipment, any installed alarm raising equipment, all exits and fire doors, and with "You are Here" markers as well as directional way finding indicators to the primary and secondary exits. Each plan is to be orientated to where it is going to be located.

Occupiers Statement: Provided by the Fire Safety Consultant after a site audit.

Manifest Cabinet: Cabinet to secure emergency information/documentation on site, including the Certificate of Occupancy.

1.2 CROSS REFERENCES

General

General: Conform to the *General Requirements* worksection.

1.3 LEGISLATION REFERENCES

Fire and Emergency Services Act 1990.

Building Fire Safety Regulation 2008.

Queensland Fire and Emergency Services (Domestic Smoke Alarms) Amendment Act 2016.

Building Fire Safety (Domestic Smoke Alarms) Legislation Amendment Regulation (No. 1) 2016.

National Construction Code 2016.

Queensland Development Code MP6.1.

2 QUALITY

2.1 INSPECTION

Notice

Inspection: Give notice so that inspection may be made of the following:

Signage items and Manifest Cabinet delivered to site before installation.

Building locations or substrates prepared to receive graphics items and Manifest Cabinet before they are installed.

2.2 INTERPRETATION

Fire and evacuation signs / diagrams

Statutory signage prescribed by the NCC and Statutory Authorities which includes signage for Evacuation Diagrams including Evacuation Instructions.

Fire and evacuation plan

Instructions and evacuation procedures to follow in the event of an emergency situation.

3 PRODUCTS

3.1 MATERIALS

Materials standards

Plastics:

Transparent Polycarbonate UV2 protected and abrasion resistant sheet.

White vinyl laminate UV protected with self-adhesive backing or approved alternative permanent print.

Cabinet – Emergency Information:

Provide proprietary weatherproof lockable steel cabinet nom. 425 x 350 x 100mm in size and approved for Queensland Fire and Emergency Services (QFES) evacuation requirements, including compatibility with standard 003 Emergency Services keys.

Colour: Fire Hazard 'Signal Red' R13: To AS 2700.

Labelling: 50mm high white or silver lettering to read 'EMERGENCY INFORMATION'.

Location: Wall adjacent to LAP / FIP cabinet preferably or otherwise adjacent to electric mains meter box.

Cabinet – Fire Extinguishers:

Provide weatherproof lockable steel cabinet sized to suit fire extinguisher and approved by the Queensland Fire and Emergency Services (QFES). Include a fire service 003 key lock.

Standard: To AS 2444-2001.

Colour: Fire Hazard 'Signal Red' R13: To AS 2700.

Be marked with FIRE EXTINGUISHER in letters at least 32mm high with a contrasting the background, UNLESS the door has not less than 50% of its surface area fabricated with transparent material.

Locked cabinets shall be provided with a frangible panel to provide access to the latching device or extinguisher.

Frangible panel shall not be less that 150mm x 150mm and comply with requirements for frangibility set out by AS 1603.5.

Location: Common public areas as shown on drawings and approved by the Queensland Fire and Emergency Services (QFES). Note: Open door/s not to encroach on the required path of egress minimum width or cause an obstruction.

Fasteners:

Corrosion resistance Class 4: To AS 3566.

Concealed where practicable.

Adhesives:

Building adhesive – one-component polyurethane adhesive - Sikaflex 11FC or similar.

3.2 CERTIFICATE/S SCHEDULE

Location: 'Emergency Information' Cabinet.

Material: Printed-paper card protected with double-sided clear film laminated. As per Building Compliance Certificate issued by Building Certifier. Appended to the Fire and Evacuation Plan. To fit an A4 sized 4-ring binder (final sizing and number determined by Building Certifier).

3.3 FIRE AND EVACUATION SIGNS / DIAGRAMS SCHEDULE

Locations:

Adjacent to all apartment (externally) entry doors in the evacuation route (A4 size).

To all Common areas, including Lift Lobbies (A3 size).

Do not locate inside apartments.

Material: Clear Transparent Polycarbonate UV2 sheet 3mm min.

Image/Graphics: Reversed lettering and graphic images full colour or black and white screen / digitally printed on the back clear transparent polycarbonate plate. Protect image with white vinyl laminate UV bonded directly to back of printed image.

Finish/colour/text: Refer Queensland Fire and Rescue Service's Fire Safety Management Guidelines.

Fixing method: One-component polyurethane adhesive with button head tamper-proof screw fasteners.

3.4 EMERGENCY INFORMATION

Additional to the Building and Fire Safety Statutory and stipulated requirements, supply following additional documentation in electronic (soft) format at (or prior to) Practical Completion in accordance with the *Handover Checklist - Schedule 020 General Requirements*.

Fire and evacuation signs / diagrams;

Fire and evacuation plan/s;

Building Classification/s / Occupancy Certificate.

4 EXECUTION

4.1 WORKMANSHIP

Production

General: Form image / graphics items accurately with clean, well-defined edges or arises, free from blemishes.

Installation

General: Install signage and manifest cabinet level and plumb, securely and permanently mounted.

230 WINDOWS

1 GENERAL

1.1 CROSS REFERENCES

General
Refer to the *General Requirements* worksection.

Related worksections
Refer to the following worksections:

Doors and Hatches;

Metals and Pre-Finishes;

Glazing;

Hardware.

1.2 STANDARDS

General
Selection and installation: To AS 2047.

Glazing
Glass type and thickness: To AS 1288, where no glass type or thickness is nominated.

Materials and installation: To AS 1288.

Quality requirements for cut-to-size and processed glass: To AS/NZS 4667.

Terminology for work on glass: To AS/NZS 4668.

Protection of openable windows/fall

prevention: To AS 5203

1.3 INTERPRETATION

Definitions
General: For the purposes of this worksection the definitions given below apply.

Louvres:

- Horizontal: Louvres span between frame stiles or mullions.
- Continuous horizontal: Louvres run continuously past, and are supported by, concealed mullions.
- Vertical: Louvres span between frame heads and sills.
- Window: The term 'window' used in this worksection also means 'louvre grille' where the grille forms part of the window assembly.
- U-value: Total U-Value as defined by NCC and determined in accordance with NFRC 100.

SHGC: Solar heat gain coefficient as defined by NCC and determined in accordance with NFRC 200.

1.4 SUBMISSIONS

Submit test certification for windows and glazing if requested by the Superintendent's Representative.

Type-test reports
General: Where required submit type-test reports verifying conformance to AS 2047 and the **Window and glazed door performance schedule** as follows:

Fire resistance level: To AS 1530.4.

Weighted sound reduction index: To AS/NZS 1276.1 or AS/NZS ISO 717.1.

High performance glass
Ceramic-coated spandrel glass: Submit a report certifying that the glass meets the Fallout Resistance Test requirements of ASTM C1048.

Opacified glass
General: Submit a statement by the manufacturer certifying that the proposed method of opacifying the glass will not be detrimental to the glass or detract in any way from the glass product warranty.

2 QUALITY

2.1 INSPECTION

Witness points
Give sufficient notice so that inspection may be made at the following stages if required by the Superintendent:

Openings prepared to receive windows (where windows are to be installed in prepared openings).

Fabricated window assemblies delivered to the site, before installation.

Install windows before wall cladding/lining.

3 MATERIALS

3.1 GENERAL

Standards
Flashings: To AS/NZS 2904.

Aluminium extrusions: To AS/NZS 1866.

Materials
Provide flashings and weatherings which are corrosion resistant, compatible with the other materials in the installation, and coated with a non-staining compound where necessary.

3.2 GLASS

General
Material: Aluminium frames. Powder coated.

Glass types and quality
Standard: To AS/NZS 4667.

Glazing plastics
General: Free from surface abrasions and warranted by the manufacturer for 10 years against yellowing or other colour change, loss of strength and impact resistance, and general deterioration.

Bullet-resistant glazing panels
Standard: To AS/NZS 2343.

Safety glasses
Standard: To AS/NZS 2208.

Certification: Required.

Certification provider: An organization accredited by the Joint Accreditation System of Australia and New Zealand (JAS-ANZ).

Type: Grade A.

Heat soaking: Required for toughened glass in curtain walls.

Ceramic coated glass
Heat strengthened or toughened glass with a coloured ceramic coating fused to and made an integral part of the surface: To ASTM C1048, Condition B.

Opacified glass
Glass with an opacifier permanently bonded to the inner face.

Unacceptable blemishes in heat-treated flat glass (including tinted and coated glass)
Standard: To AS/NZS 4667.

Insulating glass units (IGU's)
Selection and installation: To AS/NZS 4666.

3.3 WINDOW SECURITY GRILLES

General
Window latches and /or locks to be located 1000 mm above floor level or be adjustable to this level.

Fit a security screen to every openable window, to the openable section of the window only – not across the fixed glass. Refer to *Metal Fixtures* worksection for manufacture and installation requirements.

Fit openable window security screen to the main bedroom window *(only applicable to Building Classification 1a single storey construction)* if no other means of egress to outside space is available (such as breaking glass). Where an external window hood or fixed shade or privacy screen is installed in this situation, it must not prevent or restrict the opening of the window security screen.

Window latches to openable window security screen to be, highly visible, and easy to locate and operate, in poor light and emergency conditions.

Note: Ensure latches to window security screens are:

not key lockable, and

not operable below 1700mm above finished floor (where windows are positioned 2000mm above the ground floor).

Compliance
Only window security grilles certified to AS 5039 will be accepted. Submit the manufacturer's NATA or equivalent test certificate in accordance with the Australian Standard.

At Practical Completion, submit full test certification for the types of doors and screens supplied, including tested specification.

Type: As appropriate to the application.

Fixed Screens.

Openable escape screens.

Sliding Screens.

Use concealed fixings to attach security screens to the window frame. Where it is impractical to provide concealed fixings, then tamper resistant fixings are to be used. Pop-riveting is unacceptable as fixings.

Australian Standards
AS 5039: Installation of security screen doors and security window grilles.

AS 5040: Security screen doors and window grilles.

AS 5041: Methods of test - Security screen doors and window grilles.

Finish
Powder coated unless specified anodised elsewhere.

Colour: To match window frames unless specified otherwise.

Grille may be black for mechanically fixed grilles.

3.4 BUSHFIRE SCREENS AND SEALS

Requirement
Protection: Protect glazed windows and doors from the ingress of embers.

Standard: To AS 3959.

3.5 SLIDING SECURITY DOORS

Refer to *Doors and Hatches* worksection.

3.6 GLASS IDENTIFICATION

Safety glazing materials
Identify each piece or panel, to AS 1288.

Noise reducing glazed assemblies
Label each panel with a legible non-permanent mark, self-destroying when removed, stating and certifying the Rw rating, and identifying the testing authority. Remove when directed.

Bullet-resistant panels
Marking: To AS/NZS 2343.

4 EXECUTION

4.1 CONSTRUCTION GENERALLY

Standards
Unframed toughened glass: To AS 1288.

Installation
Install windows so that the frames:

are plumb, level, straight and true within acceptable building tolerances;

are adequately fixed or anchored to the building structure; and

will not carry any building loads, including loads caused by structural deflection or shortening.

Joints
General: Make accurately fitted tight joints so that neither fasteners nor fixing devices such as pins, screws, adhesives and pressure indentations are visible on exposed surfaces.

Sealants: If priming is recommended, prime surfaces in contact with jointing materials.

Operation
Ensure moving parts operate freely and smoothly, without binding or sticking, at correct tensions or operating forces and that they are lubricated where appropriate.

Protection
Removal: Remove temporary protection measures from the following:

Contact mating surfaces before joining up.

Exposed surfaces.

Trim
General: Provide mouldings and other trim using materials and finishes matching the window frames. Install to make neat and clean junctions between frames and the adjoining building surfaces.

Flashing and weatherings
Install flashings, weather bars, drips, storm moulds, caulking and pointing so that water is prevented from penetrating the building between the window frame and the building structure under the prevailing service conditions, including normal structural movement of the building.

Requirement: Provide PVC flashing to jambs, head and sill in brick veneer or cavity construction.

Fixing
Packing: Pack behind fixing points with durable full width packing.

Fasteners: Conceal fasteners.

Fastener spacing (nominal): 600mm.

5 COMPONENTS

5.1 WINDOW ASSEMBLIES

Windows
Proprietary domestic window system to AS 2047.

Door assemblies
Proprietary door set system comprising an aluminium framed glazed door or doors, hung or otherwise supported by a fixed aluminium door frame, inclusive of the necessary hardware and accessories and integral provision for installing a sliding security door externally.

Sliding glazed door to be internal to fixed panel and security door to be external unless necessary otherwise.

Sliding glazed doors with protruding stiles not permitted where interference occurs with sliding security door hardware.

Doorsills to Silver, Gold and Platinum Levels accommodation to be of low profile suitable for wheelchair access. Refer to detail *AD_1 Accessible Threshold Entry for Aluminium Sliding Doors.*

Selection and installation: AS 2047.

Refer to the **Window Schedule**.

Adjustable louvres
General: Provide louvre blades clipped into blade holders pivoted to stiles or coupling mullions with integrated security bars unless separate security grille is installed.

Installation: Screw fix stiles and mullions to the building structure. Provide weather strips to heads and sills.

Metal louvres
Provide metal louvre blades mounted in a metal surround frame or subframe, installed as for metal window installations.

Frames
Include the necessary sills, jambs, mullions, transoms, security bars, internal and external corners, beads, brackets, anchors, straps and accessories.

Catches
General: Required

Note: ensure catches to windows are not key lockable (not applicable to external sliding doors).

240 GLAZING

1 GENERAL

1.1 CROSS REFERENCES

General
Refer to the *General Requirements* worksection.

Related worksections
Refer to the following worksections:

Windows;

Doors and Hatches.

1.2 STANDARDS

Glazing
Glass type and thickness: To AS 1288, where no glass type or thickness is nominated.

Materials and installation: To AS 1288.

Insulating Glass Units: To AS/NZS 4666.

Quality requirements for cut-to-size and processed glass: To AS/NZS 4667.

Terminology for work on glass: To AS/NZS 4668.

1.3 INSPECTION

Notice
Inspection: When required by the Superintendent Representative, give notice so that the glass products may be inspected before they are installed.

1.4 SUBMISSIONS

Design
Certification: Submit an engineers' certificate confirming compliance with AS 1288.

High performance glass
Ceramic-coated spandrel glass: Submit a report, from the manufacturer, certifying that the glass meets the Fallout Resistance Test requirements of ASTM C1048.

Installation
Glazing: Provide certification from the fabricator that the method of glazing, the selection of sealant systems and conditions next to the glass are:

Compatible with the edge seal of insulating glass units (IGUs) and self-cleaning glass.

Will not be detrimental to the long-term structural performance, weathering capabilities and visual qualities of the glass.

Opacified glass: Submit a statement by the manufacturer certifying that the proposed method of opacifying the glass will not be detrimental to the glass or detract in any way from the glass product warranty.

Glazier's data: Submit the glazing subcontractor's statement certifying:

A satisfactory thermal safety assessment.

That the assembled frame provides for the required glazing clearances and tolerances and maximum and minimum joint configurations, having regard to the bow, warp and kink characteristics of the required glass types, and is ready for glazing.

Site glazing: If site glazing is intended, submit proposals.

2 PRODUCTS

2.1 GENERAL

Performance
Thermal qualities: U value and Solar heat gain coefficient to SELECTIONS.

Heat soaking
Requirement: All toughened glass products.

Heat strengthening
Requirement: Heat strengthen all glass that requires extra strength and thermal resistance.

2.2 GLASS

Glass types and quality
Standard: To AS 1288 and AS/NZS 4667.

Glass and glazing materials
Glass and glazing materials generally: Free from defects which detract from appearance or interfere with performance under normal conditions of use.

Glazing plastics: Free from surface abrasions, and warranted by the manufacturer for 10 years against yellowing or other colour change, loss of strength and impact resistance, and general deterioration.

Safety glasses
Standard: To AS/NZS 2208.

Certification: Required.

Certification provider: An organization accredited by the Joint Accreditation System of Australia and New Zealand (JAS-ANZ).

Standards Mark: Required.

Ceramic coated glass
Heat strengthened or toughened glass with a coloured ceramic coating fused to and made an integral part of the surface: To ASTM C1048, Condition B.

Opacified glass
Description: Glass with an opacifier permanently bonded to the inner face.

Unacceptable blemishes in heat-treated flat glass (including tinted and coated glass)
Standard: To AS/NZS 4667.

Insulating glass units (IGU's)
Manufacture and installation: To AS/NZS 4666.

Glass thickness selection: To AS 1288.

2.3 GLAZING MATERIALS

General
Glazing materials (including putty, glazing compounds, sealants, gaskets, glazing tapes, spacing strips, spacing tapes, spacers, setting blocks and compression wedges): Appropriate for the conditions of application and the required performance.

Glass thickness as determined by the supplier/contractor in compliance with the Australian Standards.

Glazing generally (i.e. if not otherwise shown or specified): Clear float, general quality.

Safety Glass: Clear laminated.

Bathrooms, Toilets Windows and Sliding Glass Doors in-between carport/garage and residence: Colourless obscure glass, Spotswood pattern, or similar.

Jointing materials
Compatability: Provide recommended jointing and pointing materials which are compatible with each other and with the contact surfaces and non-staining to finished surfaces. Do not provide bituminous materials on absorbent surfaces.

Glazing tapes
Standards: To AAMA 800, Products coded 804.3, 806.3, 807.3, as applicable.

Elastomeric sealants
General: Provide elastomeric sealants in conformance with the **Elastomeric sealant schedule.**

Sealing compound (polyurethane, polysulphide, acrylic):

Single component: Type II, Class A.

Multi component: To ASTM C920.

Sealing compound (silicone):

Single component: Class A.

Multi component: To ASTM C920.

Sealing compound (butyl): To ASTM C1311.

Glazing compounds: To AAMA 802.3 (Types I or II), or 805.2, as applicable.

Narrow joint seam sealer: To AAMA 800, Products coded 803.3.

Exterior perimeter sealing compound: To AAMA 800.

Non-drying sealant: To AAMA 800.

Expanded cellular glazing tape: To AAMA 800.

Very high bond pressure sensitive tapes: To ASTM D897, ASTM D1002, ASTM D3330M, ASTM D3652M, ASTM D3654M, and ASTM D3715M.

2.4 MIRRORS

Reflective surface
Type: Silver layer deposited on the glass or glazing plastic (only where specified).

Protective coatings: Electrolytic copper coating at least 5 μm thick, and 2 coats of mirror backing and edge sealing paint having a total dry film thickness of at least 50 μm.

Frames
Type: Aluminium powder coated in gloss white.

2.5 GLASS IDENTIFICATION

Safety glazing materials
Identification: Identify each piece or panel, to AS 1288.

Noise reducing glazed assemblies
Identification: Label each panel with a legible non-permanent mark, self-destroying when removed, stating and certifying the R_w rating, and identifying the testing authority. Remove when directed.

3 EXECUTION

3.1 GLASS PROCESSING

General
Processing: Perform required processes on glass, including cutting, obscuring, silvering and bending. Form necessary holes, including for fixings, equipment, access holes and speaking holes. Process exposed glass edges to a finish not inferior to ground arrised.

3.2 INSTALLATION

Glazing
General: Install the glass so that:

Each piece is held firmly in place by permanent means which enable it to withstand the normal loadings and ambient conditions at its location without distortion or damage to glass and glazing materials.

Building movements are not transferred to the glass.

External glazing is watertight and airtight.

Temporary marking: Use a method which does not harm the glass. Remove marking on completion.

Toughened glass: Do not cut, work, or permanently mark after toughening. Use installation methods which prevent the glass making direct contact with metals or other non-resilient materials.

Preglazing
Window assemblies and glazed doors: Supply inclusive of glazing, shop preglazed unless preglazing is impracticable.

Vision panels: Install so that they are to be removable Internally.

External timber framed glazing: Glaze with putty.

3.3 FIXING MIRRORS

Frame fixing
General: Proprietary aluminium frames to mirror perimeter, corners mitred. Bed glass edges in a continuous resilient gasket. Attach the frame to the substrate with concealed screw fixings. Seal the frame to the substrate with paintable sealant which will not react with the mirror coating. Do not allow the sealant to contact the mirror back.

3.4 GLAZED SHOWER SCREENS

Provide where shown on Drawings and install to manufacturer's requirements.

Type: Fully framed glazed screen/door.

Description:

- Proprietary systems comprising frames of extruded aluminium (with gloss white powder coated finish or clear anodised), assembled around toughened (safety) clear glass to form fixed panels, waterproofed with resilient seals.

Selection (refer to schedule and drawings):

1) Shower recess (General and Silver Levels of accommodation):
   - Provide screen/s and pivoted door. Height 1830mm (min.) above shower tray edge or tiled hob. Plan size 900x900mm (nom.) to suit shower tray/recess.
2) Shower recess (Gold Level of accommodation):
   - Provide screen/s and side hinged door. Height 2000mm (min.) above finished floor. Door opening 800mm (min.) clear width. Plan size 1000x1000mm (min.) internal dimensions.
   - Threshold from main bathroom floor into the shower recess is required to be step-free for accessibility.
3) Shower over Bath: Combined screen and side hinged door, or side hinged door solely. Height 1400mm (min.) above bath edge. Width 800mm (nom.).

Number and location:

- To each shower tray or recess, and shower over bath.
- Location: refer to schedule and drawings.

Hardware:

- Compatible receiver channels for glass support, including hinges, and brackets. Fasteners - stainless steel
- Proprietary pull handles on both sides of sash (door).

Finish:

- Metal components and fasteners colour matched to shower screen frame, or chromed brass or stainless steel.
- Graphic indicators (manifestations) are required to glass shower screen to define visual location.

Fixings

Penetrations through floor/wall tile for mechanical fixings or fastenings through surface materials are required to be waterproofed to comply with AS 3740 and waterproofing guarantees.

Water shedding

Provide assemblies which shed water to shower/bath. Flash all junctions and waterproof all surfaces.

Water shedding

Provide assemblies which shed water to shower/bath. Flash all junctions and waterproof all surfaces.

4 COMPLETION

4.1 TRADE CLEAN

Method: Clean with soft, clean cloths and clean water, finishing with a clean squeegee. Do not use abrasive or alkaline materials.

Extent: All frames and glass surfaces inside and out.

4.2 WARRANTIES

General: Submit a warranty, signed by the glazing subcontractor, undertaking to repair or replace glass and glazing materials which, within the warranty period, become defective or prove unsuitable for the nominated application; provided that the manufacturers' recommendations for the maintenance of the material have been followed during the warranty period.

Glass manufacturer's warranty: An undertaking, conditional only on compliance with the manufacturer's recommendation for installation and maintenance, to supply replacement glass units to the site for replacement of defective units defined as follows:

IGU units: Units in which the hermetic seal has failed as evidenced by intrusion of foreign matter, or internal condensation at temperature above 2°C.

Coated glass units (including coated SIG units): Units in which the metallic coating shows evidence of manufacturing defects, including but not necessarily limited to cracking or peeling, as determined in accordance with ASTM C1048.

Toughened glass warranty: The manufacturer's warranty certifying that toughened glass supplied for use in curtain walls has been subjected to a heat soaking process which has converted at least 95% of the nickel sulphide content to the stable beta-phase.

Maintenance manual

Submit manufacturers' published recommendations for service use, where applicable.

Cleaning

Replace damaged glass and leave the work clean, polished, free from defects, and in good condition.

250 LINING

1 GENERAL

1.1 CROSS REFERENCES

General
Refer to the *General Requirements* worksection.

Related worksections
Refer to the following worksections:

Schedule of Materials and Finishes;

Light Timber Framing;

Light Steel Framing.

1.2 PROPRIETARY SYSTEMS

To manufacturers' recommendations and details.

2 QUALITY

2.1 INSPECTION

Witness points
Give sufficient notice so that inspection may be made of substrate or framing before installation of linings.

2.2 TOLERANCES

Surface
Flatness, twist, winding and bow: ≤ 1.5mm deviation from a 1.5 m straightedge placed in any position.

3 MATERIALS AND COMPONENTS

3.1 MATERIALS AND COMPONENTS

Fire and sound rated systems
In strict compliance with manufacturer's details and instructions.

Plasterboard generally
Standard: To AS/NZS 2588.

Location: Refer to the *Multi-Trade Schedule*.

Grade: WR grade for ceilings in wet areas and carports/garages.

Thickness (mm) (unless other thicknesses are required to achieve NCC fire or sound ratings):

Walls: 13mm for all walls.

Ceilings: For non-fire rated ceilings:

- 13mm (supports at 600mm centres);
- 10mm (supports at 450mm centres);
- 10mm ceiling grade (supports at 600mm centres).

Edge finish: Recessed.

Plaster cornices: Contemporary profiles. Refer to the drawings and schedules.

Fibre cement
Standard: To AS/NZS 2908.2.

Wall and ceiling linings: Type B category 2.

Minimum thickness: 4.5mm unless otherwise specified.

Plywood and blockboard
Interior use: To AS/NZS 2270.

Exterior use: To AS/NZS 2271.

Marine plywood: To AS/NZS 2272.

Presealed plywood: Plywood presealed both sides and edges with a machine applied sealer.

Visible surfaces with a clear finish: Veneer quality A.

Other visible surfaces: Veneer quality B.

Back/face veneer: Veneer quality C or D.

Bond: Type A.

High pressure decorative laminate sheet
Standard: To AS/NZS 2924.1.

Melamine lining panels
3mm thick high-pressure laminate impervious sheet lining to wet areas nominated in the *Finishes Schedules*.

Particleboard
Standard: To AS/NZS 1859.1.

Coated steel
Standard: To AS 1397.

Fasteners
Steel nails: Hot dip galvanized.

Adhesives
Contact adhesives: To AS 2131.

For plasterboard: To AS 2753.

For wallboards: Mastic adhesive.

For wallboards: Gunnable synthetic rubber/resin-based mastic contact adhesive formulated for bonding flooring and wallboards to a variety of substrates.

Sealants
Fire rated sealant: Non-hardening sealant compatible with the materials to be sealed and having a fire rating equal to that of the partition it seals.

Acoustic sealant: Non-hardening sealant compatible with the materials to be sealed and having a specific gravity of not less than 1.5 gm/cubic centimetre and of 100% polyurethane mastic.

4 EXECUTION

4.1 CONSTRUCTION GENERALLY

Conditions
Do not commence lining work until such time as the building or zone in question is enclosed and weathertight and all wet trades have been completed.

Substrates or framing
General: Before fixing linings check and, if necessary, adjust the alignment of substrates or framing.

Battens
General: Fix at each crossing with structural framing members, or direct to solid walls or ceilings. Provide wall plugs in solid backgrounds.

Ceiling linings
General: Do not install until at least 14 days after the timber roof structure is fully loaded.

Accessories and trim
General: Provide accessories and trim necessary to complete the installation.

Adhesives
General: Provide adhesives of types appropriate to their purpose, and apply them so that they transmit the loads imposed, without causing discolouration of finished surfaces.

4.2 PLASTERBOARD LINING

Supports
General: Install timber battens or proprietary cold-formed galvanized steel furring channels as follows:

Where framing member spacing exceeds the recommended spacing.

Where direct fixing of the plasterboard is not possible due to the arrangement or alignment of the framing or substrate.

Where the lining is the substrate for tiled finishes.

Transverse walls: Locate noggings as follows:

At least 150mm from the horizontal joint.

Ensure that noggings do not protrude beyond the face of studs.

Installation

Gypsum plasterboard and fibre reinforced gypsum lining: To AS/NZS 2589.

Framed construction: Screw or nail or combine with adhesive.

Wet areas: Do not use adhesive fixing alone.

Metal stud frames: Screw using galvanized self-tapping screws, or retain using proprietary clamping straps and cover trims.

Masonry construction:

To fire rated party walls and sound rated walls, provide min. 32mm battens or furring channels to solid masonry walls to conceal services.

Elsewhere, fix using adhesive direct to masonry, but do not fix direct to masonry as a substrate for tiled finishes.

To furring channels: Fix using screw or screw and adhesive.

Multiple sheet layers

Application: Fire rated and acoustic rated walls.

Joints: Fill and flush up all joints and fixings in each layer and caulk up perimeters and penetrations before commencing succeeding layers. Stagger all sheet joints by minimum 200mm.

Joints

Flush joints: Provide recessed edge sheets and finish flush using perforated paper reinforcing tape.

Butt joints: Make joints over framing members or otherwise provide back blocking.

External corner joints: Make joints over metallic-coated steel corner beads.

Dry joints: Provide square edged sheet and finish with a UPVC joining section.

Control joints: Install purpose-made metallic-coated control joint beads at not more than 12 m centres in walls and ceilings and to coincide with structural movement joints.

Wet areas: Install additional supports, flashings, trim and sealants as required.

Joints in tiled areas: Do not apply a topping coat after bedding perforated paper tape in bedding compound.

4.3 FIBRE CEMENT LINING

Supports

General: Install timber battens or proprietary cold-formed galvanized steel furring channels as follows:

Where framing member spacing exceeds the recommended spacing.

Where direct fixing of the fibre cement is not possible due to the arrangement or alignment of the framing or substrate.

Where the lining is the substrate for tiled finishes.

Installation

General: Run sheets across the framing members. In flush jointed applications, stagger end joints in a brick pattern and locate them on framing members, away from the corners of large openings. Provide supports at edges and joints.

Timber framed construction: Nail only or combined with adhesive.

Steel framed construction: Screw only or combined with adhesive.

Wall framing:

Do not fix to top and bottom plates or noggings.

In tiled areas: Provide an extra row of noggings immediately above wall-to-floor flashings. Fix sheet at 150mm centres to each stud and around the perimeter of the sheet.

Masonry wall construction:

Fix using adhesive direct to masonry, but do not fix direct to masonry as a substrate for tiled finish.

Fix to furring channels using screw or screw and adhesive.

Ceilings: Fix using screw or screw and adhesive to ceiling furring members. Do not fix sheets to the bottom chords of trusses.

Wet areas: Do not use adhesive fixing alone.

Multiple sheet layers

Application: Fire rated and acoustic rated walls.

Joints: Fill and flush up all joints and fixings in each layer and caulk up perimeters and penetrations before commencing succeeding layers. Stagger all sheet joints by minimum 200mm.

Joints

Flush joints: Provide recessed edge sheets and finish flush using perforated paper reinforcing tape.

Movement joints in walls: Position a stud parallel to the joint on each side.

Movement joints in ceilings and soffits: Provide movement joints to divide ceilings into bays not larger than 10.8 x 7.2 m and soffit linings into bays not larger than 4.2 x 4.2 m or 5.4 x 3.6 m. Provide framing parallel to the joint on each side. Do not fix the lining to abutting building surfaces.

External corner joints: Make joints over metallic-coated steel corner beads.

Dry joints: Provide square edged sheet and finish with a UPVC joining section.

Control joints: Provide purpose-made metallic-coated control joint beads at ≤ 7.2 m centres in walls and ceilings and to coincide with structural movement joints.

Wet areas: Provide additional supports, flashings, trim and sealants as required.

Joints in tiled areas: Bed perforated paper tape in bedding compound. Do not apply a topping coat.

Movement joints: Space to suit joints required in tiling.

Internal corners: Reinforce with metallic-coated steel angles. In corners subject to continuous moisture, flash over the angle and under the sheeting with continuous bitumen coated aluminium flashing.

4.4 SUSPENDED CEILINGS

Requirement

General: Provide a proprietary suspended ceiling system.

Location
Provide proprietary suspended ceiling system to lift lobby/ waiting areas in under croft carparking (for local lighting and to hide overhead services).

Extent: Refer to Schedules and Drawings.

Standard
To AS/NZS 2785

Stability
General: Install the ceilings level and fix to prevent looseness or rattling of ceiling components under normal conditions. Ensure additional securing where ceiling units are exposed to wind loads.

Failure
Provide a ceiling system where failure of any one suspension point does not cause a progressive failure of the ceiling.

Control of movement
Abutments: Install the ceiling to allow for differential movement at abutting surfaces.

Alignment: Align ceiling control joints with structural control joints. Do not bridge structural control joints.

General
Accessories: Provide accessories as part of the proprietary ceiling system necessary to complete the installation. Any exposed fixings/fasteners to be concealed.

Trim: Provide trim at junctions with other building elements and surfaces, including walls, beams and penetrations, consistent with the materials and finishes of the ceiling system.

Pattern and texture
Set out patterned or heavily textured proprietary materials with a consistent direction of pattern or texture.

4.5 CEILING ACCESS

General
Location: Provide personnel access ways to each separate ceiling space. Avoid bathrooms, but place near utility areas e.g. hallway.

Material: Match adjacent ceiling.

Opening size: Maximise the space available within a 600mm x 600mm ceiling grid.

Types
Trimmed personnel access ways: Plain cover supported on all sides by timber trim fixed to underside of ceiling.

Flush personnel access ways: Cover fitted with rebated frame and set flush with the surrounding ceiling.

4.6 DRAINAGE ACCESS

General
Location: Provide access panel to ceiling and/or vertical ducts to access maintenance points on drainage lines i.e. drainage traps in ceilings and test-gates/clear-outs in vertical ducts.

Opening size: Suitably sized to allow easy working access to drainage fittings.

Types
Flush access ways: Cover fitted with rebated frame and set flush with the surrounding ceiling and/or duct.

4.7 TRIM

General
Provide trim such as beads, mouldings and stops to make neat junctions between lining components, finishes and adjacent surfaces.

Note: ***MDF MR trims are not permitted****.*

Timber trim
Seasoned hardwood: AS 2796.1.

Grade: Select.

Cypress pine: AS 1810.

Timber- Softwood- Sawn and milled products: AS 4785.1 and AS 4785.2.

Grade: Select.

Trim
Architraves: 42 x 12mm.

Picture rail if required: 42 x 16mm.

Timber skirtings
Location: At junctions of walls (other than ceramic tiled walls) with timber and concrete floors.

Fixing:

Masonry: Fix to wall plugs.

Stud walls: Fix to bottom plates.

Colour: Refer to Colour Schedule.

Material:

Timber species or group: Radiata pine.

Size (h x t) (mm): 68 x 12mm.

Profile: Bull nose or splayed.

4.8 FIRE RATED PARTITION TO ROOF SPACE

Scope
Provide fire separation between units in roof space to maintain party wall / fire wall separation to units. Fire rated plasterboard to be fixed to roof trusses either side at party wall to maintain required fire rating. Provide fire stop to top of wall and underside of roofing.

Required fire separation FRL
60/60/60.

Installation
Install in accordance to manufactures detail. Refer to Multi-Residential Timber Framed Construction Manual for method of construction.

260 PLASTERING

1 GENERAL

1.1 CROSS REFERENCES

General
Refer to the *General Requirements* worksection.

Related worksections
Refer to the following worksections:

Masonry;

Concrete;

Painting.

Refer to *Painting* worksection for proprietary textured finishes.

1.2 INTERPRETATION

Definitions
CRF Cement Render Finish.

GPF Gypsum Plaster Finish.

Plaster: A mixture of binders, aggregate and water which are applied to backgrounds in a plastic state and dry and cure to a hard surface which may subsequently be decorated.

Cement: Plaster containing Portland cement as the principal binder.

Gypsum: Plaster containing hydrated or anhydrous calcium sulfate as the principal binder.

Plastering system: One or more coats of plaster and associated treatments comprising some or all of the following in sequence:

Base coat 1 or 2.

Bonding treatment.

Finish coat.

Finishing treatment.

Render, rendering: Plaster, plastering, usually single coat in more than one application and usually cement:lime:sand.

2 QUALITY

2.1 INSPECTION

Give sufficient notice so that inspection may be made of the completed work before decorative coating.

2.2 STANDARD

General
Plastering: To AS CA27.

3 EXECUTION

3.1 MATERIALS AND COMPONENTS

Accessories
Beads: To be metal proprietary sections manufactured to be fixed to backgrounds and/or embedded in the plaster to form and protect plaster edges and junctions.

Lath: To be a proprietary product manufactured from raised expanded metal for use with plaster.

Metallic-coatings: For beads or lath in cement plaster: Do not use zinc-aluminium alloy.

Admixtures
Plasticizers or workability agents: Do not use in cement plasters.

Aggregates
Sand: To be fine, sharp, well-graded sand with a low clay content and free from efflorescing salts.

Autoclaved aerated concrete plaster
To be a proprietary product manufactured for use with the wall system.

Bonding products
To be proprietary products manufactured for bonding cement-based plaster to solid backgrounds.

Cement
Standard: To AS 3972. Type: GP.

Metal lath
A proprietary metal lath, corrosion resistance to be appropriate to the location of high, medium or low corrosivity category.

High corrosivity:

≥ 200 < 1000 m from water subject to breaking surf.

< 100 m from salt water not subject to breaking surf.

Heavy industrial areas.

Medium corrosivity:

≥ 1000 < 10,000 m from water subject to breaking surf.

≥ 100 < 1000 m from salt water not subject to breaking surf.

Non-heavy industrial areas.

Low corrosivity:

≥ 10 km from water subject to breaking surf.

≥ 1 km from salt water not subject to breaking surf.

Gypsum plaster
To be a proprietary product containing calcium sulfate hemihydrate conforming to AS 2592 with additives to modify setting.

Lime
To be in the form of lime putty made as follows:

Dry hydrate of lime to AS/NZS 1672.1 and water which has stood for ≥ 24 hours without drying out.

Quicklime and water which has stood ≥ 14 days without drying out.

Mixes
General: Select a mix ratio to suit the conditions of application in conformity to the **Mixes table** at the end of this Section.

Measurement: Measure binders and sand by volume using buckets or boxes. Do not allow sand to bulk by absorption of water.

Plaster mixing: Machine mix ≥ 3 < 6 minutes.

Strength of successive coats: Ensure successive coats are no richer in binder than the coat to which they are applied.

Movement control joint products
To be proprietary products manufactured for use with the plastering system and to accommodate the anticipated movement of the backgrounds and/or the plaster.

Water
To be clean and free from any deleterious matter.

3.2 PREPARATION

Backgrounds
General: Ensure backgrounds have:

Any deposit or finish which may impair adhesion of plaster cleaned off.

If framed or discontinuous, support members in full lengths without splicing.

If solid or continuous, including formwork concrete, excessive projections are cut off and ground smooth, and imperfections, voids and hollows are filled with render or purpose made fill material equal or greater in strength than the background substrate.

Beads

Location: Fix beads as follows:

Angle beads: At all external corners.

Joints in beads: Use dowels to maintain alignment.

Drip beads: At all lower terminations of external plaster.

Mechanical fixing to background: ≤ 300mm centres.

Movement control beads: At all movement control joints.

Stop beads: At all terminations of plaster and junctions with other materials or plaster systems.

Embedded items

If there are water pipes and other embedded items, sheath them to permit thermal movement. Ensure embedded items conform to the **Corrosion resistance and durability table.**

Lath

Location:

Chases: If chases or recesses are ≥ 50mm wide, fix metal lath extending ≥ 75mm beyond each side of the chase or recess.

Masonry and concrete backgrounds: If scabbling and bonding treatment will not provide a sufficient mechanical key, fix metal lath to provide a key.

Metal and other non-porous backgrounds: Fix metal lath to provide a key.

Installation:

General: Run the long way of the mesh across supports with strands sloping downwards and inwards from the intended face of the plaster.

Fixing: Mechanically fix at ≤ 150mm centres.

Laps: Tie with 1.25mm galvanized wire ≤ 150mm. Do not stop edges of sheets at corners but bend around.

On solid backgrounds: Space the lath ≥ 5mm clear of the background.

Support spacing: ≤ 400mm.

4 APPLICATION

4.1 PLASTERING

Scratch-comb each base coat in two directions when it has stiffened.

Metal lath: Press the plaster through the apertures of expanded metal lath and wings of beads.

Finishing treatments

Plain:

Bag: To be a finish mainly free from sand by rubbing the finish coat with a Hessian pad when it has set firm.

Carborundum stone: To be a smooth finish free from sand by, rubbing the finish coat with a fine carborundum stone when it has set hard.

Foam float: To be an even surface by a wood or plastic floating the finish coat on application and finishing with a foam float to a fine sand textured finish.

Steel trowel: To be a smooth dense surface by steel trowelling which is not glass-like and is free from shrinkage cracks and crazing.

Wood or plastic float: To be an even surface by wood or plastic floating the finish coat on application.

Joining up

If joining up is required, ensure joints will be imperceptible in the finished work after decoration.

Movement control joints

General: Provide movement control joints in the finish to coincide with movement joints in the background. Ensure that the joint in the background is not bridged during plastering.

Depth: Extend the joint right through the plaster and reinforcement to the background.

Width: 3mm, or the same width as the background joint, whichever is greater.

Damp-proof courses: Do not continue plaster across damp-proof courses.

Plastering on metal lath: Provide movement joints to divide the plastering area into rectangular panels ≤ 10 m².

V-joints: Provide V-joints, cut right through the plaster to the background, at the following locations:

Abutments with metal door frames.

Abutments with other finishes.

Junctions between different backgrounds.

Plaster thickness

Conform to the **Plaster thickness** table at the end of this Section.

Temperature

If the ambient temperature is ≤ 10ºC or ≥ 30ºC ensure that the temperature of mixes, backgrounds and reinforcement are, at the time of application, ≥ 5ºC or ≤ 35ºC.

4.2 COMPLETION

Curing

General: Prevent premature or uneven drying out and protect from the sun and wind.

Keeping moist: If a proprietary curing agent is not used, keep the plaster moist as follows:

Base coats and single coat systems: Keep continuously moist for 2 days and allow to dry for 5 days before applying further plaster coats

Finish coats*:* Keep continuously moist for 2 days.

Mixes table

Mix type		Application	Upper and lower limits of proportions by volume			
			Gypsum	Cement	Lime	Sand
Cement render coats in: Single or multi-coat systems with integral finishing treatments Base coats in multi-coat systems with cement or gypsum finishes	CRS	Dense and smooth concrete and masonry Thrown finishing treatments Tiled finishes Gypsum finishes Cement finishes	- -	1 1	0 0.5	3 4.5
	CRM	Clay or concrete masonry	- -	1 1	0.5 1	4.5 6
	CRW	Lightweight concrete masonry and other weak backgrounds	- -	1 1	1 2	6 9
Cement finish coats	CRF	Cement render base coats	- -	1 1	1 2	1.5 2
Gypsum finish coats	GPF	Cement render base coats	3 1	- -	1 3	- -

Plaster thickness table

Plaster	Application	Upper limit of thickness (mm)			
		Single coat systems	Multi-coat systems		
			Base coat(s)	Finish coat	System
Cement render base coats and cement or gypsum finish coats	On smooth dense concrete and masonry	12	10	4	13
	On clay and concrete masonry and other backgrounds	15	13	4	16

270 TILING

1 GENERAL

1.1 CROSS REFERENCES

General
Refer to the *Materials and Finishes* worksection and *Colour Schemes*.

Related worksections
Refer to:

Waterproofing;

Linings;

Brick and Block Construction;

Concrete.

1.2 STANDARDS

Ceramic tiles
General:

To AS 4662;

ISO 13006 (in conjunction with AS 4459.1 and AS 4459.2) for dimensional tolerances, surface quality, physical and chemical properties relevant to the product type.

Slip resistance
Classification: To AS 4586.

Laying
General: To AS 1884.

2 QUALITY

2.1 INSPECTION

Witness points
Give sufficient notice so that inspection may be made at the following stages:

Substrate immediately before tiling.

Initial and trial set-outs.

2.2 ALTERNATIVES AND SAMPLES

Tile finishes to conform to the physical characteristics of approved samples, and to be within the limits of any sample range of variation in colour, pattern, and the like.

Where the tile finish is specified as a proprietary item the Contractor shall obtain and submit samples for approval if required.

Submit labelled samples of tiles, including fittings, accessories, grout and sealants, illustrating the range of variation in colour and finish if requested.

If for any reason the specified product becomes unavailable, request an alternative to be nominated through the Principal.

If alternatives to the specified product are proposed by the Contractor, submit labelled samples of resilient finishes illustrating the range of colour, pattern or texture as seen in the finished work.

2.3 TESTING

The Contractor is to provide tile slip-resistance information and certified test reports from a certified testing facility to demonstrate the tile type to be installed has been tested in accordance and complies with AS 4586.

3 MATERIALS AND COMPONENTS

3.1 MARKING

Identification
Deliver materials to the site in the manufacturer's original sealed containers legibly marked to show the following:

Manufacturer's identification.

Product brand name.

Product type.

Dimensions and quantity.

Product reference code and batch number.

Date of manufacture.

Material composition and characteristics such as type, colour, pattern and slip resistance.

Handling and installation instructions.

3.2 TILES AND ACCESSORIES

Wall tiles
Type: Fully vitrified ceramic.

Floor Tiles
Type: Fully vitrified ceramic.

Features
Floor Tiles for this application shall:

Have slip resistance ratings in accordance with Table 1;

Have an easily maintained, 'mop over' finish;

Be domestic in appearance and of a neutral colour and design which will minimise the show of marks and stains;

For bathrooms, tiles should be of an appropriate size to achieve sufficient falls. (nom. 300x300mm)

Texture, profile and tile size should be used to achieve effective slip resistance and ease of cleaning; and

White or very light-coloured tiles are not acceptable.

Stair nosings
Provide purpose-made non-slip stair nosings to stairs, compliant to AS 1428.1 for access and luminance contrast.

Material: Extruded aluminium with carborundum inserts, mechanically fixed and adhered to manufacturers' installation requirements.

Slip resistance: Nosing Strip: R11/P4 min.

Tiles nominal sizing
Floor tiles (wet areas): 300 x 300mm nominally;

Floor tiles (general areas): 450 x 450mm nominally;

Wall /Splashback/Skirting tiles – min. to max. sizing (100 to 200mm) x (100 to 200mm) sq. or (75 to 100mm) x (200 to 300mm) rect; 50 x (50 to 300mm) where tile height required is <100mm.

Exposed edges
In positions where the edge is exposed provide purpose-made border tiles with the exposed edge (whether round, square or cushion) glazed to match the tile face. If such tiles are not available, mitre tiles on external corners.

Accessories
Provide tile accessories which match the composition, colour and finish of the surrounding tiles.

Shower Niche
Where specified elsewhere in this specification or the project documentation, provide built-in recessed shower niche.

Location: to all shower and bath recess.

Platinum Level accommodation:

Refer: to drawings and AS 1428.1, Figure 48 for positioning.

General, Silver and Gold Levels of accommodation:

Refer: to drawings for positioning.

Size: 340mm W x 240mm H x 70mm D (nominal).

To: AS 3740

Construction: Support all faces of the recess. Provide a proprietary waterproof tile ready niche liner, and tile to match adjacent wall. Fall base of recess to shed water to shower/bath. Flash all junctions and waterproof all surfaces. Match niche size to whole tile module to limit tile cuts/grout lines, where possible.

Number required:

1 to each shower and bath recess.

Coves, nosings and skirtings
Provide matching stop ends and internal and external angle tiles moulded for that purpose.

3.3 ADHESIVES

General
Standard: To AS ISO 13007.1.

PVA based adhesives: Do not provide in wet areas or externally.

3.4 SEAMLESS WATERPROOF MEMBRANE

Refer *Waterproofing* worksection.

3.5 MORTAR

Materials
Cement type to AS 3972: GP.

White cement: Iron salts content < 1%.

Off-white cement: Iron salts content < 2.5%.

Lime: To AS 1672.1.

Sand: Fine aggregate with a low clay content selected for grading.

Water: To AS 3958.1.

Bedding mortar
Proportioning: Select proportions from the range 1:3 - 1:4 cement:sand to obtain satisfactory adhesion. Provide minimum water.

Mixing: To AS 3958.1.

3.6 GROUT

Type
Cement based proprietary grout: Mix with water. Fine sand may be added as a filler in wider joints.

Portland cement based grout: Mix with fine sand. Provide minimum water consistent with workability.

For joints < 3mm: 1:2 cement:sand.

For joints > 3mm: 1:3 cement:sand.

Pigments
Pigments for coloured grout: Provide colourfast fillers compatible with the grout material. For cement-based grouts, provide lime-proof natural or synthetic metallic oxides compatible with cement.

3.7 SEALANTS

Use a proprietary non-hardening, mould resistant, one-part silicone or polyurethane sealant.

4 EXECUTION

4.1 SUBSTRATES

Drying and shrinkage
Before tiling, allow at least the following times to elapse (for initial drying out and shrinkage) for these substrates:

Concrete slabs: 42 days.

Concrete blockwork: 28 days.

Toppings on slabs and rendering on blockwork: A further 21 days.

Preparation
Suitably prepare substrates to receive the bedded finish, including the following:

Remove deleterious and loose material and leave the surface dust-free and clean.

For mortar bedding, wet the substrate as necessary to achieve suitable suction. Alternatively apply a bonding agent to the substrate to improve adhesion.

4.2 SEAMLESS WATERPROOF MEMBRANE

Proprietary item
Acrylic, polyurethane or rubberised liquid based membrane.

Refer: *Waterproofing* worksection.

4.3 FLOOR TILING

Application
Provide tiling to rooms nominated in *Table 1 - Standard and Acceptable Floor Finish Types / Slip Resistance by Room and Accommodation Level.*

(note: cross-reference sections *270 Tiling* and *300 Carpets).*

4.4 TILING GENERALLY

Sequence
Fix wall tiles before floor tiles.

Cutting
Cutting: Cut tiles neatly to fit around fixtures and fittings, and at margins where necessary. Drill holes without damaging tile faces. Cut recesses where necessary for fittings such as soap holders. Rub edges smooth without chipping.

Laying (General)
Laying: Butt up to returns, frames, fittings, and other finishes. Strike and point up beds where exposed.

Laying (Openings and windows)
Return tiles into sills and reveals of openings and windows.

Splashbacks
Tiles to extend 300mm minimum. Above kitchen bench top (or to underside of overhead cupboards or window sill/reveal. Tile selection to be easy-clean and be resistant to heat/shatter/fire behind cooktop/range.

Variations
If necessary, distribute variations in hue, colour, or pattern uniformly, by mixing tiles or tile batches before laying.

Protection
Floor tiles: Keep traffic off floor tiles until the bedding has set and attained its working strength.

Cleaning: Keep the work clean as it proceeds and protect finished work from damage.

4.5 SETTING OUT

General

Joint widths: Set out tiles to give uniform joint widths within the following limits:

Internal ceramic tiling: 1.5 - 3mm.

External ceramic tiling: 4 - 9mm.

Mosaic tiling: Nominal 2mm or as dictated by pattern.

Quarry tiling: 6 - 12mm.

Vitrified floor tiling: 3 - 5mm.

Joint alignment: Set out tiling with joints accurately aligned in both directions and wall tiling joints level and plumb, to a tolerance of ± 4mm in 2 m from the design alignment.

Margins: Provide whole or purpose made tiles at margins where practicable, otherwise set out to give equal margins of cut tiles. If margins less than half tile width are unavoidable, locate the cut tiles where they are least conspicuous.

Fixtures: If possible, position tiles so that holes for fixtures and other penetrations occur at the intersection of horizontal and vertical joints or on the centre lines of tiles.

Continue tiling to full extent behind and under fixtures such as WC pans and under laundry tub cabinets.

In the kitchen continue floor tiling under benches with removable cupboards, below cook tops and sink and into alcoves such as the refrigerator and stove recess and pantry.

Before tiling ensure that fixtures interrupting the tile surfaces, such as bathtubs and upstands, are accurately positioned in their designed or optimum locations relative to the tile layout.

4.6 FALLS AND LEVELS

General

Step Down: Allow for minimum structural set down of min. 100mm at ground level slabs where floor falls to the shower waste in bathrooms with hobless showers.

Elsewhere allow 50mm or as otherwise shown on the Drawings or directed by the Superintendent.

In the case of bathrooms with hob-shower on upper storey suspended slabs, stepdown may be omitted – provide revised tile-bed in lieu.

Comply with the requirements of AS 3740 Appendix C.

Grade floor tiling to even and correct falls as indicated in the Drawing Details.

Falls applicable as designated in Silver, Gold and Platinum Levels accommodation bathrooms to comply with the 'Design Standards'.

Unless indicated otherwise on the drawings, in step-free bathrooms provide:

- Fall between 1:60-1:80 in shower areas with a central waste, a fall between 1:50 and 1:90 in shower areas with a linear waste and a fall between 1:80 and 1:100 to the remainder of the facility.

Where falls are not required, lay level.

Threshold from main bathroom floor into the shower recess is required to be step-free for accessibility

Conventional Floor Waste Drainage System

Falls to hobless shower outlets: Fall whole of floor to the shower recess perimeter. Any intermediate floor waste, if present, to be set within the level of the overall fall without creating a secondary fall to that waste. Commence the fall from the furthest point of the room and doorway to obtain maximum fall to the floor waste.

Linear Floor Waste Drainage System

Falls to hobless shower outlets: Fall whole of floor to the Linear Floor Waste Drainage System adjacent shower recess perimeter. Orientate long axis of floor waste parallel to entrance threshold of bathroom/ensuite. Commence the fall from the furthest point of the room and doorway to obtain maximum fall to the floor waste.

Deviation: Maximum deviation of the finished floor level between points of contact under a 2 m straight edge laid in any direction on an area of uniform grade to be 1:300 or 3mm, whichever is the lesser.

Change of finish: Maintain finished floor level across changes of floor finish including carpet.

4.7 BEDDING

Preparation of tiles

Adhesive bedding: Fix tiles dry; do not soak.

Mortar bedding: Soak porous tiles in water for half an hour and then drain until the surface water has disappeared.

Bedding

Use bedding methods and materials which are appropriate to the tile, the substrate, the conditions of service, and which leave the tile firmly and solidly bedded in the bedding material and adhered to the substrate. Form falls integral with the substrate.

Thin adhesive beds

General: Provide only if the substrate deviation is less than 3mm when tested with a 2 m straight edge. Cover the entire tile back with adhesive when the tile is bedded.

Thickness: 1.5 - 3mm.

Thick adhesive beds

General: Provide on substrates with deviations up to 6mm when tested with a 2 m straight edge, and with tiles having deep keys or frogs.

Nominal thickness: 6mm.

Mortar beds

For floor tiles: Either lightly dust the screeded bed surface with dry cement and trowel level until the cement is damp, or spread a thin slurry of neat cement, or cement-based thin bed adhesive, on to the tile back. Do not use mortar after initial set has occurred.

Minimum thickness: 25mm at low point.

For wall tiles on block masonry: Apply the bed to the substrate as a floated coat, bring up to a true surface with a wood float and allow to stiffen for up to 2 hours. Then either apply a back-up skim coat (1 - 2mm thick) of 1:2 mortar to the bed, or butter the tile with 1:2 mortar or a cement based thin bed adhesive, before applying the tile to the bed.

Nominal thickness: 15mm.

Thick reinforced beds: Place mortar bed in two layers and incorporate the mesh reinforcement in the first layer.

4.8 FINISHES

General requirements

The following general requirements shall be applied for the selection and installation of ceramic tiles:

heavy domestic or light commercial quality hard wearing, long life and low maintenance finish that is resistant to damage with an easily maintained 'mop over' finish for domestic applications;

colours shall be selected to intentionally avoid an institutional appearance; this may also be achieved with the addition of border tiles;

colours (including grout) shall be neutral to minimise show of marks and stains;

fixed to substrate with a manufacturer approved adhesive;

thoroughly and neatly grouted with similar coloured flexible manufacture approved grout product;

edges and junctions thoroughly and neatly sealed with a similar coloured manufacturer approved sealant product;

whole tiles should be used as much as possible;

where cut tiles are necessary, they should be located as unobtrusively as possible and typically should not be less than a half tile;

the 'levelling' tile course shall be at the bottom of the wall, with the cut to the bottom; and

all joint lines, including mitres, shall be straight and of even width and align with the abutting tile. Where alignment is not possible, the misalignment shall be consistent.

Wet area floor tiles

The ceramic tiles general requirements and the following criteria shall be applied for the selection and installation of wet area floor tiles:

maximum acceptable size is 200 x 200mm to achieve sufficient falls;

A smaller tile size may be used in the shower recess to assist in achieving the greater falls required;

minimum acceptable size is 50 x 50 mm;

5 JOINTS

5.1 MOVEMENT JOINTS

General

Location: Provide movement joints:

over structural (isolation, contraction, expansion) joints;

at internal corners;

at junctions between different substrates; and

to divide large, tiled areas into bays, maximum 5 m wide, maximum 16 m^2.

Depth of joint: Right through to the substrate.

Sealant width: 6 - 25mm.

Depth of elastomeric sealant: One half the joint width, or 6mm, whichever is the greater.

Movement joint materials

Preformed strip: A proprietary expansion joint consisting of a neoprene filler sandwiched between plates with lugs or ribs for mechanical keying. Set flush with the finished surface.

Sealant: Two-pack self-levelling non-hardening mould resistant, one-part silicone or polyurethane sealant applied over a backing rod. Finish flush with the tile surface.

Floors: Trafficable.

Backing rod: Compressible closed cell polyethylene foam with a bond-breaking surface.

5.2 GROUTED AND CAULKED JOINTS

Grouted joints

General: Commence grouting as soon as practicable after bedding has set. Clean out joints as necessary before grouting.

Face grouting: Fill the joints solid and tool flush. Clean off surplus grout. Wash down when the grout has set. When grout is dry, polish the surface with a clean cloth.

Edges of tiles: Grout exposed edge joints.

Epoxy grouted joints: Ensure that tile edge surfaces are free of extraneous matter such as cement films or wax, before grouting.

Grouting mosaics: If paper faced mosaics are to be bedded in cement mortar, pre-grout the sheeted mosaics from the back before fixing. After fixing, rub grout into the surface of the joints to fill any voids left from pre-grouting. Clean off surplus grout. When grout has set, wash down. If necessary, use a proprietary cement remover.

Caulked joints

General: Provide caulked joints filled with sealant and finished flush with the tile surface as follows:

Where tiling is cut around sanitary fixtures.

Around fixtures interrupting the tile surface, for example pipes, brackets, bolts and nibs.

At junctions with elements such as window and door frames and built-in cupboards.

At internal corners.

Width: 5mm.

Depth: Equal to the tile thickness.

5.3 JOINT ACCESSORIES

Floor finish dividers

General: Finish tiled floors at junctions with differing floor finishes with a non-corrosive metal dividing strip suitably fixed to the substrate, with top edge flush with the finished floor. Where changes of floor finish occur at doorways make the junction directly below the closed door.

Material: Aluminium angle.

Where a 90^{O} or other change in direction of the separating strip presents a sharp prone corner, use a rounded D-strip to minimize injuries.

Weatherbars

General: Provide a non-corrosive metal weatherbar in tiling which occurs under external doors, wherever the external paving is less than 25mm below the internal floor finish at the junction, to stand up at least 10mm above the tile surface.

Material: Aluminium.

6 COMPLETION

6.1 COMPLETION

Replace any cracked, chipped or otherwise damaged tile, and any tiles improperly laid (for example drummy tiles).

Clean the tiled surface with an appropriate tile cleaning agent, and polish.

Maintenance manual

Submit a maintenance manual naming the brand and type of tile and setting out the manufacturer's recommendations, for its use, care and maintenance to retain slip resistance, in the domestic situation. Include the names and addresses of the suppliers and manufacturers of each component.

TABLE 1: Standard and Acceptable Floor Finish Types / Slip Resistance by Room and Accommodation Level

Room	Slip Resistance	General, Silver, and Gold Levels of accommodation			Platinum Level accommodation		
		Tiles	Vinyl	Carpet	Tiles	Vinyl	Carpet
Bedrooms	P2/R9	Acceptable	Standard	Generally N/A *	N/A	Standard	Generally N/A *
Living, Dining, Hall	P2/R9	Acceptable	Standard	N/A	N/A	Standard	N/A
Kitchen	P2/R9	Acceptable	Standard	N/A	N/A	Standard	N/A
Bathroom Combined Bathroom and Laundry	P3/R10	Standard	Acceptable	N/A	Standard	Acceptable	N/A
Separate Laundry and Separate Toilet	P3/R10	Standard	Acceptable	N/A	Standard	Acceptable	N/A

* Carpet not to be provided unless by exception when identified in the Project Brief and/or project specific design requirements.

280 FLOOR SANDING

1 GENERAL

1.1 CROSS REFERENCES

General

Refer to the *General Requirements* worksection.

Related worksections

Refer to the following worksection:

Painting for clear finish.

2 QUALITY

2.1 SUBMISSIONS

Installation

Finishing: Submit proposals for finishes.

3 EXECUTION

3.1 GENERAL

Type

Carpeted or resilient finished: Basic sanding.

Clear finished: Fine sanding. Stop with matching filler.

Preparation

Punch nails 3mm below the surface. Remove tacks. Fill open grained timber with materials compatible with those used in subsequent finishing operations.

3.2 STRIP FLOOR SANDING

Stopping

Oil putty: Stop immediately before the last cut in basic sanding.

Basic sanding

General: Remove irregularities due to capping or mismatching of the boards, using drum-type sanding machines, and coarse abrasive.

Uneven or hard flooring: First cut at 45º to the length of the boards, second cut at 90º to the first cut, and third cut parallel to the length of the boards.

Even or mild flooring: First cut at 45º to the length of the boards, and second cut parallel to the length of the boards.

Boundary areas: Bring to the same surface condition as the main sanded area, using disc sanding and coarse abrasive.

Inaccessible areas: Hand scrape to produce an even, plane surface.

Fine sanding

Removal of scratch marks: After basic sanding, cut twice parallel to the length of the boards. For the first cut use an intermediate abrasive, and for the second cut use a fine abrasive.

Boundary areas: Bring to the same surface condition as the main sanded area, using disc sanding and fine abrasive.

Inaccessible areas: Hand scrape to produce the same surface condition as the main sanded area.

3.3 CROSS-GRAIN FLOOR SANDING

Stopping

Oil putty: Stop immediately before the last sanding cut.

Basic sanding

General: Remove irregularities caused by cupping or mismatching of the blocks, using drum type sanding machines, and coarse abrasive.

Uneven or hard flooring: First cut at 45º to the direction of the grain of the wood, second cut at 90º to the first cut, third cut at 45º to the first cut, and fourth cut at 90º to the third cut.

Even or mild flooring: First cut at 45º to the direction of the grain of the wood, second cut at 45º to the first cut, third cut at 90º to the second cut.

Boundary areas: Bring to the same surface condition as the main sanded area, using disc sanding and coarse abrasive.

Inaccessible areas: Hard scrape to produce an even, plane surface.

Fine sanding

Removal of scratch marks: After basic sanding, cut twice using an intermediate abrasive, parallel to the last basic sanding cuts, then cut twice in that direction using a fine abrasive.

Boundary areas: Bring to the same surface condition as the main sanded area, using a fine abrasive.

Inaccessible areas: Hand scrape to produce the same surface condition as the main sanded area.

4 COMPLETION

4.1 COMPLETION

Cleaning

Clean free from dust ready for immediate application of liquid finishes.

290 RESILIENT FINISHES

1 GENERAL

1.1 CROSS REFERENCES

General
Refer to the *Materials and Finishes* worksection and *Colour Schemes*.

Related worksections
Refer to the following worksection.

General Requirements.

1.2 STANDARDS

Slip resistance
Classification: To AS 4586.

Laying
General: To AS 1884.

1.3 FIRE HAZARD PROPERTIES

(Note: Fire Hazard properties requirements in this section Part A take precedence over material selections in schedules Part B).

Residential Housing (Class 1 and Class 10 buildings)

Refer to NCC – generally not applicable.

Multi-Residential, Commercial and Public Buildings (Class 2 – 9 buildings).

To comply with NCC – Vol.1 Spec. C1.10 requirements and in particular

Testing: To AS ISO 9239.1

- Fire Resistance: Compliance to AS ISO 9239-1.
- Critical Radiant Flux (CRF in kW/m^2): > 2.2.
- Smoke Development Rate: ≤ 750% minutes.

1.4 CERTIFICATE OF COMPLIANCE

Submit the Certificate of Compliance (with the fire hazard properties) to the Building Certifier for approval, prior to installation.

2 QUALITY

2.1 INSPECTION

Witness points
Give sufficient notice so that inspection may be made at the following stages:

Completion of laying underlay, or substrate preparation if any.

2.2 ALTERNATIVES AND SAMPLES

Sheet vinyl finishes to conform to the physical characteristics of approved samples, and to be within the limits of any sample range of variation in colour, pattern, and the like.

Where the sheet vinyl finish is specified as a proprietary item the Contractor shall obtain and submit samples for approval if required.

If for any reason the specified product becomes unavailable, request an alternative to be nominated through the Principal.

If alternatives to the specified product are proposed by the Contractor, submit labelled samples of resilient finishes illustrating the range of colour, pattern or texture as seen in the finished work.

3 MATERIALS AND COMPONENTS

3.1 MARKING

Identification
Deliver materials to the site in the manufacturer's original sealed containers legibly marked to show the following:

Manufacturer's identification.

Product brand name.

Product type.

Dimensions and quantity.

Product reference code and batch number.

Date of manufacture.

Material composition and characteristics such as volatility, flash point, light fastness, colour and pattern.

Handling and installation instructions.

3.2 SHEET VINYLS

Refer *Colour Schedule*.

Acceptable materials
Unless specified otherwise:

2mm thick approved heterogeneous (layered) sheet vinyl with 0.7mm min wear layer.

2mm thick approved homogenous sheet vinyl.

PUR Wear finish

Slightly textured finish required but no raised profiles acceptable.

Slip resistance – refer to requirements in *Table 1 - Flooring Location / Slip Resistance*.

Wall protection
1.5mm thick approved homogeneous sheet vinyl.

Colour range

Colours will be chosen from the manufacturer's standard colour range of moderate neutral tones to compliment the overall colour scheme.

Edges of sheets
Ensure edges are firm, unchipped, machine-cut accurately to size and square to the face.

Underlays
Hardboard: Standard hardboard Type RD, to AS/NZS 1859.4, manufactured specifically as flooring underlay.

Fibre cement sheet: To AS/NZS 2908.2, Type B, category 2 minimum.

Polyvinyl chloride (PVC)
Unbacked flexible sheet: To AS 2055.1.

Adhesives
Standard: To AS 3553 and to vinyl manufacturer's recommendations.

Volatile Organic Compounds (VOCs)
Use low VOC emitting adhesives and sealants.

Indoor sheet vinyl adhesives and sealants: 50 g/litre or less.

4 EXECUTION

4.1 PREPARATION

Substrate
General: Suitably prepare the substrate to receive the installation, including the following:

Repairs: Make good to the surface finish as necessary. Fill depressions with a suitable filler, and

remove high spots and projections. If necessary, lay a steel-trowelled underlay to concrete substrates.

Where vinyl abuts a thicker material such as ceramic floor tiles or trim, taper the substrate up over 150mm minimum so that finished levels are the same. Use stable material, compatible to the substrate. Do not use MDF, particle board or materials subject to deformation or deterioration if wet.

Fixtures and fittings: Remove door stops and other fixtures and refix in position undamaged on completion of the installation.

Concrete substrates:

Dryness: Test concrete substrates for dryness using the hygrometer test method described in AS 1884 Appendix A. If necessary, provide artificial means for drying out the substrate before installation.

Levelling compound: Where substrate surface levels exceed maximum permissible tolerances, apply a proprietary levelling compound compatible with the adhesive.

Timber, plywood and particleboard substrates: Allow the substrate to achieve equilibrium moisture content before installation.

Underlay
Lay over prepared floors an underlay in accordance with manufacturer's instructions and in accordance with AS 1884.

Wet area (bathrooms, toilets and laundries) underlay - 6mm Versilux or other approved.

Kitchen and kitchen dining area underlay - 5mm proprietary underlay suitable for vinyl or other approved.

Fixing
Install sheet vinyl in accordance with manufacturer's recommendations, including use of recommended adhesive, coverage of adhesive, heavy rolling within 30 minutes of spreading adhesive and method of cleaning of excess adhesive. Use all-over stick method to within not more than 6mm from skirting. Allow 2 days for adhesive to dry.

Cleaning and protection
General: Keep traffic off floors until bonding has set or for 24 hours after laying, whichever period is the longer. Do not allow water in contact with the finish for 7 days.

Reinstatement: Repair or replace faulty or damaged work. If the work cannot be repaired satisfactorily, replace the whole area affected.

Cleaning
Keep the surface clean as the work proceeds.

4.2 SHEET INSTALLATION

Application
Provide sheet vinyls to rooms nominated in *Table 1 - Standard and Acceptable Floor Finish Types / Slip Resistance by Room and Accommodation Level.*

(note: cross-reference sections *270 Tiling* and *300 Carpets*).

Sheet set out
Set out sheets to give the minimum number of joints. Run sheet joints parallel with the long sides of floor areas, vertically on walls.

Continue vinyl to full extent behind and under fixtures such as WC pans and under laundry tub cabinets where applicable.

In the kitchen continue sheeting under benches with removable cupboards, below cook tops and sink and into alcoves such as the refrigerator recess and pantry.

In other areas continue sheeting into cupboards and recesses at floor level.

Junctions
Scribe neatly up to returns, edges, fixtures and fittings. Finish flush with adjoining surfaces.

Wet areas
In wet areas such as bathrooms, cove 100mm up walls. Provide solid backing for coves and nosings.

Minimum radius: 20mm formed in situ.

Turn down into floor wastes and secure.

Change of finish
Maintain finished floor level across changes of floor finish including carpet and ceramic tiles.

Edge finish
Where required provide 20mm PVC quadrant against skirting. Punch and fill nail holes.

At internal doorways and openings in partitions, provide 19mm thick (finished size) hardwood kerb rebated for sheeting and underlay and fixed to align with quadrant to 30mm (finished size) width of kerb where there is no door, otherwise to be such that outer edge of kerb finishes under door.

At external hinged doors, protect vinyl floor edge by 1.6mm thick aluminium or stainless steel or brass angle with unequal legs (approximately 25 x 6mm) set in clear silicone sealant with short leg down between sill and flooring screwed at 150mm maximum centres to timber sub floor with No8 x 25mm countersunk chrome-plated brass or galvanised steel screws. Seal between angle and door sill with clear silicone sealant.

Note: Silver, Gold, and Platinum Level accommodation or where wheelchair access is required, comply with AS 1428.1 for access for maximum allowable difference in floor levels and junctions.

Welded joints
Heat welding: After fixing, groove the seams using a grooving tool and weld the joints with matching filler rod and using a hot air welding gun. When the weld rod has cooled, trim off flush.

Cold welding: Apply seaming compound 100mm wide to the substrate centrally under the seam. Roll the seam until the compound is forced up into the joint. Clean off flush using a damp cloth.

Epoxy jointing: Join seams with epoxy adhesive.

4.3 STAIRS

Vinyl (where applicable)
Preformed: Provide purpose-made vinyl stair finish combining riser, nosing and tread in the one element. Lay each step consecutively with the joint at the bottom of each riser.

Formed in situ: Fit the sheet vinyl to each tread, and to the riser above, in one piece, coved in the angle. Accurately scribe, cut and fit to stair nosings and perimeters.

Stair nosings
Provide Purpose-made non-slip stair nosings to stairs, compliant with AS 4586, including AS 1428.1 for access and luminance contrast. Refer to Section - 220 Hardware for particulars.

Material: Extruded aluminium with carborundum inserts, mechanically fixed and adhered to manufacturers' installation requirements.

Slip resistance: Nosing Strip: R11/P4 min.

4.4 JOINTS AND ACCESSORIES

Junctions
Finish junctions flush with adjoining surfaces. Where changes of floor finish occur at doorways locate the junctions directly below the closed doors.

Accessories
General: Provide purpose-made matching moulded accessories for nosings, coves and skirtings if specified and edge cover strips and finishes at junctions, margins, and angles, if available. Otherwise form accessories from the sheet material. Provide solid backing for radiused coves and nosings.

Cover strips
General: Provide edge cover strips at junctions with different floor finishes and as protection strips to exposed edges.

Metal cover strip: Extruded tapered strip 25mm wide, of the same thickness as the sheet or tile. Fix with matching screws to timber bases or to masonry anchors in concrete bases, at 200mm maximum centres.

UPVC cover strip: Featheredge strip matching the floor finish, fixed with contact adhesive.

Movement joints
Location: Provide movement joints:

over structural (isolation, contraction, expansion) joints; and

at junctions between different substrates.

Depth of joint: Right through to the substrate.

Sealant width: 6 - 25mm.

Depth of elastomeric sealant: One half the joint width, or 6mm, whichever is the greater.

Preformed strip: A proprietary expansion joint consisting of a neoprene filler sandwiched between plates with lugs or ribs for mechanical keying. Set flush with the finished surface.

Sealant: Two-pack self-levelling non-hardening mould resistant, one-part silicone or polyurethane sealant applied over a backing rod. Finish flush with the surface.

Backing rod: Compressible closed cell polyethylene foam with a bond-breaking surface.

Vinyl skirting
Moulded skirting: Moulded PVC feather edge skirting section.

Flat skirting: Cut from 2mm thick sheet matching the floor finish.

Fixing: Scribe as necessary. Mitre corners. Fix to walls with contact adhesive.

Minimum height: 100mm.

Coves and nosings
Location: Where specified in the Materials and Finishes Schedules.

Minimum radius: Formed in situ:

Vinyl finishes: 20mm.

Rubber finishes: 25mm.

5 COMPLETION

5.1 COMPLETION

Maintenance manual
Submit manufacturer's published use, care and maintenance requirements for each type of finish in the domestic situation. State tested slip resistance level on installation.

Cleaning
Clean the finished surface. Buff and polish if recommended by manufacturer. Before handover, mop and leave the finished surface clean and undamaged on completion.

TABLE 1: Standard and Acceptable Floor Finish Types / Slip Resistance by Room and Accommodation Level

Room	Slip Resistance	General, Silver, and Gold Levels of accommodation			Platinum Level accommodation		
		Tiles	Vinyl	Carpet	Tiles	Vinyl	Carpet
Bedrooms	P2/R9	Acceptable	Standard	Generally N/A *	N/A	Standard	Generally N/A *
Living, Dining, Hall	P2/R9	Acceptable	Standard	N/A	N/A	Standard	N/A
Kitchen	P2/R9	Acceptable	Standard	N/A	N/A	Standard	N/A
Bathroom Combined Bathroom and Laundry	P3/R10	Standard	Acceptable	N/A	Standard	Acceptable	N/A
Separate Laundry and Separate Toilet	P3/R10	Standard	Acceptable	N/A	Standard	Acceptable	N/A

* Carpet not to be provided unless by exception when identified in the Project Brief and/or project specific design requirements.

300 CARPETS

1 GENERAL

1.1 CROSS REFERENCES

General
Refer to the *Materials and Finishes* worksection and *Colour Schemes*.

Related worksections
Refer to the following worksection:

General Requirements.

1.2 STANDARDS

Slip resistance
Classification: To AS 4586.

Substrate
General: To AS/NZS 2455.1 or AS/NZS 2455.2, as appropriate.

Laying Carpet
General: To AS/NZS 2455.1.

1.3 FIRE HAZARD PROPERTIES

(Note: Fire Hazard properties requirements in this section Part A take precedence over material selections in schedules Part B).

Residential Housing (Class 1 and Class 10 buildings)

Refer to NCC – generally not applicable.

Multi-Residential, Commercial and Public Buildings (Class 2 – 9 buildings).

To comply with NCC – Vol.1 Spec. C1.10 requirements and in particular:

Testing: To AS ISO 9239.1.

- Fire Resistance: Compliance to AS ISO 9239-1.
- Critical Radiant Flux (CRF in kW/m^2): > 2.2.
- Smoke Development Rate: ≤ 750% minutes.

1.4 CERTIFICATE OF COMPLIANCE

Submit the Certificate of Compliance (with the fire hazard properties) to the Building Certifier for approval, prior to installation.

2 QUALITY

2.1 INSPECTION

Witness points
Give sufficient notice so that inspection may be made at the following stages:

subfloor prior to placing underlay;

completion of hard underlay and/or carpet gripper installation, if any.

2.2 ALTERNATIVES AND SAMPLES

Carpet to conform to the physical characteristics of approved samples, and to be within the limits of any sample range of variation in colour, pattern, and the like.

Where the carpet is specified as a proprietary item the Contractor shall obtain and submit samples for approval if required.

If for any reason the specified product becomes unavailable, request an alternative to be nominated through the Principal.

If alternatives to the specified product are proposed by the Contractor, submit labelled samples of carpet finishes illustrating the range of colour, pattern or texture as seen in the finished work.

3 MATERIALS AND COMPONENTS

3.1 CARPET

Generally specified are of the following types or similar.

Refer to Colour Scheme and Materials and Finishes Schedules for selections.

Application
Provide carpets to rooms nominated in *Table 1 - Standard and Acceptable Floor Finish Types / Slip Resistance by Room and Accommodation Level.*

(note: cross-reference sections *270 Tiling and 290 Resilient Finishes).*

Unless otherwise specified or approved, carpet type to comply with Table A: Carpet Requirements.

Table A: Carpet Requirements

ACCS rating: (minimum)	Residential Extra Heavy Duty.
Fibre Composition:	100% air entangled polypropylene
Colouration:	Solution dyed
Construction (Style):	Level loop (Broadloom)
Pile Height	3mm min to 6mm max. *Platinum Level:* 3mm (+/- 1mm max.)
Textile Backing Height	4mm max.
Backing	Woven synthetic. *Platinum Level:* Impervious synthetic barrier system.
Pile Weight or Density	675 g/m² min
Gauge	1/8 inches max
Stitches per 10cm	31 min
Installation	Direct stick
Spread-of-Flame Index:	≤ 9
Smoke-Developed Index:	≤ 8 if the 'Spread-of-Flame Index' is > 5
Environmental	Quality Assured to ISO 9001 & Environmental Management System 14001

Tolerances
Standard: To AS 1385.

Batching
Ensure that carpet laid in a single area and of a single specified type, quality, colour and design, comes from one manufacturing batch and dye lot.

Anti-microbial treatment
Requirement: Non-metallic, colourless, odourless, positively charged polymer applied during manufacturing to form a molecularly bonded surface to resist bacteria and mould growth.

Insect resistance
Insecticide: Provide carpets and underlays composed entirely of materials either inherently resistant to insect attack, or treated against insect

attack, including by moth and carpet beetle, by application of insecticide to the yarn during the dyeing or scouring process.

Standard: To IWS E-10.

Electrical resistance
Surface or bulk resistance: Provide carpet conforming to AS 2834 clause 2.1.2 when tested to AS 4155.6.

Stain and soil resistance
Requirement: Provide one or more of the following:

Fluoro-treatments: Fluorochemical soil and liquid repelling chemical treatment applied during manufacturing.

Stain blockers: Colourless acid-based dye stainblocker applied to dyed fibres.

VOC limits
Maximum total VOC emission: 0.5 mg/m^2/h.

Compliance: To the Environmental Classification Scheme (ECS) operated by the Carpet Institute of Australia Limited (CIAL).

3.2 UNDERLAYS

Standard
General: To AS/NZS 2455.1- Textile floor covering – Installation practice – General.

Fibre cement underlay
Thickness: 5mm minimum.

Hardboard underlay
Standard: To AS/NZS 1859.4.

Classification: Standard hardboard Type RD, manufactured specifically as flooring underlay.

Thickness: 5.5mm.

Soft underlay
Standard: To AS 4288.

Synthetic foam: High density polymeric foam with reinforced carrier fabric as recommended by the manufacturer for the application.

Rubber: Heavy-duty vulcanised rubber, waffle pattern, with a backing of reinforcing fabric.

Reinforcing fabric: Synthetic such as spun nylon or polyester.

Classification: Heavy commercial.

3.3 ADHESIVES AND TAPES

Standard
General: To AS/NZS 2455.1.

Adhesives
General: Compatible with the floor covering material, and suitable for bonding it to the subfloor as recommended by the carpet manufacturer.

Volatile Organic Compounds (VOCs)
Use low VOC emitting adhesives and sealants.

Indoor carpet adhesives and sealants: 50 g/litre or less.

Hot-melt adhesive tapes
Commercial grade glass fibre and cotton thermoplastic adhesive coated tape 60mm wide on a 90mm wide metal foil base and backed with silicon-coated release paper.

3.4 STRIPS

Preformed gripper strips
General: Commercial grade plywood carpet gripper strip with 3 rows of rust-resistant angled pins of length appropriate to the carpet type.

Size (minimum): 33mm wide x 7mm thick.

Location: At edges, except where edge strips are used. Provide double gripper strips to edges where recommended.

Edge strips
Type: Heavy duty edge strip appropriate to the floor covering type (tackless or adhesive fixed), capable where necessary of accommodating different levels of adjacent floor finishes.

Form: Metal moulding or extrusion, with vinyl inserts.

Colour: Natural metal with black insert.

Location: At exposed edges of the carpet and at junctions with differing floor finishes or finishes of a different thickness. Where edge strips occur at doorways, locate the junctions directly below the closed door.

Note: Silver, Gold and Platinum Level accommodation or where wheelchair access is required, comply with AS 1428.1 for access for maximum allowable difference in floor levels and junctions.

3.5 STAIRS

Carpet (where applicable)
Formed in situ: Fit the carpet to each tread, and to the riser above, in one piece, coved in the angle. Accurately scribe, cut and fit to stair nosings and perimeters.

Stair nosings
Provide purpose-made non-slip stair nosings to stairs, compliant with AS 4586, including AS 1428.1 for access and luminance contrast. Refer to Section - 220 Hardware for particulars.

Material: Extruded aluminium with carborundum inserts, mechanically fixed and adhered to manufacturers' installation requirements.

Slip resistance: Nosing Strip: R11/P4 min.

4 EXECUTION

4.1 SUBSTRATE

Standard
General: To AS/NZS 2455.1 or AS/NZS 2455.2, as appropriate.

Substrate preparation
General: Suitably prepare the substrate to receive the carpet installation, including the following:

Stripping and cleaning: Remove deleterious and loose material, including existing floor coverings and surface treatments which could adversely affect adhesion. Leave the surface dust-free and clean.

Repairs: Make good to the surface finish as necessary. Fill depressions with a suitable filler, and remove high spots and projections. If necessary lay a steel-trowelled underlay to concrete substrate.

Fixtures and fittings: Remove door stops and other fixtures, and refix in position undamaged on completion of the installation.

Concrete substrate: Test concrete substrate for dryness using the hygrometer test method described in AS/NZS 2455.1 Appendix B. If necessary, use artificial means for drying out the substrate before installation.

4.2 LAYING CARPET

Standards

General: To AS/NZS 2455.1

Continuous accessible paths of travel / circulation spaces - Floor or Ground Surfaces (Silver, Gold and Platinum accommodation): To AS1428.1

Application

Provide carpet to rooms nominated in *Table 1 - Standard Floor Finish Types / Slip Resistance by Room and Accommodation Level.*

(note: cross-reference sections *270 Tiling* and *290 Resilient Finishes*).

Setting out

General: Lay the carpet in continuous lengths without cross joins in the body of the area. Where unavoidable cross joins occur at doorways, locate the joins directly below the closed doors.

Partition layout: Confirm that permanent partitions have been installed before starting carpet laying.

Underlays

Use underlays only where specified – Project Specific Schedules.

Joints in underlay: Ensure joints in underlay do not coincide with carpet joints. Do not carry underlay over carpet grippers or edge strips.

Fixing underfelt

To timber floors: Secure underfelt with staples at 100mm centres at edges and joints, in parallel lines 600mm apart.

To concrete floors: Glue continuously at edges and joints with a 100mm wide strip to each piece, and at 600mm centres both ways with 150mm diameter patches.

Seaming methods

Woven carpet: Machine or hand sew. Do not provide glued taped seams.

Tufted carpet: Seam with hot-melt adhesive tape.

Fixing

Permanent stick method: Immediately after laying, and again one hour later, roll the carpet from the centre diagonally towards each edge using a 65 kg multi-wheeled roller. Do not roll foam-backed carpet.

Dual bonded underlay: For use only where underlay is specified. Fix with adhesive between carpet and underlay, and between underlay and subfloor.

Gripping system: Preformed gripper strip and tackless edge strip. Space fixings at 150mm maximum centres.

5 COMPLETION

5.1 COMPLETION

Maintenance manual

Contents: Submit a maintenance manual containing a technical specification of the carpet installation and setting out the manufacturer's recommendations, for its use, care and maintenance. Include the names and addresses of the suppliers and manufacturers of each component.

Standard: To AS/NZS 3733.

Warranties

Minimum 5-year limited wear warranty.

Minimum 5-year anti-stain warranty.

TABLE 1: Standard and Acceptable Floor Finish Types / Slip Resistance by Room and Accommodation Level

Room	Slip Resistance	General, Silver, and Gold Levels of accommodation			Platinum Level accommodation		
		Tiles	Vinyl	Carpet	Tiles	Vinyl	Carpet
Bedrooms	P2/R9	Acceptable	Standard	Generally N/A *	N/A	Standard	Generally N/A *
Living, Dining, Hall	P2/R9	Acceptable	Standard	N/A	N/A	Standard	N/A
Kitchen	P2/R9	Acceptable	Standard	N/A	N/A	Standard	N/A
Bathroom Combined Bathroom and Laundry	P3/R10	Standard	Acceptable	N/A	Standard	Acceptable	N/A
Separate Laundry and Separate Toilet	P3/R10	Standard	Acceptable	N/A	Standard	Acceptable	N/A

* Carpet not to be provided unless by exception when identified in the Project Brief and/or project specific design requirements.

310 PAINTING

1 GENERAL

1.1 CROSS REFERENCES

General

Refer to the *General Requirements* worksection.

1.2 STANDARDS

General

Painting: Comply with the recommendations of those parts of AS 2311 and AS/NZS 2312 which are referenced in this section.

2 MATERIALS

2.1 MATERIALS AND COMPONENTS

Paints

APAS specifications: Provide paints and other materials which are scheduled in the Australian Paint Approvals Scheme “List of Approved Products” as complying with cited APAS specifications.

Quality: Provide premium quality lines.

Low VOC emitting paints

VOC limits for low odour/low environmental impact paint types:

Primers and undercoats: < 65 g/litre.

Low gloss white or light-coloured latex paints for wall areas: < 16 g/litre.

Coloured low gloss latex paints: < 16 g/litre.

Gloss latex paints for timber doors and trims: < 75 g/litre.

Combinations

General: Do not combine paints from different manufacturers in a paint system.

Clear timber finish systems: Use only the combinations of putty, stain and sealer recommended by the manufacturer of the topcoats.

Delivery

Deliver paints to the site in the manufacturer’s labelled and unopened containers. Ensure containers of materials specified by an APAS specification code are labelled accordingly.

Tinting

General: Provide only products which are colour tinted by the manufacturer or supplier.

Tinting by contractor: Add tinters or stainers only if this is without detriment to the durability or aesthetic performance of the product.

Clear floor finishes

Use only products approved by the Built Environment Unit, of the Department of Housing, Local Government, Planning and Public Works.

Putty

General: Oil-based or polymeric based.

Putty for timber finishes: Lacquer or water based. Do not provide oil based or glazing putty.

Toxic ingredients

General: Comply with the requirements of Appendix I Uniform Paint Standard to the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

3 EXECUTION

3.1 PAINTING

Standards

General: To AS 2311 Sections 3, 6 and 7.

Protection of steelwork: To AS/NZS 2312 Sections 5, 8 and 10.

Order of work

Other trades: Before painting, complete the work of other trades as far as practicable within the area to be painted, except for installation of fittings, floor sanding and laying flooring materials.

Clear finishes: Complete clear timber finishes before commencing opaque paint finishes in the same area.

Protection

Fixtures: Remove door furniture, switch plates, light fittings and other fixtures before starting to paint, and refix in position undamaged on completion of the installation.

Adjacent surfaces: Protect adjacent finished surfaces liable to damage from painting operations.

“Wet paint” warning

Place notices conspicuously and do not remove them until paint is dry.

Repair

General: Clean off marks, paint spots and stains progressively and restore damaged surfaces to their original condition. Touch up new damaged decorative paintwork or misses only with the paint batch used in the original application.

Substrate preparation

General: Prepare substrates to receive the painting systems.

Cleaning: Clean down the substrate surface. Do not cause undue damage to the substrate or damage to, or contamination of, the surroundings.

Filling: Fill cracks and holes with fillers, sealants, putties or grouting cements as appropriate for the finishing system and substrate, and sand smooth.

Projections: cut off projections, grind and sand imperfections in substrates, including concrete, to achieve a smooth level surface.

Clear finish: Provide filler tinted to match the substrate.

Paint system and number of coats to repaired or "bare" surfaces to be as for unpainted surfaces

Paint application

Apply the first coat immediately after substrate preparation and before contamination of the substrate can occur. Ensure each coat of paint or clear finish is uniform in colour, gloss, thickness and texture, and free of runs, sags, blisters, or other discontinuities.

Priming before fixing

Apply one coat of wood primer (2 coats to end grain) to the back of the following before fixing in position:

External fascia boards.

Timber door and window frames.

Bottoms of doors.

Associated trims and glazing beads.

Timber board cladding.

Painted fence joints.

Repair of galvanizing
General: For galvanized surfaces which have been subsequently welded, power tool grind to remove all rust and weld splatter. Remove all surface contaminants then immediately prime the affected area.

Primer: Organic zinc rich coating for the protection of steel to AS/NZS 3750.9 Type 2.

3.2 PAINT SYSTEMS

New unpainted interior surfaces
Standard: To AS/NZS 2311 Table 5.1.

New unpainted exterior surfaces
Standard: To AS/NZS 2311 Table 5.2.

Specialised painting systems
Standard: To AS/NZS 2311 clause 5.2 for the following final coats:

High build textured or membrane finishes (B38 to AS/NZS 2311).

2 pack gloss pigmented polyurethane (B44 to AS/NZS 2311).

2 pack epoxy (B29 to AS/NZS 2311).

2 pack water-based epoxy (B29A to AS/NZS 2311).

Paint system description
Final coat: If a paint or clear finish system is referred to only by its final coat (for example by the manufacturer's brand name, or the generic name) provide in addition to the final coat, the appropriate stains, primers, sealers and undercoats, suitable for the substrate and compatible with the finish coat and each other.

No system description given: If a surface is to be painted but no system is nominated select the system from AS 2311 Section 5, using System 1 where a choice is offered.

Number of coats
Unless specified as one coat or two coat systems, each paint system consists of at least 3 coats. Provide additional coats if necessary to:

prepare porous or reactive substrates with prime or seal coats consistent with the manufacturer's recommendations;

achieve the total film thickness or texture; or

achieve a satisfactory opacity.

Tinting
General: Tint each coat of an opaque coating system so that each has a noticeably different tint from the preceding coat, except for top coats in systems with more than one top coat.

Corrosion prevention system to steel door frames and electrical meter boxes
Application:

To external steel door frames where located within 3 km of the sea or salt estuary.

To all steel door frames to bathrooms.

To external faces of steel meter boxes including the back face, before installation against masonry walls.

Prepare and paint all surfaces before installation of the frame and with special attention to the edges, with Durebild STE at 125 microns or approved equivalent. Finish with polyurethane topcoat (Dulux Weathermax HBR or approved equivalent) to the exposed areas at 75 to 100 microns.

Toxic ingredients
General: Comply with the requirements of Appendix I Uniform Paint Standard to the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

Maintenance painting systems
The system and number of coats for previously painted surfaces in good condition to be as that stated herein for unpainted surfaces except that primer/seal coat is not required. The system and number of coats for previously painted surfaces in poor condition to be that as stated herein for unpainted surfaces. Refer 'WORKMANSHIP' herein for substrate preparation of previously painted surfaces.

Proprietary texture coat finishes
Refer to manufacturer's specifications and recommendations for the selected system.

Use paint to APAS specification.

3.3 PAINT FINAL COAT TABLE

Final coat	APAS reference
Interior Enamel (solvent-borne)	
Full gloss	0015/1
Interior Latex	
Gloss	0260/1
Semi-gloss	0260/2
Low gloss	0260/3
Flat	0260/4
Ceiling	0260/5
Exterior Enamel (solvent-borne)	
Full gloss	0015/1
Lightly pigmented (stain) ranch finish	0115
Exterior Latex	
Gloss	0280/1
Gloss - tropical grade	0175
Semi-gloss	0280/2
Flat or Low gloss	0280/3

Final coat	**APAS reference**
Texture Finish	0117/3 system
Low gloss opaque (stain) ranch finish	0280/5
Paving	
Flat	0202
Gloss	0200/2
Semi-gloss	0200/1

3.4 EXTERNAL PAINT SYSTEMS

Surface Identification	**Primer/Sealer** **Undercoat** **Finishing Coat/s** **APAS reference**
External timber to walls, fascias, barges, railings, gables and stringers.	0183 0280/1 0280/1
Timber surfaces to mouldings, sills, doors, windows.	0183 0163/1 0280/1
All fibre cement externally. All fibre cement soffit linings, including ceilings to porches, landings, open verandah, patio, etc. In tropical areas and surfaces subject to mould growth.	0280/2 0175
Upper surfaces only to timber porch, landing, patio, walkway floors, decking to ramps and step treads. Surfaces of stumps and battens. Timber fencing, infills and timber yard screens. Timber Fencing only if specified to be painted in the Materials and Finishes Schedule, Colour Scheme, or on the drawings including posts, rails, palings etc	0280/5
Masonry, concrete, concrete render, blockwork (excl. Tilt up concrete)	0280/2
Surfaces under Concrete Balconies. Paint finish applied to whole of under surface up to drip groove edge. Natural concrete finish from drip groove to outer perimeter of suspended concrete slabs, including exposed edges. Refer drawings.	0117/3 system Refer to Section 310 Painting – 'Proprietary Textured Finish' & 'Paint Final Coat Table'
Paint all vertical surfaces in undercroft carparking, lift lobby areas and especially columns and walls facing street frontages.	0117/3 system Refer to Section 310 Painting – 'Proprietary Textured Finish' & 'Paint Final Coat Table'
Tilt up concrete	0171 0280/2
Galvanised or zincalume steel roof sheeting and accessories, including capping, rainwater tanks, etc (if required – suitable for potable water collection)	0011
Galvanised or zincalume steel (other than roof sheeting, etc), including columns, pipe work railings, balusters, flashings, guttering, steel stringers and lintels.	0134 0280/1
External steel door frames within 3 km of sea or estuary, paint on all surfaces for corrosion prevention before installation. Final coat to visible surfaces.	Refer **Paint Systems** Specification requirements for Corrosion Prevention System
Steel and cast iron (bare not galvanised or otherwise protective plated.)	P-0162/1 (or 2) 0163/1 0280/1
UPVC vent pipes, waste pipes etc.	Primer Not required 0280/2 (or 1)
Line Marking (Carparks / Roadways / Pavement) - White – refer drawings	0202
Pattern / Strip markings (Pedestrian Caution - Carparks / Roadways / Pavement)^^ - Yellow – refer drawings	0202

^^Note: Wheelchair Symbols / Logos **not required** for Accessible (Disabled) car parking bays.

3.5 INTERNAL PAINT SYSTEMS

Location	**Surface**	**Primer/Sealer** **Undercoat** **Finishing Coat/s**
		APAS reference
LIVING AREAS Living Room/Dining Room, Bedrooms, Hallway	Timber surfaces Doors, windows, trims etc Doors: Paint all surfaces including top and bottom	0181 0260/1
	Metal surfaces	0032 0015/1
	Galvanised metal surfaces	0134 0016/1 0015/1
	Concrete masonry and brick surfaces	0171 0260/2
	Wall linings, plasterboard and fibre cement	0172 0260/3
	Wall linings hardboard	0183 0260/3
	Ceilings linings. Plasterboard and fibre cement	0172 0260/5
WET AREAS Kitchen/Bathroom W.C., Laundry, Garage	Timber surfaces Doors, windows, trims etc	0181 0260/1
	Metal surfaces - iron and steel	0032 0015/1
	Metal Surfaces Aluminium	0035/3 0015/1
	Metal door frames to Bathrooms only	Refer Specification Requirements for Corrosion Prevention System
	Galvanised metal surfaces	0134 0015/1
	Concrete masonry and brick surfaces	0172 0260/2
	Wall and Ceilings Linings, Plasterboard and fibre cement	anti-mould 0172 0260/2
	Concrete flooring	Primer not required 0202

3.6 PROPRIETARY TEXTURED FINISH

Apply to the manufacturer's recommendations.

Refer to *Plastering* worksection.

Location: As nominated on drawings.

Substrate	**Under Concrete Off-form surfaces**	**Concrete Block – Flush Face**	**Cement Render**	**Fibre cement sheeting**
Minimal Surface preparation	Primer	Skim Coat	Minor surface preparation	Primer
Texture Application	Roll on Grade mm Profile / pattern	Roll on Grade mm Profile / pattern	Roll on Grade mm Profile / pattern	Roll on Grade mm Profile / pattern
	Trowel on Grade mm Profile / pattern	Trowel on Grade mm Profile / pattern	Trowel on Grade mm Profile / pattern	Trowl on Grade mm Profile / pattern
	Spray on Grade mm Profile / pattern	Spray on Grade mm Profile / pattern	Spray on Grade mm Profile / pattern	Spray on Grade mm Profile / pattern

Substrate	Under Concrete Off-form surfaces	Concrete Block – Flush Face	Cement Render	Fibre cement sheeting
Final Coat				

315 METAL FIXTURES

1 GENERAL

1.1 CROSS REFERENCES

General
Conform to the *General Requirements* worksection.

Related worksections
Conform to associated worksections as follows:

Metals and Prefinishes;

Adhesives, Sealants and Fasteners;

Hardware – Sundry Hardware for proprietary items.

2 QUALITY

2.1 INSPECTION

Witness points
Give sufficient notice so that inspection, if required, may be made of the following:

structural steel assemblies shop fabricated and ready for delivery to the site;

structural steel assemblies erected on site, prior to encasing or cladding.

2.2 SAMPLES

General
Submit samples where specified – Project Specific Schedules, except in the case of detached or duplex accommodation.

Samples may be in the form of a prototype, showing:

Each type of joint.

Each type of finish.

Sections for use in fabricated work.

2.3 SUBMISSIONS

Shop drawings/Typical details
Submit shop drawings or typical details showing the following information:

Details of fabrication and components showing the intended design of the finished product.

Information necessary for site assembly.

3 MATERIALS

3.1 MATERIALS AND COMPONENTS

Metals
Performance: Provide metals suited to their required function, finish and method of fabrication, in sections of strength and stiffness adequate for their purpose.

4 EXECUTION

4.1 CONSTRUCTION GENERALLY

Metals
Performance: Provide metals so that they transmit the loads imposed and ensure the rigidity of the assembly without causing deflection or distortion of finished surfaces.

Incompatible metals: Separate using concealed layers of suitable materials in appropriate thicknesses.

Fasteners
Performance: Provide fasteners so that they do not cause galvanic corrosion.

Materials: Provide fasteners in materials of mechanical strength and corrosion resistance at least equal to that of the lowest resistant metal joined.

To copper and copper alloys: Provide copper or copper-alloy fixing devices only.

To aluminium and aluminium alloys: Provide aluminium alloy or non-magnetic stainless steel fixing devices only.

To stainless steel: Provide appropriate stainless steel materials only.

Fabrication
Workshop: Fabricate and pre-assemble items in the workshop wherever practicable.

Edges and surfaces: Keep clean, neat and free from burrs and indentations. Remove sharp edges without excessive radiusing.

Tube bends: Form bends in tube without visibly deforming the cross section.

Colour finished work: Match colours of sheets, extrusions and heads of fasteners.

Thermal movement: Accommodate thermal movement in joints and fastenings.

Fabrication tolerances
Structural work generally: ± 2mm.

Joints
General: Fit joints to an accuracy appropriate to the class of work. Finish visible joints made by welding, brazing or soldering using grinding, buffing or other methods appropriate to the class of work, before further treatment.

Self-finished metals: Free of surface colour variations, after jointing.

Joints: Fit accurately to a fine hairline.

4.2 WELDING AND BRAZING

General
Site welds: Do not weld on site where steelwork is exposed externally.

Quality: Provide finished welds which are free of surface and internal cracks, slag inclusion, and porosity.

Galvanizing: Do not weld galvanised components after hot dip galvanising.

Butt weld quality level: Not inferior to the appropriate level recommended in AS 1665 Appendix A.

4.3 STAINLESS STEEL FABRICATION

Surface finish
Type: Refer to Project Specific Schedules.

Welding stainless steel
Certification of welders: To AS 1796.

4.4 HANDRAILS AND BALUSTRADES

Design to the NCC and Australian Standards:

AS/NZS 1170 Structural Design Actions.

AS 1428.1 Design for access and mobility.

Hand rails and top rails to balustrades to be 50mm diameter where for use by disabled people.

4.5 STEEL TUBE BALUSTRADE

Description
Handrails, intermediate rails and standards fabricated from medium wall thickness steel tube to AS 1074, with predrilled fixing brackets for attachment to the building structure, welded together and galvanised after fabrication.

Fixing to structure
Galvanised bolts in masonry anchors or galvanised coach screws in timber, or other approved, as appropriate.

4.6 STEEL BALUSTRADE

Description
Handrails, intermediate rails and standards fabricated from steel hollow sections to AS 1163, plate to AS/ANZ 3678 and bars to AS/ANZ 3679, with pre-drilled fixing brackets for attachment to the building structure, welded together and galvanised after fabrication.

Fixing to structure
Galvanised bolts in masonry anchors or galvanised coach screws in timber, or other approved, as appropriate.

4.7 ALUMINIUM BALUSTRADE

Description
An approved prefinished aluminium balustrading system consisting of handrail, bottom rail, balusters, spurs, and accessories necessary to complete the system including fixings, assembled and fixed in place. System may be welded or screwed.

Finish
Finish to all aluminium balustrading and brackets to be either anodised or powder coated. Refer to Schedules and colour schedule for requirements.

Fixing to structure
Stainless 316.

4.8 STEEL STAIR STRINGS

Description
Strings fabricated and welded from mild steel rolled sections with predrilled brackets and fixing plates for attachment to the building structure and to support precast concrete stair treads, aluminium treads, or timber hardwood treads.

Protective finish
Hot dipped galvanised.

Fixing to structure
Refer Drawings.

4.9 SUNSCREENS AND PRIVACY SCREENS

Requirement
Refer to Schedules and Drawings.

Comply with:

Social Housing Design Guide;

Local Authority;

NCC;

AS 1170.

4.10 GARDEN SHEDS AND LOCKERS

Where shown on the drawings and where specified, provide a proprietary garden shed or locker.

Construction: Lightweight steel frame work supporting profiled steel cladding. Colorbond, Multicoat or approved alternative, with matching sliding or hinged door/s. Fit door/s with a galvanised pad bolt or hasp and staple to receive a padlock by tenant.

Where an accessible shed is specified in Platinum Level accommodation and where wheelchair access is required, provide sliding door access with clear access of 920mm minimum.

Fixings and prone surfaces to be free of sharp protrusions such as screw points or cut metal.

Bolt to concrete slab with the perimeter bottom rail set down to provide smooth access at door way for wheeled equipment.

Preferred sizes as specified to meet site requirements.

Apartments, Cluster Housing and Attached Housing:

(Note: applicable to dwellings on ground level with private yard access only)

Garden store:

. min. 2.0 sq m. (min. 2100mm wide).

The garden locker must be located and accessed within the dwellings private outdoor space.

Detached Houses, Duplexes and Dual Occupancy:

Garden store:

. min. 3.5 sq m. (max. 1800mm high).

Position the shed/store away from the dwelling in the private yard so not visible from the street. A path is not required to the shed.

4.11 CLOTHES LINES

Refer to Schedules for project requirements.

Proprietary items
Lines: PVC coated.

The size of clothes line to be supplied will be determined by design, available space and manufacturers range.

Fold down
Finish: Powder coated.

Colour: From manufacturer's standard range.

Dwelling Type	Nominal Size
Studio Apartment	7.5 lin.m
1 & 2 Bedroom Unit	15 lin.m.
3 Bedroom Unit	30-40 lin.m.
4 & 5 Bedroom Unit	40 lin.m.

Retractable
Finish: Powder coated cabinet.

Colour: From manufacturer's standard range.

Size: Refer Schedules.

Installation
Install Posts in 20 MPa no fines concrete base 200 x 200 x 600mm (minimum).

With 25mm weathered top when located in grassed/planting areas and at concrete surface;

In paved areas: paving to be cut in around posts.

Clearance between ground and underside of line frame or hoist arms (when hoist is wound down to lowest position) to be:

on level sites: 1800mm;

on sloping sites: 1700mm min. to 2000mm max. Excavate or fill where necessary or as directed by Superintendent to obtain clearances;

on balconies: 1800mm or as directed by Superintendent or as detailed.

4.12 SUNDRY FIXTURES

Refer to Hardware – Sundry Hardware Schedule and Multi Trade Schedules - Materials and Finishes Schedule for details of:

Street and Unit Numbers.

Letter Boxes:

- One per unit.
- Australia Post Standard.
- Powdercoated Aluminium (Mail In Front, Opening Back - MIFOB) Latch Lock with provision for padlock locking only.

4.13 VEHICLE HEIGHT RESTRICTION BARS

Refer to the drawings for location and details.

Provide suspended height restriction bar/s, at locations where vehicles first enter an under-building (undercroft) carparking area, stipulating the maximum height clearance to prevent contact with overhead obstruction/s, while maintaining minimum heights required for vehicle clearances, as follows:

Typical Height clearances required:

Carpark entrance, paths of vehicle travel: 2200mm min.

Accessible parking spaces: 2500mm min.

Common parking spaces: 2100mm min.

Bar/s to be proprietary aluminium powder-coated safety yellow with reflective diagonal stripes, with clearly visible text “LOW CLEARANCE” including the specified height in black letters on a white background, complete with hot dipped galvanised steel chains and hangers.

4.14 ASSET PROTECTION (CARPARKS AND DRIVEWAYS)

General: Provide proprietary steel guards to protect services, downpipes, and the like, at locations exposed to damage from vehicles and other heavy impacts.

Locations: Carparks and vehicle accessways/driveways.

Finish: Hot dipped galvanised.

4.15 SHARED ZONE (PARKING BAY) BOLLARD

Standards: To AS2890.6; AS/NZS 1170.1.

Fixed bollard

Provide proprietary steel ‘internal fixed base plate’ type bollard (Leda Securapost - SB80B, or approved alternative), to shared zones adjacent nominated ‘Accessible’ car parking bays, secured to carpark concrete slab with stainless steel masonry anchors. Install in accordance with manufacturer’s recommendations.

Location/s: Refer to Drawings and/or as directed by Superintendent.

Description: Steel circular pipe 80NB.

Finish: Powder-coated safety yellow.

Removable bollard

When required, provide proprietary steel ‘lift and remove’ type lockable bollard (Leda SecuraPost - BB80P, or approved alternative), to shared zones adjacent nominated ‘accessible’ car parking bays. Include cast-in sleeve (Leda - SHCP80H with hinged cover plate, or approved alternative) and lockable bollard storage sleeve/s (for when not in use). If installing sleeve into set concrete slab by core-drilling, ensure the slab is designed to accommodate components without penetrating through slab base, and able to withstand loads imposed by possible vehicle impact to bollard. Install in accordance with manufacturer’s recommendations.

Location/s: Refer to Drawings and/or as directed by Superintendent.

Description: Steel circular pipe 80NB.

Finish: Powder-coated safety yellow.

4.16 BICYCLE PARKING

Standard: To AS 2890.3.

Provide proprietary steel bicycle hitch rail (Leda SecuraBike fixed rail - BR85B, or approved alternative).

Location/s: Refer to Drawings and/or as directed by Superintendent.

Description: Steel pipe 40NB fabricated with base plates for surface mount.

Finish: Hot dipped galvanised post-fabrication.

Capacity: 2 bikes per rail.

Fasteners: Stainless steel masonry anchors, flush head or finished with matching dome nuts.

320 TIMBER FIXTURES

1 GENERAL

1.1 CROSS REFERENCES

General
Refer to the *General Requirements* section, *Colour Scheme* and Project Specific Schedules.

Related sections
Refer to the following sections:

Hardware;

Plumbing and Drainage for sanitary fittings;

Tiling;

Adhesives, Sealants and Fasteners;

Metals and Prefinishes.

2 MATERIALS AND COMPONENTS

2.1 MATERIALS AND COMPONENTS

Joinery timber
Seasoned hardwood: To AS 2796.3.

Grade: Select.

Cypress pine: To AS 1810.

Australian grown conifers, other than radiata pine and cypress pine: To AS 1786.

Plywood
Interior use generally: To AS/NZS 2270.

Interior use, exposed to moisture: To AS/NZS 2271.

Hardboard
Standard: To AS/NZS 1859.4.

Particleboard
Standard: To AS/NZS 1859.1.

Melamine overlaid particleboard: Particleboard overlaid on both sides with low pressure melamine.

Classification: HMR (Highly Moisture Resistant).

Medium density fibreboard
Standard: To AS/NZS 1859.2.

Medium density fibreboard overlaid on both sides with low pressure melamine.

Classification: MDF.MR (Moisture Resistant)

Decorative overlays
Standard: To AS/NZS 1859.3.

High-pressure decorative laminate sheets
Standard: To AS/NZS 2924.1.

Thickness (minimum):

For horizontal surfaces fixed to a continuous

background, and square edging: 1.2mm.

For post-formed laminate fixed to a continuous background: 0.8mm.

For vertical surfaces fixed to a continuous background: 0.8mm.

For vertical surfaces fixed intermittently (e.g. to studs): 3.0mm.

2.2 TIMBER JOINERY REQUIREMENTS

Location
Where shown on the drawings.

ITEM	REQUIREMENT	FINISH
Kitchen		
Bench	Width: 600 mm. Bench Heights: *Platinum accommodation:* - 850mm height. *General, Silver and Gold Levels accommodation:* - 900mm high.	
	33mm MDF MR or Particle Board HMR 180º radius or 90º Bullnose or Square Edge-stripped or Preformed proprietary laminated bench top Prone corners to be splayed or rounded	0.8mm formable or 1.2mm, High pressure melamine laminate.
Toe Recess - Kick Plate	*General, Silver, Gold and Platinum Levels of accommodation:* - 200h x 200d.	Face kick plate with high pressure laminate. Colour: To match carcass colour.
Drawers	One bank of drawers 450mm wide nom. Metal sliders. D-Pulls/bow handles mounted horizontally. Cutlery compartments in top drawer. If built-in: Finish 20mm below top of drawer Or If proprietary moulded plastic tray support on all sides.	

ITEM	REQUIREMENT	FINISH
Door and Drawer Pulls **D-Pulls,** **Bow handles** **Horizontal Rail Pulls**	96 mm minimum (Nominal) Mount vertically on cupboard doors & horizontally on drawers. or Mounted horizontally on under bench doors and drawers Hettich or Howard Silver or approved alternative 12mm dia. Length to suit door/drawer sizes. Maximum length required allowing full 170^0-180^0 (nominal) door opening. Refer manufacturers catalogue	Chrome on metal or Plastic to match door colour. Anodised Aluminium, Chrome on metal, or Stainless Steel.
Overhead Cupboards	Provide to walls above bench/s, except above hotplates (refer to drawings), if rangehood is not included. Provide one fixed shelf centrally spaced internally. Note: 600mm minimum clearance is required from top of range to adjacent overhead cupboards.	To match bench cupboards unless colour schedules state otherwise.
Tray Shelf	Provide only when space remains using standard cupboard module sizes. Opening width: min.100mm.	To match bench cupboards
Microwave Alcove	Where shown on the drawings. Gold – 1200mm top of oven Platinum – 1100mm top of oven	To match bench cupboards
Microwave Shelf	Where shown on the drawings, provide Microwave shelf where bench space not available.	Melamine faced board. Colour to match cupboard finishes.
Wall Oven Enclosure	Where shown on the drawings, provide pot cupboard or drawer below oven and cupboard over with 1 central shelf to top cupboard. Or microwave recess. Refer to drawings for dimensions and requirements Oven recess to suit oven dimensions	
Pantry Size Shelves	900mm-1100mm width nom. x 600mm depth. Refer to drawings. *Platinum level* - Do not elevate floor and ensure step-free access. 5x adjustable height shelves Full depth shelves with straight front edge. Shelf front cut outs - not permitted.	 Reinforce with front rail as necessary.
BATHROOM		
Vanity Unit *General and Silver Levels of accommodation*	As shown on the drawings. 1000-1200mm length x 550mm width. Wall hung, cantilevered unit with drop-in basin or integrated with top, 3 drawers and 2 door cupboard, set 300mm above floor level. Install 300mm min from bath. Bull nosed fascia 125mm deep. 850 mm to top of bench.	

ITEM	REQUIREMENT	FINISH
Vanity Unit *Gold and Platinum Levels of accommodation*	***Gold level:*** Min. 900 length x approx. 300mm width. Wall hung, cantilevered unit with semi recessed basin, bank of drawers and or cupboard (min. 300mm wide), set 300mm above floor level, open under basin. Bench top 820-840mm height above FFL. Vanity basin (top front edge) height above FFL: - 800-840mm (Gold level). Square or sharp bull nosed fascia. Refer to drawings. ***Platinum level:*** Min.1000mm length x approx. 300mm width. Wall hung, cantilevered unit with semi recessed basin. Open under basin for wheelchair access. 300mm clear of floor. Clearance under vanity (refer to AS4299-1995, Figure 4.4: washbasin clearances. Washbasin circulation space as per AS1428.1.2021 Figure 51(B). FFL: - 840-860mm (Platinum level);	
BEDROOMS		
Wardrobes Size	As shown on the drawings. Nominally: - 2400 and under (2 doors). - 2400 (3 doors).	Colours: Refer to Colour schedules.
Sliding Doors	Proprietary system. Full Height Doors. Aluminium framed door panels and Aluminium tracks and pelmet. or Flush panel hollow core doors with moulded timber edge pulls.	Vinyl faced doors, and/or painted internally. Powder coated aluminium. Painted: Edge pulls may be natural timber, clear polyurethane finish.
Shelves	Keep Shelves and partitions 25mm clear of sliding doors. Shelf thickness and construction to avoid deflection under load. Top shelf - Full width shelf at 1700mm height supported on 75 mm rail at edges. Below top shelf – Wardrobes up to 2400mm wide: three (min) shelves to one side (600mm min wide – not in corner of room) and 19mm dia Stainless-Steel hanging rail under top shelf to the length of remaining side.	
LINEN CUPBOARD		
	Refer to drawings for dimensions and to Door Schedule 5 No. equally spaced shelves. Size: 1000mm W x 600mm D nom.	Shelving: MDF or Particle board edge stripped
BROOM CUPBOARD		

ITEM	REQUIREMENT	FINISH
	Similar to Pantry or Linen Cupboard as required and shown on the drawings, with top shelf only. Size: 500mm W x 600mm D nom.	
LAUNDRY SHELVES		
	Refer drawings for requirements. *Otherwise*, A single Joinery Cupboard or Storage Shelf, comprising of 2 adjustable shelves 600mm x 250mm nom. on slotted powder coated aluminium wall strips 500 long, or fixed angle brackets, fixed to studs. Fix shelf to shelf brackets from below.	Edge Stripped melamine board Off White and powder coated brackets.

3 FURNITURE

3.1 CONSTRUCTION GENERALLY

Construct and install built-in furniture, cupboards and shelving to kitchen, bathroom, laundry and elsewhere to the extent indicated on the drawings.

Refer: To Domestic Kitchen Assemblies clauses for detailed requirements.

General

Accuracy: Build components square and install plumb.

Joints: Provide materials in single lengths whenever possible. If joints are necessary make them over supports.

Framing: Frame and trim where necessary for openings, including those required by other trades.

Provide openings for the following: Drop-in sinks and basins, cook tops and any other built-in items specified.

Accessories and trim

Provide accessories and trim necessary to complete the installation.

Fasteners

Visibility: Do not provide visible fixings except in the following locations:

Inside cupboards and drawer units.

Inside open units in which case provide proprietary caps to conceal fixings.

Visible fixings: Where fastenings are unavoidable on visible joinery faces, sink the heads below the surface and fill the sinking flush with a material compatible with the surface finish. In surfaces which are to have clear or tinted finish provide matching wood plugs showing face grain (not end grain). In surfaces which are to have melamine finish provide proprietary screws and caps finished to match.

Fixing to building structure: Provide screws with washers for fixing into timber or steel framing or masonry anchors.

Adhesives

General: Provide adhesives to transmit the loads imposed and to ensure the rigidity of the assembly, without causing discolouration of finished surfaces.

Decorative laminated sheets: Provide contact adhesive to AS 2131.

Finishing

Junctions with structure: Scribe bench tops, splashbacks, ends of cupboards, kickboards and returns, to follow the line of structure.

Joints: Scribe internal and mitre external joints.

Edge strips:

Finish exposed edges of sheets with edge strips to match facing sheets or as specified.

PVC edge strips: Purpose made high pressure applied edge strips to match the finished board colour unless specified otherwise. Applied to all door and drawer panel edges. Apply to bench tops and other panels only if detailed.

High Pressure Melamine strip: Purpose made strip applied to edges not prone to severe impact such as internal shelving and dividers.

Labelling

Permanently mark each unit of furniture with the manufacturer's name, on an interior surface.

3.2 DOMESTIC KITCHEN ASSEMBLIES

Standard

General: To AS/NZS 4386.1.

3.3 CUPBOARD, SHELF AND DRAWER UNITS

Plinths

Material: Select from the following:

Exterior grade plywood.

High moisture resistant particleboard.

High moisture resistant medium density fibreboard.

Thickness: 16mm min.

Fabrication: Form up with front and back members and full height cross members at not more than 900mm centres.

Finish: High-pressure decorative laminated sheet to match carcase colour and texture unless detailed otherwise.

Fasteners: Conceal with finish.

Installation: Scribe to floor and secure to wall to provide level platform for carcasses.

Carcasses

Material: Select from the following:

Melamine overlaid high moisture resistant (HMR) particleboard for internal shelves and dividers.

Melamine overlaid high moisture resistant medium density fibreboard (MDF-MR) for all externally visible surfaces.

Thickness: 16mm.

Joints: Select from the following:

Proprietary mechanical connections.

Dowels and glue.

Screws and glue.

Proprietary joining plates and glue.

Adjustable shelves where shown on the drawings: Support on proprietary pins and ferrules in holes bored at equal centres vertically.

Spacing: 32mm.

All cupboards (except pantry and under sink) to have one fixed shelf, positioned midway for the full width and depth of cupboard. A removable mid-shelf may be provided under the sink, but plumbing is not to penetrate the shelf preventing its removal.

Finish
Externally visible: Melamine overlaid MDF MR board to specified colour.

Internally, white melamine overlaid Particle board HMR.

Texture: Standard Matt.

Fasteners: Conceal with finish.

Installation: Secure to walls at not more than 600mm centres. Seal at junction with wall with clear or colour matched polymer curing mastic.

Removable under-bench cupboards
Under-bench cupboards below kitchen sinks and cook tops in Platinum Level accommodation and where detailed on the drawing are to be removable for a minimum length of 820mm for wheelchair access (refer to AS 4299). The cupboard unit, including any shelving, kick boards etc is to be demountable/ foldable for compact storage.

Underside cook top injury hazard protection
Platinum Level accommodation:

Provide 16mm MDF or particleboard horizontal panel at least 50mm below base of cook top for protection against burning of knees or hands when removable cupboard is taken away.

Panel should be removable for maintenance.

Provide ventilation at ends where possible. Drill a row of 50mm vent holes in the panel at sides and at rear and halfway towards the rear.

Drawer fronts and doors
Material: Select from the following:

Melamine overlaid high moisture resistant (HMR) particleboard.

Melamine overlaid high moisture resistant medium density fibreboard. (MDF-MR).

Thickness: 16mm.

Edging 2mm PVC strip factory applied by purpose made machinery.
Colour: To match door and drawer colour.

Maximum door size: 2400mm high, 900mm wide, 1.5 m^2 on face.

Drawer fronts: Route for drawer bottoms.

Finish: and Colour: To match DOORS.

Drawer backs and sides
Material: Melamine overlaid. Particleboard HMR or MR-MDF. Edge stripped.

Thickness: 16mm.

Colour: White.

Installation: Finish with butt joints, glue to form carcass and screw to drawer front. Route for drawer bottoms.

Drawer bottoms
Material: As for drawer sides and backs.

Drawer divisions: Cutlery drawer 12mm min particle board finished 20mm below drawer top or approved proprietary moulded acrylic cutlery tray drawer insert, fixed in place.

Alternatively: Drawers may be a proprietary metal product, powder coated white. Full extension system.

3.4 BENCHTOPS

Laminated bench tops
Material: High Moisture Resistant HMR particleboard.

Bench top thickness: 33 mm.

Finish: High-pressure decorative laminated sheet:

Class: HG.

Type: P or S.

Exposed edges: Extend laminate over shaped nosing, finishing > 50mm back on underside. Splay outside corners at 45º or splay end edge strip 65º to bull nosed front edge.

Sealing underside: Laminate undersides of bench tops if:

subject to excessive moisture from equipment such as dishwashers; or

the benchtop is not firmly restrained against warping by cupboard carcass or support framing.

Installation: Scribe to walls. Fix to carcass at least twice per 600mm length of benchtop.

Joint sealing: Fill joint with sealant matching finish and clamp with proprietary mechanical connectors. Seal at junctions with walls.

3.5 HARDWARE

Drawer and door hardware
Hinge types: Concealed metal hinges with the following features:

Adjustable for height, side and depth location of door.

Self-closing retention action.

Hold open function.

Angle of opening: 170º - 180º nominal (except where doors open against walls), with hold open function.

Click-off hinges to demountable/removable cupboards under kitchen bench.

Nickel plated.

Corner doors hinge types: Piano hinge extending full height of doors or proprietary corner cabinet metal bi-fold hinges.

Finish:

Piano hinge - Chrome plated steel,

Proprietary bi-fold hinge – SCP

Slides: Metal runners and plastic rollers with the following features:

30 kg loading capacity. Full extension.

Closure retention.

Stops on opening.

White thermoset powder coating.

4 STAIRS

4.1 TIMBER STAIRS INTERNAL

Set out

Set out stair rod to give uniform risers and uniform treads respectively in each flight.

Fabrication

Closed strings: Trench for treads and risers.

Cut strings: Profile for treads and risers. Mitre riser ends.

Treads: Arris nosings pencil round. Return nosings at cut strings. Groove for riser tongue in closed rise stair. Set rise 19mm back from nosing.

Top tread: Flush with finished floor, otherwise to match stair treads. Provide similar tread section as nosing to floor edges around stair well.

Risers: Tongue to tread. Mitre to string in cut string stairs.

Stair nosings

Provide purpose-made non-slip stair nosings to stairs, compliant to AS 1428.1 for access and luminance contrast.

Material: Extruded aluminium with carborundum inserts, mechanically fixed and adhered to manufacturers' installation requirements.

- Surface fixed onto tread nosings of stairs; *or*
- Rebated flush into tread nosings of stairs.

Slip resistance:

Standard: AS 4586.

Nosing Strip: R11/P4 minimum.

Installation

General: Glue joints in internal work. In closed rise stairs wedge treads and risers to strings. Plant two glue blocks behind each tread to riser junction. Trim floors to carry ends of stairs and around stair well.

Stair bolts (to open rise close string stairs): 8mm diameter mild steel, one at each end and one at centre of flight, transversely between strings. Draw strings tight against ends of treads.

Fascia: Of depth sufficient to overlap 19mm below ceiling, fixed to floor joists hard up under nosing.

Trim: Provide beads and mouldings as necessary, including a scotia or similar planted under the tread nosing against the risers and cut strings, a bead between wall strings and wall, and a bead behind the fascia over the ceiling finish.

Soffit lining

Fix to 38 x 38mm nailing battens notched and nailed to the underside of treads and risers of closed rise stairs at the centre of flights and at each side.

4.2 INTERNAL TIMBER BALUSTRADES

General

Provide a balustrade to the stair and landing, consisting of newels, handrail, balusters, and associated mouldings.

Newels

Halve and bolt to strings. Turn tops to detail.

Handrails

On edge. Bullnose arrises 13mm radius. Stub tenon to newels.

Balusters

At 100mm centres. Stub tenon to handrail at top and to tread or floor at bottom.

325 WINDOW COVERINGS

1 GENERAL

1.1 CROSS REFERENCES

General

General: Conform to the *General Requirements* worksection.

Associated worksections

Conform to associated worksections as follows:

Doors and Hatches;

Windows;

Glazing.

1.2 INSPECTION

Notice

Inspection: Give notice so that inspection may be made of the following:

Building locations or substrates prepared to receive window coverings before installation.

1.3 SUBMISSIONS

Fire hazard properties

Requirement: Submit evidence of conformance to section ***PRODUCTS, MATERIALS, Fire hazard properties***.

Provide Product Testing certification by a NATA approved laboratory or other approved alternative testing authority to verify compliance.

Products and materials

Installation drawings: Submit manufacturer's standard drawings and details showing methods of construction, assembly and fixing, with dimensions and tolerances.

Insect resistance: Submit evidence of conformance to section ***PRODUCTS, MATERIALS, Insect resistance***.

Samples

General: Submit 2 samples of each of the following where applicable:

Colour samples of fabrics, facings and prefinished production material.

Manufacturer's standard control system furniture items and accessories.

Subcontractors

General: Submit names and contact details of proposed installers.

2 PRODUCTS

2.1 MATERIALS

Fire hazard properties

Requirement: Provide window coverings composed entirely of materials 'Inherently Flame Retardant', not 'Coated Flame Retardant' system.

Fire hazard indices for all materials: Conform to the following tested to AS/NZS 1530.3:

Spread-of-Flame Index: ≤ 9.

Smoke-Developed Index: ≤ 8 if Spread-of-Flame Index > 5.

Fabrics

Uncoated woven and knitted fabrics: To AS 2663.1.

Performance classification (minimum): 2.

Coated woven and knitted fabrics: Not acceptable.

Anti-microbial treatment

Requirement: Non-metallic, colourless, odourless, positively charged polymer applied during manufacturing to form a molecularly bonded surface to resist bacteria and mould growth.

Insect resistance

Requirement: Provide window coverings composed entirely of materials inherently resistant to insect attack.

Colour fastness

Against light according to ISO 105-B02: 5-7 (Scale 1-8).

Refer AS 2001.4.21.

Against wash according to ISO 105-C06: 4-5 (Scale 1-5).

Refer AS 2001.4.15.

Quality

Quality fabrics shall be used to ensure long life, UV resistance, and good thermal performance.

2.2 CURTAINS

Location: To all aluminium framed windows and sliding glass doors, except in kitchen, bathroom, laundry and toilet areas.

Internal window dimensions: Refer Drawings.

Fabrics Width:

1.5 x width of window.

Windows with width over 600mm will be provided with 2 equal curtains on either side of the window.

Height:

Height of window –50mm above finished floor level.

Height of sliding door –50mm above finished floor level.

Colour: Submit colour samples of fabrics to Superintendent for approval. (Refer Colour Schedules where applicable).

Washable: Fabric is required to be washable with a shrinkage rate ≤ 3%. Fabric to retain fire retardant properties after washing.

Style: Curtain style to be suitable for use on metal rods utilising 40-45mm I.D. Metal Ring Eyelets.

Rod/Track system: Metal Curtain Rod 25mm O.D. designed with an internal extruded metal spine for increased stiffness (no sag permitted). Install with internal spine in vertical position. Vanda - Vantage 25mm Eyelet Rod system (or approved alternative). Use suitable sized 40-45mm I.D. Metal Ring Eyelets on curtains.

Rod Finials: Plain caps to match.

Rod/Track holders: Matching proprietary 75mm-100mm metal wall mounted curtain brackets which will securely hold curtain rod/track in place (clamp or screw type). Rod/Track holder spacing 1350mm maximum. Vanda - Vantage 25mm Eyelet Rod system (or approved alternative).

Metal components: Pre-finished from factory (paint or electroplated). Sliding components / finishes to allow for easy glide operation.

Operating system:

Manual operated with metal curtain rod & rings.

Metal Flick sticks to be provided for each curtain drop for Platinum Level accommodation.

3 EXECUTION

3.1 INSTALLATION

General

Fixing: Use purpose made wall mounted curtain brackets which will securely hold curtain rod/track in place (clamp or screw type).

Provide sufficient rod/track overrun on both sides of window to allow curtains to be fully retracted from window opening.

Align curtain separations with window mullions (not over window panel or opening).

3.2 COMPLETION

Warranties

General: Submit the installer's warranty against defective workmanship or wrong installation.

Maintenance manual

General: Submit the manufacturers' data as follows:

Recommendations for service use, care and maintenance.

List of manufacturers and suppliers of replacement parts.

330 PLUMBING AND DRAINAGE

1 GENERAL

1.1 CROSS REFERENCES

General
Refer to the *General Requirements* worksection.

Related worksections
Refer to the following worksections:

Electrical and Mechanical Services;

Landscaping;

Roofing.

Scope of work and detailed requirements
Refer to the Drawings and Project Specific Schedules for project specific requirements.

2 QUALITY

2.1 INSPECTION

Witness points
Give sufficient notice so that inspection may be made at the following stages:

Excavated surfaces.

Work ready for specified testing.

Concealed or underground services before covering.

2.2 STANDARDS

Stormwater drainage
General: To AS/NZS 3500.3.2.

Sanitary plumbing and sanitary drainage

General: To AS/NZS 3500.2.2.

Local authority requirements
Plumbing and Drainage Act 2002.

Standard Plumbing and Drainage Regulation 2003.

Plumbing Code of Australia.

Queensland Plumbing and Wastewater Code.

2.3 INTERPRETATION

Definition
Pipe surround: Includes pipe overlay, pipe side support, side zone and haunch zone.

2.4 NOTICE OF COMMENCEMENT

Give seven days notice of intention to commence drainage.

2.5 LAYOUT

Install pipework in position as shown on drawings. Before commencing work, verify the exact positions of connection points to Utility Service Provider's service, fixtures, plant, appliance and the like to which the pipework is to be connected.

Systems installation to allow for easy maintenance and servicing of all components.

2.6 APPROVED DRAWINGS

Refer to the *Schedules of Requirements* to this worksection for supply of approved drawings.

2.7 AS-BUILT DRAWINGS

Requirement
Refer to *Preliminaries* section *'As-Built Drawings'* and Project Specific Schedules.

2.8 PIPEWORK TESTING

Arrange for testing as required by the *Plumbing and Drainage Act 2002*.

Concealed Work: Do not cover or conceal underground or enclosed work until it has been tested and approved.

UPVC Pipework: Cure solvent cement joints for at least 24 hours before testing.

2.9 SAMPLES

General
Submit samples of the following if requested.

Each type of imported pipe-bedding material.

Each type of filter material.

2.10 PIPEWORK

General
Supply and install all pipework and fittings where shown and specified on the Drawings.

Pipe materials
Vitrified Clay Pipe and Fittings: To AS 1741, Grade A, Class Y.

Concrete pipe
To AS 4058.

Class:

100mm and 150mm dia.: Class LDU (light duty unreinforced).

Over 150mm dia: Class 2 (reinforced).

Jointing methods
Flexible joints: Using rubber rings.

Rigid joints: Spigot and socket joints or rebated joints to AS 4058, Appendix A, caulked with mortar jointing material.

Joint materials: to AS 1646.

Marking: To AS 4058, Clause 1.5.

UPVC pipe and fittings
Drainage and Stormwater pipe and fittings**:** Within site, to be sewer class to AS 1260, not less than 100mm diameter. Identifying colour to be cream.

Footpath crossings
Cluster Housing: 100mm minimum dia. pressure pipe Class 6 UPVC.

Apartments or Attached Housing: Hot dipped galvanised RHS pipes.

Unless otherwise required by the relevant Local Government.

Pipe underlay
General: Bed piping on a continuous underlay of bedding material, at least 75mm thick after compaction. Grade the underlay evenly to the gradient of the pipeline.

Chases: If necessary, form chases to prevent projections such as sockets and flanges from bearing on the trench bottom or underlay.

Pipe surrounds
General: Place the material in the pipe surround in layers ≤ 200mm loose thickness, and compact without damaging or displacing the piping.

Anchor blocks
If necessary, provide anchor blocks which restrain lateral and axial movement of the pipelines at junctions and changes of grade or direction.

Underground Installations
Minimum Cover Over Pipe: Provide the following cover to underground pipeline external to the building:

- Generally: 300mm.

Pipes subject to vehicular loading (under sealed roadways, Parking areas and the like) 600mm.

Encasing: Where the required minimum cover cannot be provided encase the pipeline with 20 MPa reinforced concrete not less than 150mm thick all round or 100mm concrete pad over pipe extending 100mm into the side walls of the trench.

Procedure: Drains through footings to be laid before footings are poured.

Drainage line and/or waste pipes passing through foundations or slabs to be lagged with 6mm thick (minimum) approved material.

Junctions to be at 45º unless otherwise approved.

Tolerances

Comply with the **Pipeline tolerances table**. These tolerances are conditional on falls to outlets being maintained and no part of a pipeline being at less than the designated gradient.

Pipeline tolerances table

	Permissible angular deviation from alignment	**Permissible displacement from alignment**
Horizontal	1 in 300	15mm
Vertical	1 in 500	5mm

Gradients

Lay drains to gradients complying with the relevant authority's requirements, and in any case not less than the following:

Pipeline type	**Pipe Diameter (mm)**	**Pipeline gradient**
Sewer	100	1 in 60
	150	1 in 80
Stormwater	100	1 in 100
	150-300	1 in 150
Subsoil	100-150	1 in 300

2.11 PITS

General

This Clause includes manholes, field gullies and channels.

In situ concrete: 20 MPa concrete, 100mm thick.

Precast concrete: Proprietary precast concrete units or spun precast wall sections, minimum 20 MPa concrete designed for the appropriate application. Provide cored holes as required.

Reinforcement: If depth of pit exceeds 1500mm: F718 mesh or as otherwise shown on Drawings.

Proprietary Pits: Where proprietary polypropylene pits are installed, the following conditions apply:

Trafficable areas:

600 x 600mm and 450 x 450mm pits to be cast in 100mm (minimum) concrete with 150 x 150mm concrete collar surround.

300 x 300mm pits to be cast in 100mm (minimum) concrete with 100 x 100mm concrete collar surround.

Non-Trafficable areas:

300 x 300mm pits to have a 100 x 100mm concrete collar surround.

Pedestrian areas:

- 'Heel Safe' grates shall be provided to all pits in paved areas shared or solely used by pedestrians.
- Grate spacing and direction to allow unencumbered traverse of narrow wheeled equipment, wheelchairs, bicycles, prams and narrow heeled footwear.
- Grate aperture: 8mm max. perpendicular to direction of travel.
- Conform to:
  - AS 4685 to resist narrow heeled footwear penetration.
  - AS 3996 to resist bicycle/wheeled equipment tyre penetration, and AS 3996 Clause 3.3.5: Surface Openings in Pedestrian Areas.
  - AS 1428.2 for wheelchair and walking cane safety requirements.
  - AS 4586 Slip resistance required: rated to P4 / R11 min. where grades are equal or under 1:14; and rated to P5 / R12 min. where grades are greater than 1:14.

Collar to finish flush with top of grate.

All grates to be hot dipped galvanised (including grates in garden areas).

Inspection Chambers: Construct in concrete and fit with concrete infill type cover appropriate to the finish of contiguous surfaces and trafficable loads.

Invert and benching to be rendered with at least 10mm thickness of cement mortar. Ladders to be set in one wall of the chamber where the depth of same exceeds 1200mm. The top rung is not to be more than 700mm below the finished top.

Finish to exposed surfaces

General: Provide a smooth, seamless finish, using steel trowelled render or concrete cast in steel forms.

Corners: Cove or splay internal corners.

Metal access covers and grates

Standard: To AS 3996.

Covers and grates are to meet the appropriate load requirements areas. Load class: A, B, C or D, to suit application.

Cover levels: Top of cover or grate, including frame:

In paved areas: Flush with the paving surface.

In landscaped areas: 25mm above finished surface.

Gratings taking surface water runoff: Locate to receive runoff without ponding.

Slip resistance:

AS 4586 Slip resistance required to access covers and grates in pedestrian areas, including car parks: rated to P4 / R11 min. where grades are equal or under 1:14; and rated to P5 / R12 min. where grades are greater than 1:14.

3 STORMWATER

3.1 EXECUTION

General

General: Provide stormwater drains to connect downpipes, surface drains, subsoil drains, seepage drains and drainage pits to the outlet point or point of connection.

Provide means for stormwater drains to discharge as detailed on Drawings:

underground drain;

street channel;

soakage pits.

Downpipe connections
Turn up the drain branch pipeline with a suitable bend to meet the downpipe, to finish 50mm above finished ground or flush with pavement.

Provide UPVC adaptor to connect roof water downpipe to drainage without reduction in pipe size. Except where impractical due to limited fall to site adaptor to be encased by pavers or, if none, in concrete to 50mm above ground.

Where connection is between Colorbond or approved alternative downpipe and collar of drainage line (without adaptor) concrete surround to be separated from downpipe by 10mm gap to permit back flow discharge.

3.2 LINED SURFACE DRAINS

Where specified:

Half round pipe drains: Provide surface drains lined with half round pipe, including bedding and jointing.

Grated trenches: Provide precast or cast in situ concrete lined trenches with galvanized steel gratings. Refer to CL 1.12 Pits.

3.3 PRECAST BOX CULVERTS

Standards
Culverts < 1200mm span x 900mm high: To AS 1597.1.

Culverts 1500 - 4200mm span x 4200mm (maximum) high: To AS 1597.2.

Lifting gear
Provide suitable attachments for lifting gear to culverts 600 x 450mm.

Installation
Screed and compact the bedding to provide uniform support. Install culvert sections to provide a continuous waterway without abrupt changes in alignment or grade.

3.4 SUBSOIL DRAINS

General
Provide subsoil drains to intercept groundwater seepage and prevent water build-up behind walls and under floors and pavements. Wrap pipes in geotechnic cloth. Connect subsoil drains to surface drains or to the stormwater drainage system as applicable.

Pipe depth
Refer to minimum pipe cover table CL 1.11 as per AS/NZS 3500.3, 7-2.6.

Jointing
At junctions of subsoil pipes provide tees, couplings or adaptors to AS 2439.1.

Trench width
Minimum 450mm.

Pipe underlay
General: To requirements of AS/NZS 2032.

Pipe surrounds
General: Place the material in the pipe surround in layers ≤ 200mm loose thickness, and compact without damaging or displacing the piping.

Depth of overlay: Backfill with clean rubble over the filter:

To the underside of the bases of overlying structures such as pavements, slabs and channels.

To within 150mm of the finished surface of unpaved or landscaped areas.

Filter fabric
General: Provide polymeric fabric formed from plastic yarn composed of at least 85% by weight propylene, ethylene, amide or vinyledenechloride, and containing stabilisers or inhibitors which provide resistance to deterioration due to ultraviolet light.

Marking: To AS 3705.

Protection: Provide heavy duty protective covering. Store clear of the ground and out of direct sunlight. During installation do not expose the filter fabric to sunlight for more than 14 days.

4 WASTEWATER

4.1 SEWER WORKS

Standards
General: To AS/NZS 3500.2 or AS/NZS 3500.5.

Connection
Make connection from fixtures to the Utility Service Provider's sewer in accordance with the approved drawings.

All work to be in accordance with the Plumbing and Drainage Act and Regulations and relevant Australian Standards

Costs for connection
Refer to Project Specific Schedules for possible reimbursement of costs for connection.

4.2 MATERIALS AND COMPONENTS

Sanitary fixtures
General: Provide the accessories necessary for correct installation.

Standard: To SAA MP 52-2005, unless otherwise required by the statutory authority.

Refer: Project Specific Schedules.

4.3 EXECUTION

Sanitary plumbing
Provide sanitary plumbing (within the building) and house drains (under and external to the building) to connect the outlets of sanitary fixtures to the sewer main or septic tank, as applicable.

All soil and waste stacks and discharge pipes are to be installed in suitable ducts and/or ceilings, and not exposed on exterior of the building or encased in concrete filled block walls.

Traps: Provide the necessary fixture traps. Fixture traps, other than for fixtures with integral traps to be polypropylene.

Overflow Relief and Disconnector Gullies: Provide approved gratings to each building and to Local Government requirements.

Where the minimum mandatory height of the Overflow Relief Gully and the lowest fixture cannot be achieved, requiring the use of Reflux Valve/s, provide Disconnector Gullies to each building to prevent backflow into Units. (Note: Seek approval from the Superintendent prior to the installation of any Reflux Valve/s).

Vents: Provide the required vent pipes, stayed where necessary, with birdproof terminations. Make watertight any roof penetrations. Vents where

passing through roof not to be copper and terminate 150mm above roof or 600mm above eaves gutter. All vents are to rise in walls or ducts.

Floor Wastes:

Provide floor wastes to shower compartments, bathrooms, laundries, and elsewhere where shown. Floor waste gullies and risers to be 100mm diameter of copper, brass or UPVC finished at floor level with a chrome plated brass drainer's grate (screw in pattern).

- Silver, Gold, and Platinum Levels accommodation: Linear Floor Waste Drainage Systems are an acceptable alternative in obtaining correct falls to bathroom floors. Finish at floor level with a 316 Grade polished stainless steel (linear bar design) drainer grate suitable to meet AS 1428.1 access and AS 4586 slip resistance requirements. Orientate long axis of floor waste drain parallel to entrance threshold of bathroom/ensuite. Refer to drawings.
- Fixed gratings to floor waste gullies not permitted. Trap shower wastes and floor wastes charged by other fixtures and connect them to the soil and waste system. Where sheet vinyl flooring is specified use purpose-made floor wastes to accept vinyl sheet flooring turned down below grates.

Piping
Finishes generally: Finish exposed piping, including fittings and supports, as follows:

- In internal locations such as toilet and kitchen areas: Chrome plate copper piping to AS 1192 service condition 2, bright.
- Externally, and steel piping and iron fittings internally: Paint.
- In concealed but accessible spaces (including cupboards and non-habitable enclosed spaces): Leave copper and plastic unpainted except for identification marking. Prime steel piping and iron fittings.

Core holes and sleeves
Set out core holes and sleeves in floors, walls and beams and obtain approval from the structural engineer of the set out prior to placing concrete. Pipework shall not pass through party walls.

Where metallic pipework e.g. copper for the sanitary plumbing system passes through fire rated walls, floors and beams, all penetrations shall be backfilled with mortar seal or fire resistant flexible sealant meeting AS 2530.4 - 1997and all pipes shall have a minimum distance of 50mm between another pipe.

Where UPVC pipes pass through fire rated walls and floor slabs provide approved fire stop collars with a minimum fire resistance rating of two hours complete with purpose-made metal sleeves of sizes to suit core holes.

Prior to installation of fire stop collars, submit for approval by the Superintendent approvals from the manufacturer/s that fire stop collars to be used with UPVC pipe provide a minimum fire resistance rating of two hours and are in accordance with AS 1530.4 - 1997, ISO 834 with AS 4072.1 – 1992 Clauses 4.6.1, 4.6.2,4.6.3 and 4.6.4.

Install strictly in accordance with the manufacturer's instructions.

If requested supply certification that at completion all fire stop collars as installed maintain the required fire rating.

Where piped services pass through non-fire rated masonry and stud framed walls, provide purpose-made metal or plastic sleeves, with 12mm clearance all round, packed with gunned silicone rubber joint sealer (self extinguishing grade).

Vent pipes
Staying to roof: If fixings for stays penetrate the roof covering, seal the penetrations and make watertight.

Terminations: Provide bird-proof vent cowls made of the same material and colour as the vent pipe.

4.4 DISCHARGE FROM AIR HANDLING SYSTEMS

Trays, sumps and drainage
Standard: To AS/NZS 3666.1.

Refer Evaporative Cooling Specifications Electrical and Mechanical Services section where applicable.

4.5 SEWAGE TREATMENT

Refer: Schedules and/or the Drawings for requirements.

Septic tanks and grease traps
Standard: To AS/NZS 1546.1 (Domestic situation up to 10 people).

Standards Mark: Required.

Septic tank to be precast concrete; glass fibre reinforced plastic; or polypropylene to AS 1546.

Location: Where shown on Drawings supply and install septic tank and grease trap to comply with the Plumbing and Drainage Act 2002 Act and Local Government Regulations. Where septic tank and effluent disposal details are not shown on the Drawings, the Contractor is to determine requirements from the Local Government.

Grease Trap: Supply and install proprietary system for the interception and retention of sink water (alternative waste disposal in non-sewered areas only) complete including removable catchment tray and lid.

Effluent disposal
Standard: To AS 1547.

Agricultural pipes: Perforated plastic pipe to AS 2439.2 type 3, class 100, DN 100.

5 FRESHWATER

5.1 CROSS REFERENCES

General
Refer to the *General Requirements* worksection.

Refer: The Drawings and the Tapware Schedule in Project Specific Schedules.

5.2 STANDARDS

Water supply
General: To AS/NZS 3500.1.2.

Hot water supply
General: To AS/NZS 3500.4.2.

5.3 PRE-COMPLETION TESTS

Site tests
Test system for leaks, including pipe joints, valve seats, tap washers and strainers. Repair as necessary, replace if damaged, and retest.

5.4 AUTHORISED PRODUCTS

Standard
To SAA MP52 - 2005 unless otherwise required by the statutory authority.

5.5 SPECIAL NEEDS ACCOMMODATION

For Platinum Level accommodation and special needs accommodation, select products that have been approved for the purpose and are compliant with AS 1428.1 requirements, unless otherwise specified in the Project Specific Schedules.

5.6 THERMOSTATIC MIXING VALVES

Requirement
Provide only where required by Occupational Therapist (O.T.), approved Thermostatic Mixing Valve (TMV), to attain output temperatures compliant to AS/NZS 3500.4.

Thermostatic Mixing Valve to supply to personal hygiene fittings, bath, shower and vanity basin except where Thermostatic Tempering Valves are specified.

Set Temperature to supply water at 45^0C Maximum at point of delivery. Refer AS/NZS 3500.4.2.

Refer to the *TAPWARE SCHEDULE.*

Generally
Locate to avoid accidental burning through contact with the fitting, in an unobtrusive and protected location, accessible for maintenance, temperature adjustment and replacement. Where installed in a lockable enclosure, the door of the enclosure is to be fitted with a square key carriage lock.

Type
General: Water temperature regulated by a single hand control and capable of delivering water at the temperature of either of the supply systems and at any temperature in between, and suitable for controlling single or multiple outlets, as appropriate.

Temperature adjustment must be lockable and not be easily accessible to occupant, to minimise unauthorised adjustment.

Controls: Incorporate the following:

- A temperature sensitive automatic control which maintains temperature at the pre-selected setting and rapidly shuts down the flow if either supply system fails, or if the normal discharge water temperature is exceeded.
- Where not provided as an integral part of the fixture, provide separate isolation valves at inlet and outlet to facilitate maintenance in accordance with the Australian Standard.
- Isolation shut of valves must have a safety feature preventing them from separating from the fitting and allowing the uncontrolled flow of hot water.
- Hot water flush facility.

5.7 THERMOSTATIC TEMPERING VALVES

Requirement
Where required provide an approved thermostatic tempering valve to supply to bath, shower and vanity basin in each house or unit except where Thermostatic Mixing Valves are specified. Refer to the Drawings.

Note: Not required where the water heater has a fixed 50^0C maximum temperature output compliant to AS/NZS 3500.4 e.g. Electric Instantaneous (Continuous Flow) Water Heater.

5.8 PRESSURE CONTROL VALVES

Type
Provide pressure limiting valves, which produce the necessary reduction in pressure.

Pressure requirement
500 kPa.

5.9 LINE STRAINERS

Description
Type: Low resistance, Y-form bronze bodied type, with screen of dezincification resistant brass, corrosion-resistant stainless steel, or monel.

Screen perforations: 0.8mm maximum.

Requirement: Provide where specified in the *Tapware Schedule* or on the drawings.

5.10 WATER USAGE CHARGES

Contractor is responsible for all water usage fees during the Construction Stage levied by the relevant Local Authority and/or Utility Service Provider supplying water to the site.

5.11 WATER METERS

Provide a water meter and check valve to Local Authority / Utility Service Provider requirements to each separate address including each unit in a duplex.

5.12 WATER SUB-METERS & AUTOMATIC METER READER SYSTEM

Provide a water sub-meter and stop valve to Local Authority / Utility Service Provider requirements to each unit in a complex.

Contractor will be required to apply, process, and provide all the appropriate documentation to the Local Authority and/or Utility Service Provider for implementing, inspecting and registering the water supply reading system and sub-water meters, and to abide to all local Authority and/or Utility Service Provider policy and requirements. Contractor to pay all costs and fees.

Contractor is to confirm with the Local Authority and/or Utility Service Provider the preferred make and model of sub-water meter and Automatic Meter Reader before purchase and installation.

Hydraulic Sub-contractor to co-ordinate with Electrical Sub-contractor to undertake electrical part of installation and install as per manufactures specifications & instructions. Contractor to allow for all costs and fees.

The location of sub-water meters is to be confirmed as per Local Authority and/or Utility Service Provider requirements before installation, and that the dial face is in a position where it can be read standing on floor/ground level in a publicly accessible location.

The Automatic Meter Reader System is to be a hard-wired system between the sub-meters and Meter Reading Panel located in accessible locations in common areas for maintenance purposes, and not exposed to the elements.

The Automatic Meter Reading System is not to include any radio frequency or battery assisted models.

The Meter Reading Panel is to be located at the front boundary adjacent to the letterbox / master water meter, protected in a weatherproof / galvanized / zinc-

alum / powder-coated lockable box, at a height range of 900mm to 1500mm.

The master water meter and sub-water meters to each unit and communal water line, is to be wired to the Meter Reading Panel in strict accordance with the manufacture's specifications.

Each sub-water meter is to be 20mm diameter unless noted on drawing and be of a 'manifold' type meter when installed in ground. (It will be the Contractors responsibility to contact the Local Authority and/or Utility Service Provider for installation requirements of the meters)

Sub-meters are to be installed on branch pipes in meter boxes or path-boxes incorporating a dual check valve, ball valves on both sides of the meter, and disconnection points (ring tails) on both sides of the meter.

Ball valves and sub-meters are to have provisions for anti-tamper devices such as locking wires and stainless-steel ties.

All sub-meter boxes whether housing single or multiple sub-meters, must be identified on the outside with the words "Water Sub-meter" or "Water Sub-meters" respectively, in readable and permanent print.

All individual stopcocks / sub-water meters within the boxes are to be identified with metal tags identifying the service or unit number.

Meter Boxes are to be weather proofed galvanized / zinc-alum / powder-coated lockable boxes with a 50mm diameter drain to be provided.

Meter boxes are to be installed and drained via a frog flap above a grated drain or discharging above ground as per the NCC.

In-ground meter boxes should not be installed in walkways or other locations where they would cause potential hazard and must have lids installed with a non-slip pattern.

Contractor will be required to provide certification to the Local Authority and/or Utility Service Provider for the Automatic Meter Reading System and show that the connectivity between all sub-meters and their respective units/service has been checked as part of the final plumbing certificate.

Contractor will be required to provide all associated documentation to the Local Authority and/or Utility Service Provider and the Department including but not limited to full sets of the As Constructed Drawings for both the plumbing and electrical wiring system of the sub-water meters.

The As Constructed Plans shall be drawn to the same standard as the Approved Plans and shall be supplied in hard copy format and as a CD.

Contractor will be responsible for rectifying any defect in products and workmanship for a 12-month period known as the "defects liability period", from the date of hand over.

At the end of the 12-month period, an inspection may be carried out, and all responsibility will transfer to the water service provider as part of an asset handover, along with any associated warranties.

5.13 EXECUTION

Mains connection

General: Connect the cold-water supply system to the Utility Service Provider's main through a stop valve and meter for each separate address unless otherwise specified on the drawings.

5.14 COLD WATER SYSTEM

Standard

In accordance with the Plumbing and Drainage Act and Regulations.

Reticulation

Provide the cold-water supply system, installed from the meter to the draw-off points and fixtures or connections to other services, shown on the Drawings and specified.

Main supply reticulation for unit developments to be as shown on Drawings. Provide isolating valve to each block of units.

Provide to each detached house or unit a supply line to each single (final) branch in 20 NS piping. Single (final) branches and branches to hose cocks to be 20 NS. Provide two hose cocks to each detached house and ground floor unit (with one hose cock located no greater than one metre from patio area).

Provide 20 NS supply line to each unit of a duplex building. Internal reticulation within each unit as above.

Provide stop cock (above ground) and adjacent 500kpa pressure limiting valve at ground level to each house or to each unit within a duplex or multi-unit configuration up to 2 storeys high.

For unit blocks more than 2 storeys high, locate the pressure limiting valve at the level of each unit.

Identify isolation cock(s) with details and information on metal tags. Do not position stop cock and pressure limiting valve on front wall of house, duplex, cluster unit or units.

Provide communal hose cocks supply separate from the individual unit supply branches, plus one per rubbish bin wash area. Ensure backflow requirements meet AS/NZS 3500 and Local Authority / Utility Service Provider requirements. Provide hose cocks so that no point within the complex is further than 18m from a communal hose cock.

Protect exposed piping rising out of ground to 200mm above ground with polyethylene lagging.

5.15 FITTINGS AND ACCESSORIES

General

Provide the fittings necessary for the proper functioning of the water supply system, including taps, valves, backflow prevention devices, pressure and temperature control devices and strainers where required.

Taps and single lever mixers

Taps and single lever mixers to internal fixtures to be approved ceramic disc type c.p. brass. Internal outlets to be fitted with aerators.

Stop cocks and hose cocks - brass stuffing box with washers or O ring type. Stop cocks visible internally to be chrome plated.

Combination sets/bridging piece to be copper.

Mini cistern cocks are acceptable for WC cisterns

Tap and valve heads
Plastic heads and handles: Not permitted other than for indicators and secondary components such as cover plates, handheld shower heads and the like. Provide break-resistant material of a compact nature, to prevent fracture and exposure of jagged or rough edges.

Metal heads and handles: Provide bright chrome finish on brass fittings and/or suitably bush to prevent electrolysis and growth.

Graphic indicators and accessibility for Platinum Level accommodation
Provide, where required, clear graphics for the visually impaired and as being suitable for Platinum Level accommodation.

Tap positions
Locate hot tap to the left of, or above, the cold tap.

Valve spindles
If practicable, install in a vertical position.

Isolating valves schedule

Location	Function	Description
WC cistern Supply	Stop cock	Cistern Mini stop
Temperature control valve	Stop cock to inlet and outlet supply to Thermostatic Mixing Valves	Isolation valves may be incorporated in control valve design
Water Heater supply	Stop Valve	Gate or ball type

5.16 PIPING

Material identification marking
Pipes with grade or class identification markings: Install so that the markings are visible for inspection.

Finishes
General: Finish exposed piping, including fittings and supports, as follows:

- In internal locations such as toilet and kitchen areas: Chrome plate copper piping to AS 1192 service condition 2, bright.
- Externally, and steel piping and iron fittings internally: Paint.
- In concealed but accessible spaces (including cupboards and non-habitable enclosed spaces): Leave unpainted except for identification marking. Prime steel piping and iron fittings.

Valves: Finish valves to match connected piping.

5.17 PIPING INSULATION

General
General: For insulated piping, completely cover the pipe with insulation fitted tightly to the pipe surface and secured with wires, straps, adhesive, adhesive tape or other appropriate means. If insulation is installed in sections, butt the joints closely together without gaps. Over connection unions and couplers, install the insulation so that it is readily removable.

Standards
Comply with NCC Vol 2 Clause 3.12.5 and AS 4426 requirements.

The requirements in these standards for the insulation of piping exposed to the weather under freezing conditions shall apply to all cold-water piping similarly exposed.

Metal sheathing
Location: Insulated piping in external locations and where exposed to view.

General: Cover piping with metal sheathing sprung over the insulation in one piece with laps at least 30mm wide, and fastened with self-tapping screws or snap head rivets at 150mm maximum centres. Preform the sheathing to match the shape of the insulated pipe and fittings. Position laps to avoid water penetration. In external locations weatherproof the joints and fixings using a non-setting mastic.

Material: Colorbond or approved alternative sheet to match wall colour as far as possible.

Surface preparation
Clean the surfaces to remove scale, rust, grease and dirt and prepare surfaces to suit the insulation. Restore surface coatings, which have been damaged or affected by welding.

Testing
Do not install insulation until the piping has been tested.

5.18 PIPE SUPPORTS

Insulated pipe
General: Provide supports formed to fit around the insulation.

Protection: For pipes DN 25 either:

- protect the insulation at the support point with metal sheathing; or
- replace the insulation at the support point with a shaped wooden spacer block. Butt the insulation up to the wooden block and seal with silicone compound. Clad the block and insulation in 0.5mm zinc-coated steel sheet extending 100mm each side of the support.

5.19 INSTALLATION OF CONCEALED PIPEWORK

Provide minimum clearance between pipelines and electric cables: 100mm.

5.20 UNDER SLAB INSTALLATIONS

Where pipework is laid beneath a concrete slab, including pavements and external works, protect by encasing in PVC tube with approved fittings, sealed to prevent ingress of moisture.

5.21 VALVE BOXES

General
Provide cast-iron valve boxes with removable covers for access to underground gate valves. Provide cast-iron sluice valve covers for access to sluice valves.

Installation
Set beneath each box a shaft formed of UPVC pipe to give clear access to the valve wheel or spindle. Set top flush with pavement surface, or 15mm above unpaved surfaces, and encase in formed concrete box 150mm thick, with top surface trowelled smooth.

5.22 PITS

General
Install below-ground, water meters, stop valves and control valves, in concrete access pits with removable pit covers.

Construction
Internal dimensions: To give 300mm clear space all around the fittings in the pit.

Proprietary precast concrete item or other approved, suitably designed for the trafficable working load in the nominated locations.

Pit covers: To AS 3996.

5.23 WATER HEATING SYSTEMS

Standards
To AS/NZS 3500.1 and AS/NZS 3500.4.

Fall prevention system
Required where equipment is roof installed.

Refer to Spec Part A - *020 General Requirements, Cl 3.12 Fall Prevention System* for requirements.

Reticulation
Supply hot water piping to connect the heater to the supply and to the draw off points and fixtures as shown on Drawings and/or specified. Control hot water supply with stop cock on cold water inlet pipe.

Where copper is required, provide pre-insulated copper piping to all fixtures.

Exposed piping internally to be chrome plated copper piping.

Provide cold water expansion valve, between cold water inlet to the heater and non-return valve, fitted with relief drain. Expansion valve rating to be less than the rating of the temperature/pressure relief valve and in accordance with the manufacturer's recommendations. Drains from temperature pressure relief valve and cold-water expansion valve to discharge to an approved point separately.

Drain from safe tray, where required, to be in a copper pipe concealed within a surface mounted proprietary drainpipe duct or colorbond cover. The ducting/cover is to have a neat and tidy appearance and painted or pre-coloured to colour match the mounting substrate. Use same system throughout.

Solar Water Heater: External Pre-painted steel or approved alternative for external installation.

5.24 PROPRIETARY WATER HEATERS

Where shown on Drawings, supply and install water heaters in accordance with the manufacturer's requirements.

Refer: Tables following for required sizes, and *Schedule of Requirements* and/or drawings for type of heater.

Construction
Completely factory assembled units including heater, container, controls, insulation, casing and the like.

Warranty
Provide the written warranty for each hot water system, indicting serial numbers with location address.

Charging
On completion of installation, commissioning, testing and disinfection, fill the system with water, turn on control and isolating valves and the energy supply and leave the water supply system in full operational condition.

5.25 WATER HEATERS

Supply the system/s specified in the Schedule of Requirements as per the table below and located as per drawings.

Authorised products
Standard: Listed in the WaterMark Product Database, unless otherwise required by the network utility operator.

Microbial control
Standard: To AS/NZS 3666.1 and AS/NZS 3666.2.

Installation Standards for all systems
AS/NZS 3500.4 National Plumbing and Drainage – Hot water supply systems.

AS/NZS 3500.5 Domestic Installations.

General

Provide heaters as documented in the Schedule of Requirements.

Electricity Supply Tariff

Refer to the table below for tariff requirements.

Corrosion protection
Vitreous enamel or bonded ceramic coated steel storage vessel: Provide sacrificial anode/s to each steel storage vessel to suit water quality. Refer to manufacturer's requirements.

Stainless steel / Stainless steel storage vessel: Refer to manufacturer's requirements.

SOLAR WATER HEATERS
Standards: General: To AS/NZS 2712.

Description
General: Provide a proprietary automatic water heater/s as documented in the *Schedule of Requirements* and/or drawings, comprising solar collector/s with thermosiphon storage container; including connections; controls; and necessary fittings.

Include supplementary thermostatically controlled heating (booster) element with an independent isolating switch in the electrical switchboard (Class 1 construction) or the sub-board (Class 2 construction) within each dwelling. Refer to Section 360 Electrical and Mechanical Services; Schedule of Requirements; and drawings.

Solar collectors
Construction:

- Absorber box: Extruded aluminium sides and sheet aluminium base.
- Plate type collector panels: Copper absorber plate, tubes and headers. Continuously silver solder absorber plate to tubes.
- Collector surface: High efficiency selective absorbing coating.
- Glass: Lead free.
- Sealing: Provide seals to prevent weather entering the collector. Locate vent holes to prevent moisture entry.
- In frost prone areas, to prevent freezing, provide second inner glass panel.

Protection: Capable of withstanding large-stone hail storms when tested to AS/NZS 2712 clause 4.6(a). Provide glazing that does not deteriorate over time. Secure collectors against high winds.

Collectors: Install collectors:

- Facing ± 20° of north.
- Inclined at the angle for the nearest location listed in AS/NZS 3500.4 Table H1.

- In a location, not subject to shading at any time of year especially in winter when the sun is low.

Adjustment: If installing at other angles and/or subject to shading, increase the size of the collectors to that required to give the performance of an unshaded collector oriented as specified above.

HEAT PUMP WATER HEATER

Standards: General: To AS/NZS 2712.

Performance evaluation: To AS/NZS 5125.1.

Description

General: Provide a proprietary automatic water heater comprising self-contained reverse cycle heating system and storage container, including connections, controls and necessary fittings. Include supplementary heating element.

Ensure that free air flow around and above the heater is not obstructed and that discharge air does not short circuit to the air intake.

Refrigerant: Do not provide CFC or HCFC refrigerant.

ELECTRIC - MAINS PRESSURE STORAGE WATER HEATER

Standards: General: To AS/NZS 4692.1.

Energy performance: To AS/NZS 4692.2.

Refer to the Schedule of Requirements.

ELECTRIC INSTANTANEOUS (CONTINUOUS FLOW) WATER HEATER

Standard: Install to AS/NZS 5601.1.

- General, Silver and Gold Levels accommodation

Provide water heaters tested and approved to AS3498 to a maximum of 50°C for no requirement of a tempering valve.

- Platinum Level accommodation

Provide factory set at 60^0C minimum water heater together with a Tempering Valve (TV), or a Thermostatic Mixing Valve (TMV) when required by Occupational Therapist (O.T.), to attain output temperatures compliant to AS/NZS 3500.4.

Where water heater temperature is adjustable and cannot be factory set, fix temperature and test to maintain 60^0C minimum output before tempering with TV or TMV.

Note: Post-temperature adjustment - Cover water heater temperature control/s and display, with a shield or other method approved by Superintendent, to conceal and make tamper-proof. Method of concealment not to detract from overall appearance of water heater.

6 WATER HEATERS SIZING – SCHEDULE OF REQUIREMENTS

Water Heater 'Delivery Capacity' listed in schedule of requirements are nominal sizing. Select to achieve calculated occupancy demand.

Provide safe tray and drain to storage type water heaters where required by AS/NZS 3500.4 and as shown on Drawings. Not required for continuous flow water heaters and roof mounted coupled storage tank solar water heaters.

NOTE: Storage type water heaters with temperature preset below 60^0C are not permitted. Continuous flow type water heaters (Electric Instantaneous Water Heaters) temperature presets as nominated in table below.

6.1 DETACHED HOUSES / DUPLEXES / DUAL OCCUPANCY

Solar water heater - Thermosiphon mains pressure storage

Number of Bedrooms	Delivery Capacity in Litres (nom.)	Booster Element Size in Watts	Tariff
2	180L	3600*	Controlled Tariff T33
3 - 4	300L	3600*	Controlled Tariff T33
5 - 6	440L	3600*	Controlled Tariff T33

* Note: Booster element is thermostatically controlled (no manual over-ride).

Heat pump water heater

Number of Bedrooms	Delivery Capacity in Litres (nom.)	Booster Element Size in Watts	Tariff
2 – 3	250L	3600*	Controlled Tariff T33
4 – 5	315L	3600*	Controlled Tariff T33

* Note: Booster element is thermostatically controlled (no manual over-ride).

Electric - mains pressure storage

Number of Bedrooms	Delivery Capacity in Litres (nom.)	Element Size in Watts	Tariff
2 - 3	250L	3600	Night rate Tariff T31
4	315L	3600	Night rate Tariff T31
5	400L	3600	Night rate Tariff T31

6.2 APARTMENTS / CLUSTER HOUSING / ATTACHED HOUSING

Solar water heater - Thermosiphon mains pressure storage

Number of Bedrooms	Delivery Capacity in Litres (nom.)	Booster Element Size in Watts	Tariff
1 - 2	180L	3600*	Controlled Tariff T33

* Note: Booster element is thermostatically controlled (no manual over-ride).

Electric - Instantaneous (continuous flow) water heater

Number of Bedrooms	**Power Capacity** *(Non-selectable power loading & non-selectable temperature control).*	**Thermostatic Mixing / Tempering valves**	**Temperature Output** *(No user adjustment controls or readouts on water heater – refer to 5.2 WATER HEATERS.*	**Tariff**
1	14.5 kW nom. fixed capacity, 20A/phase (415V).	*General, Silver & Gold Levels accommodation* Tempering Valve (TV) not required	Fixed 50^0C maximum temperature compliant to AS/NZS 3500.4	Peak Tariff
2	19.4 kW nom. fixed capacity, 27A/phase (415V).			
1	14.5 kW nom. fixed capacity, 20A/phase (415V).	*Platinum Level accommodation* Tempering Valve (TV) required, *unless* Thermostatic Mixing Valve (TMV) when required by Occupational Therapist.	Fixed 60^0C minimum with a TV, or a TMV to attain output temperature compliant to AS/NZS 3500.4	Peak Tariff
2	19.4 kW nom. fixed capacity, 27A/phase (415V).			

Note: Locate Instantaneous (Continuous Flow) Water Heater in Laundry (refer to Drawings).

Electric - mains pressure storage

Number of Bedrooms	**Delivery Capacity in Litres (nom.)**	**Element Size in Watts**	**Tariff**
Studio & 1 - 2	125L	1800	Controlled Tariff T33
2 - 3	250L	3600	Night rate Tariff T31

7 SANITARY WARE REQUIREMENTS

7.1 GENERAL

Refer to the worksection and drawings for fixture layouts.

7.2 STAINLESS STEEL KITCHEN SINK

Sink material: 304 grade min. stainless steel minimum.

Sink thickness: 1.2mm minimum.

1- and 2-Bedroom Units:

- Description: 900 mm long nom. x 480mm wide min. drop-in single bowl (or 1 & ½ to 1 & ¾ bowl sink) with single left or right-hand drainer.
- Finish:
  - . Polished Stainless Steel: All sinks to have anti-drum treatment.
  - . Single tap hole on tap platform for mixer.

3 or more-bedroom Units:

- Description: 1180 mm long nom. x 480mm wide min. drop-in double bowl or 1 & ¾ bowl sink with single left or right-hand drainer as required (double drainer is also acceptable).
- Finish:
  - . Polished Stainless Steel: All sinks to have anti-drum treatment.
  - . Single tap hole on tap platform for mixer.

Platinum Level accommodation *additional requirements*:

- Description:
  - . All plumbing to be directed to a rear wall trap using low profile fittings, to allow knee room for wheelchair users
  - . Maximum bowl depth – 150mm.
- Underside sink injury hazard protection:

Insulate underside of bowl/s with manufacturer supplied insulating membrane or provide other approved physical protection to prevent possible burn injury of wheelchair users when under bench cupboard is removed.

7.3 LAUNDRY TUB

Studio Apartments and 1 Bedroom Units

- Description: 35 ltr single bowl compact tub with Suds by-pass and enamelled metal cabinet.
- Finish: Stainless-Steel tub, white enamelled steel cabinet.

2 to 3 Bedroom Units:

- Description: 45 ltr single bowl compact tub with Suds by-pass and enamelled metal cabinet.
- Finish: Stainless-Steel tub, white enamelled steel cabinet.

Detached Housing of 4 or more bedrooms:

- Description: 70 ltr single bowl compact tub with Suds bypass, metal cabinet.
- Finish: Stainless-Steel tub, white enamelled steel cabinet.

Platinum Level accommodation *additional requirements:*

- Underside tub injury hazard protection *(applicable only when wheelchair access is provided to under-basin area e.g. using drop-in basin in built joinery)*:
  - . Insulate underside of bowl/s with manufacturer supplied insulating membrane or provide other approved physical protection to prevent possible burn injury of wheelchair users when under bench cupboard is removed.

7.4 BATH AND SHOWER BATH

Standard: AS 2023

- Dimensions are nominal: 1500mm-1700mm length x 730mm-780mm width x 300mm-400mm depth. (Professionally evaluated occupant needs may vary dimensional requirements).
- Description: Pressed Steel or Reinforced 4mm.min. Sanitary Grade Acrylic Non-slip pattern to base. Integrated bath rim reinforcement required.
- Finish: White Vitreous Enamel/White Acrylic.

7.5 SHOWER TRAYS

Standard: AS 3588

- Description: Pressed Steel or Reinforced 4mm.min. Sanitary Grade Acrylic Non-slip pattern to base (Size).
- Finish: White Vitreous Enamel/White Acrylic.

7.6 SHOWER HOSE AND HANDSET

Gold and Platinum Level accommodation:

- General: To AS/NZS 3500.1.
- Position shower fittings to provide a 25mm minimum air gap between the shower handset and the overflow level of any liquid holding fixtures.
  - . Note: Where positioning of shower fittings exposes the handset to potential backflow of contaminated fluids, restrict reach of handset with a 'shower hose retainer' fixed at a height to suit. Do not reduce original hose length (1500mm required - refer to AS 1428.1). If shower hose retainer type requires fixing to wall, ensure integrity of waterproofing is maintained.
  - . The use of Galvin Care Healthcare 'ClevaCare® Shower Arm' or similar is restricted to non-domestic applications only.
  - . Maintain integrity of waterproofing where fixing penetrates membrane.

7.7 VANITY BASIN

General and Silver Levels of accommodation:

- Description: Drop in ceramic basin - Soap recesses and one tap hole for sink mixer.
- Size: 500mm width x 390mm depth nominal. 7 litres minimum capacity.
- Finish: White Vitreous china.

Platinum and Gold Levels of accommodation:

- Description: Semi recessed ceramic basin –Soap recesses and one tap hole for sink mixer.
- Size: 500mm width x 390mm depth nominal. 7 litres minimum capacity.
- Finish: White Vitreous china.

7.8 WC SUITE (4 STAR WELS RATED)

General, Silver and Gold Levels accommodation:

Description:

- Dual flush suite with full seat complete with seat flap.
- Finish / Colour:

. Suite - Vitreous China / White

. Seat – Plastic / White.

Platinum Level accommodation:

Description:

- Dual flush Disabled suite compliant to AS 1428.1 requirements (Caroma Care 400 including Caravelle Care double flap seat, or approved alternative), with solid stainless-steel hinges. Include WC seat non-slip/stabilising buffers to suit.
- Finish / Colour:
- Suite - Vitreous China / White
- Seat – Plastic / White.

8 TAPWARE REQUIREMENTS

Handles to ¾ turn Ceramic Disk Taps = Easy Clean, Star pattern or similar approved.

Item	Description/Brand/Model	Location
KITCHEN SINK MIXER *(4 Star WELS Rated)* Mixers to have rotation stops and not to exceed 150^{O}	Single lever sink mixer. *(Platinum Level accommodation* - provide healthcare extended lever).	
LAUNDRY TUB SET *(4 Star WELS Rated)*	*General, and Silver Level accommodation*: Single lever mixer and 150 mm swivel laundry spout or tap set with swivel spout.	Mixer: Install on side wall beside laundry tub; or laundry tub.
LAUNDRY TUB SPOUT (3 Star WELS Rated)	*Gold and Platinum Level accommodation*: *Separate 150 mm swivel Laundry Arm.*	Install on side wall beside laundry tub. Refer drawings.
LAUNDRY TUB WALL MIXER *(5 Star WELS Rated)*	*Gold and Platinum Level accommodation*: Single lever wall mixer	Wall mixer: Install on side wall beside laundry tub. Position 100mm from front of tub. Refer drawings.
WASHING MACHINE TAPS *(3 Star WELS Rated)*	*All accommodation:* 3/4 turn ceramic disc WM cocks (Hot & Cold).	Within laundry tub cabinet.
BATH SET *(5 Star WELS Rated)*	Single lever bath mixer Provide separate shower and bath mixer sets if shower is installed over bath. Diverter not permitted.	
SHOWER MIXER AND SHOWER SET	General and Silver Level of accommodation: Single lever shower mixer and wall mounted adjustable shower rose (no adjustable arm).	
SHOWER MIXER	Gold and Platinum Level of accommodation: Single lever shower mixer	**Mixer to be positioned toward open side of shower** (<u>not</u> toward wall corner as indicated AS1428.1) Mixer within reach zone outlined in AS1428.1 2021 figure 48. *Refer QBuild Typical Construction Details.*
SHOWER SET *(4 Star WELS Rated)*	Gold Level of accommodation: Adjustable handheld shower kit, mounted on an inverted T- shaped grab rail. AS1428.1 Compliant.	NOTE: Provide <u>Middle Fixing (MF)</u> inverted T- shaped grab rail required to enable location within shower enclosure. Constructed to withstand 1100N force (approx. 110kg) as per AS1428.1. requirements. Shower head vertical support rail to be fixed centred on wall within shower enclosure. Top of horizontal grab rail of shower kit to be 800-820mm. Shower hose connection outlet to be located on opposite wall between 100mm from the internal corner and 1200mm from FFL. where achievable. Location not to interfere with the use of mixer tap or shower niche.

Item	Description/Brand/Model	Location
SHOWER SET *(4 Star WELS Rated)*	Platinum Level of accommodation: Adjustable handheld shower kit, mounted on an inverted T- shaped grab rail. AS1428.1 Compliant.	NOTE: Provide either a Left Hand (LH) or Right Hand (RH) inverted T- shaped grab rail. Type to be determined by location of sanitary fixture and in accordance with AS1428.1. Conversely, this affects the design and compliance. Constructed to withstand 1100N force (approx. 110kg) as per AS1428.1. requirements. Shower hose connection outlet to be located on opposite wall between 100mm from the internal corner and 1200mm from FFL. where achievable. Location not to interfere with the use of mixer tap or shower niche.
HOSE RESTRICTOR WALL BRACKET	Gold and Platinum Level of accommodation: Install wall mounted hose restrainer suitable for accessible showers with 1500mm shower hose where required. Dual screw wall mount plate.	
VANITY BASIN SET *(5 Star WELS Rated)*	Single lever Basin mixer. Maximum reach within 300mm of front of basin. Platinum Level accommodation - provide healthcare extended lever).	
WC STOP COCKS	Mini stop cock to cistern	
THERMOSTATIC MIXING VALVES (TMV)	Supply with integral or additional isolation valves for maintenance as indicated on the Drawing Details.	Note: Generally, <u>not</u> to be provided. Provide only when identified as a requirement by an Occupational Therapist (O.T.), to attain output temperatures compliant to AS/NZS 3500.4).
TEMPERING VALVE		All units not fitted with a TMV. (Note: When installing 50^{o}C limited electric instantaneous water heaters, refer to manufacturer's requirements to determine if tempering valve is applicable).
500 kPa PRESSURE REDUCTION VALVE		To each house, each duplex unit or each apartment complex, or as specified, or as otherwise shown on the drawings.
Hose Cocks	Standard T Handle. ½ turn tap with ceramic disc OR Standard lever handle. ¼ turn tap with ball joint To accept standard domestic hose.	Locate as shown on the drawings.

360 ELECTRICAL AND MECHANICAL SERVICES

1 GENERAL

1.1 STANDARD

To AS/NZS 3000 Wiring Rules.

1.2 SAMPLES

Provide samples where requested by Superintendent.

1.3 AS-BUILT DRAWINGS

Provide prior to practical completion, as-built drawings accurately showing the location and depth of underground electrical wiring, telecommunications and smoke alarm wiring and electrical cable pillars and electrical cable pits, if any.

Refer *Preliminaries* worksection *'As-built Drawings'*.

2 CERTIFICATION

2.1 SUBMISSIONS

Design

Certification: All electrical design and drawings are to be prepared and signed off by an RPEQ Electrical Engineer.

2.2 REQUIREMENT

Upon completion of electrical works provide to the Superintendent certification by a practising professional Electrical Engineer registered under the Professional Engineers Act 2002 (Queensland) (Contractor's Certifying Consultant) that:

(i) All tests to electrical works and materials required under the Contract have been completed and

(ii) The completed electrical installation fully meets the electrical requirements specified under the Contract.

THE CERTIFYING PRACTISING QUEENSLAND REGISTERED PROFESSIONAL ENGINEER IS TO BE ENGAGED BY THE CONTRACTOR.

Refer also to WORKS CERTIFIED BY CONTRACTOR'S CERTIFYING CONSULTANTS – *PRELIMINARIES*.

3 QUALITY

3.1 INSPECTION

Witness points

Give sufficient notice so that inspection may be made at the following stages:

- trench excavations prior to conduit or cable installation;
- underground or concealed conduits before backfilling, covering, concreting, etc;
- concealed cabling prior to covering.

Refer *Preliminaries 'Schedules of Requirements'* for mandatory staged inspections.

3.2 TESTS

Inspect and test as set out in the requirements of the Electricity Act, the Electricity Regulations, the Electrical Safety Act including Electrical Safety (Installation of Ceiling Insulation) Notice 2010 and the Electricity Safety Regulations. Lodge written certification of electrical work with Principal prior to Practical Completion. Copy of written certification is to be left in meter box on completion of construction.

4 EXECUTION

4.1 INSTALLATION GENERALLY

Compliance

Work is to be performed in accordance with the Electricity Act, the Electricity Regulations, the Electrical Safety Act including Electrical Safety (Installation of Ceiling Insulation) Notice 2010, the Electricity Safety Regulations and relevant Electricity Distributor requirements.

Requirement

Provide a complete electrical installation, including consumers mains, switchboard/s (accessories, appliances, and luminaries) connecting the Electricity Distributor's service to each point of use, including the connection of permanently connected equipment the provision of which is specified in other sections herein.

4.2 CONNECTION OF SUPPLY

The method of connection of supply to each site will be as specified in the Schedules.

The Contractor is to make application to an Electricity Retailer of their choice for permanent supply, to allow for the installation of all meters (community and individual units). The meters and permanent supply are to be in place prior to the Contractor requesting Practical Completion. The Contractor is to pay all fees associated with the connection of supply and installation of meters. At Practical Completion, the Contractor is to make arrangements for disconnection of supply and settle their accounts with the retailer.

Where a property pole is required by Electricity Distributor, or otherwise specified, provide 150mm minimum OD, hot dipped galvanised steel pole to AS 1650. Steel property pole is also to comply with Electricity Distributor requirements and be of a type which is installed in the ground by means of a rag bolt assembly.

4.3 METER BOX/SWITCHBOARD - SINGLE INSTALLATIONS

Provide the requirements for the following dwelling units:

- Detached Houses; and
- Cluster Houses supplied directly from Electricity Distributor service pillar.

Provide and position meter box on side of building where shown on the Drawings, recessed and within two (2) metres of building front wall and in front of any return fence to building. Install meter box in accordance with QBuild Standard Detail B1004-1. Do not locate meter boxes in carports.

Meter box is to contain Electricity Distributor metering equipment - one meter for light and power and one meter and control relay switch for water heating where electric water heating, including electric heat pumps, is specified.

Provide a switchboard with a vertically hinged door, recessed into wall where shown on Drawings, containing separate combined residual current device/miniature circuit breakers (RCD/MCBs), one for each of the following circuits:

- Lighting – combined RCD/MCB required – single phase, rating 10 Amps/30 milliAmps;
- Power (SOs) – combined RCD/MCB required – single phase, rating 20 Amps/30 milliAmps;

- Power (SOs) – combined RCD/MCB required – single phase, rating 20 Amps/30 milliAmps;
- Electric range (Where applicable) - combined RCD/MCB required – single phase, rating 40 Amps (minimum) /30 milliAmps;
- Or
- Hotplate – combined RCD/MCB required – single phase, rating 32 Amps (minimum) /30 milliAmps;
- Plus
- Oven - combined RCD/MCB required – single phase, rating 32 Amps (minimum) /30 milliAmps;
- Electric storage water heater (where applicable), including solar hot water units - combined RCD/MCB required - rating to suit unit. Single phase, typically 20 Amps/30 milliAmps;
- or
- Electric Instantaneous water heater (where applicable) - combined RCD/MCB required - rating sized to suit unit. Typically, three phase, 32 Amps/30 milliAmps.
- Airconditioning Unit (NB: Not required on most projects. Only applicable where air-conditioning is particularly specified) - combined RCD/MCB required – rating to suit unit. Typically, single phase, rating 20 Amps/30 milliAmps.

Provide a single main switch to control all RCD/MCBs other than the water heating RCD/MCB.

Unless otherwise specified, locate bottom of switchboard 1500mm above finished floor level. In Gold and Platinum Levels accommodation and special needs accommodation, locate bottom of switchboard 1200mm above finished floor level.

Provide additional light and power circuits where required by AS/NZS 3000.

All individual dwelling sub-circuits must be on RCD protection using combined overload/RCD circuit breakers.

Consumers mains are required to have a minimum current carrying capacity of 63 Amps for single phase electrical installations and 32 Amps per phase for multiphase electrical installations.

The maximum demand of consumers mains and submains is to be determined by the calculation method in accordance with Appendix C of AS/NZS 3000 Wiring Rules.

Residual Current Device (RCD) protection is to be provided by combined RCD/MCBs, one for each circuit. RCDs shall have a residual current rating of 30 milliAmps and shall be AS/NZS 3000 Type 'A'.

Residual current devices protecting single -phase inverter air conditioners (where applicable), shall be AS/NZS 3000 Type 'A'.

Power circuits for socket outlets (SOs) are to be wired with 2.5mm^2 cable. SOs are to be connected to power circuits so that no one circuit supplies more than two thirds of the total number of SOs. Kitchen bench SOs are not to be connected to the same circuit.

Range circuit is to be wired with 6mm^2 (minimum) cable.

Permanently identify main switches and RCD/MCBs on front of switchboard panel with indelible professional lettering. Self-adhesive type labels are not acceptable.

Refer *Plumbing and Drainage Section - Water Heating Systems* for size, element rating and tariff for electric water heaters.

4.4 METER BOX/MAIN SWITCHBOARD - MULTIPLE INSTALLATIONS

Generally for the following dwelling units:

- Attached Houses / Row or Townhouses;
- Dual Occupancy and Duplex Units;
- All Unit and Apartment Blocks; and
- Cluster Houses not supplied directly from Electricity Distributor service pillar.

Provide and position meter box containing main switchboard where shown on Drawings to accommodate the following:

- Main switch to control the entire installation.
- Circuit breakers (D curve type) to protect each unit light and power submain: Provide additional circuit breakers (D curve type) to protect each water heater submain where electric water heating is specified.
- Minimum current rating of submain circuit breakers is to be 50 Amps for light and power and 20 Amps for water heater.
- Single switch to control communal lighting and power.
- A separate combined residual current device/miniature circuit breaker (RCD/MCB) to protect each communal lighting circuit and each communal power circuit. RCDs shall have a residual current rating of 30 milliAmps. Combined RCD/MCBs protecting communal power circuits shall have a current rating of 20 Amps. RCDs be AS/NZS 3000 Type 'A'.
- Communal lighting time switch and enclosure.
- Communal lighting by-pass switch.
- Lockable communal socket outlet (SO);
- Circuit breaker (D curve type) to protect each set of unmetered submains or submains supplying a sub board in a community room where specified;

Circuit breakers and RCD/MCBs are to be suitably rated for the available Electricity Distributor fault current:

- Meter panel with adequate space to install Electricity Distributor metering equipment required for Each unit, (light & power, and hot-water where electric storage type is provided, plus control relay switch), and for a meter for communal light and power;
- Supply and meter all communal light and power from main switchboard;
- Hot Water System - Refer Plumbing and Drainage Section - Water Heating Systems for size, element rating and tariff for electric water heaters;
- Clearly and permanently mark and identify all metering and equipment on front of panel with indelible professional lettering to indicate the portion of the installation that they control/supply; self-adhesive type labels are not acceptable;

- Lay out equipment and metering on main switchboard and metering distribution boards in ascending numerical sequence;
- Meter boxes are to be to the Supply Authority requirements and be able to have Supply Authority lock put on them;
- Meter boxes are to be surface mounted, unless otherwise specified;
- Meter boxes for dual occupancy and duplex units are to be recessed;
- Fit heavy duty approved hasp and staple with non-accessible fixings to all meter box doors to accept Electricity Distributor padlock;
- A minimum clearance of 600mm is to be provided around meter boxes to enable all electrical equipment to be safely and effectively operated and adjusted. Where a meter box incorporates a hinged panel, the 600mm clearance is to apply with the hinged panel fully extended and opened to 90 degrees.

Consumers Mains are required to have a minimum current carrying capacity of 63 Amps per phase.

The maximum demand of consumers mains and submains is to be determined by the calculation method in accordance with Appendix C of AS/NZS 3000:2000 Wiring Rules.

NOTE: Communal light and power facilities are not required for dual occupancy and duplex unit projects unless specified.

Refer *Schedules of Requirements*.

4.5 ADDITIONAL METERING POSITIONS - MULTIPLE INSTALLATIONS

Where more than one meter position is proposed for a project, obtain written approval from the relevant Electricity Distributor prior to the commencement of the project.

Where written approval is received, the following is required:

- Unmetered submains are to be a minimum of 16mm^2 cable, three phase and neutral supply unless otherwise specified;
- Unmetered submains are to originate at main switchboard;
- Unmetered submains are to be installed underground and as specified in WIRING GENERALLY herein;
- Unmetered submains are to be protected by a circuit breaker (D curve type) rated at 80 amps or the maximum current rating permitted by AS/NZS 3008.1.1, whichever is the higher rating;
- An isolating switch located on each metering distribution board to control all load;
- Layout, control and equipment to meet relevant requirements of 'SWITCHBOARD MULTIPLE INSTALLATIONS' herein.

All communal light and power is to be supplied and metered at the main switchboard.

Refer *Schedules of Requirements.*

4.6 DISTRIBUTION SWITCHBOARD (SUB BOARD) - MULTIPLE INSTALLATIONS

Provide an approved distribution switchboard (sub board) with a vertically hinged door located within each unit, recessed into wall and not to be located within any enclosed cupboards, containing separate combined residual current device/ miniature circuit breakers (RCD/MCBs), one for each of the following circuits:

- Lighting – combined RCD/MCB required - rating 10 Amps/30 milliAmps.
- Power (SOs) – combined RCD/MCB required - rating 20 Amps/30 milliAmps.
- Power (SOs) – combined RCD/MCB required - rating 20 Amps/30 milliAmps.
- Electric range, hotplate unit, wall oven - combined RCD/MCB required - rating 32 Amps/30 milliAmps.
- Electric water heater - combined RCD/MCB required - rating 10 Amps(minimum)/30 milliAmps.
- Electric Instantaneous water heater - combined RCD/MCB required - rating 32 Amps(minimum)/30 milliAmps.
- Evaporative cooling unit (where applicable) - combined RCD/MCB required - rating 20 Amps/30 milliAmps.

Provide a single main switch to control all RCD/MCBs other than the water heating RCD/MCB.

Provide additional light and power circuits where required by AS/NZS 3000.

Unless otherwise specified, locate bottom of switchboard 1500mm above finished floor level. In Platinum and Gold Levels accommodation, and special needs accommodation, locate bottom of switchboard 1200mm above finished floor level.

RCD/MCBs are to be C curve types and be the same brand name as the submain circuit breakers on the main switchboard/metering distribution switchboard.

Residual Current Device (RCD) protection is to be provided by combined RCD/MCBs, one for each circuit. RCDs shall have a residual current rating of 30 milliAmps and shall be AS/NZS 3000 Type 'A'.

Residual current devices protecting single -phase inverter air conditioners (where applicable), shall be AS/NZS 3000 Type 'A', Super Immune type (which is available from some manufacturers) and must be recommended by the manufacturer as suitable for protecting inverter air conditioners without nuisance tripping.

Power circuits for socket outlets (SOs) are to be wired with 2.5mm^2 cable. SOs are to be connected to power circuits so that no one circuit supplies more than two thirds of the total number of SOs. Kitchen bench SOs are not to be connected to the same circuit.

Range circuit is to be wired with 6mm^2 cable.

Where project has a community room, provide a distribution switchboard (sub board), recessed into wall, in the common area of the community room containing separate combined residual current device/miniature circuit breakers (RCD/MCBs), one for each circuit. RCDs shall have a residual current rating of 30 milliAmps. Combined RCD/MCBs protecting power circuits shall have a current rating of 20 Amps.

Permanently identify main switches and RCD/MCBs on front of switchboard panel with indelible

professional lettering. Self-adhesive type labels are not acceptable.

Mark “415 Volts” on panel where distribution board is supplied by more than one phase.

Refer *Schedules of Requirements.*

4.7 WIRING - GENERAL REQUIREMENTS

Provide wiring in accordance with Electricity Distributor requirements and AS/NZS 3000 Wiring Rules.

Refer to Clause 4.8 – WIRING – PARTICULAR REQUIREMENTS, for additional wiring requirements for attached houses, dual occupancy and duplex units, all unit and apartment buildings, and cluster houses not supplied directly from an Electricity Distributor service pillar.

Install all wiring in such a manner that where replacement of cables becomes necessary, the new cables can be readily drawn.

All wiring is to be concealed within floors, ceilings, walls and partitions.

Cables are to have copper conductors. Earthing conductors are to be multi stranded.

Consumers Mains are to be installed between Electricity Distributor point of supply and main switchboard. Consumers Mains are to be installed underground where a property pole is specified or required for connection of an overhead Electricity Distributor service.

Enclose TPS cables in rigid PVC conduit where installed in solid and cavity masonry or brick walls.

Install TPS cables in brick veneer walls to prevent bridging of cavities.

Enclose TPS cables in rigid PVC conduit where exposed to direct sunlight.

Provide a minimum length of one metre of cable between range, wall oven unit and hotplate unit and the wall, enclose in flexible PVC conduit to permit removal of range, wall oven unit and hotplate unit for maintenance. Where range, wall oven unit or hotplate unit comes suppled with a prewired flexible cord, the flexible cord is to be enclosed in flexible PVC conduit and connected to the range circuit in a junction box located beneath the kitchen bench. Saddle flexible PVC conduit clear of cupboard contents. Saddle conduit to range, wall oven unit and hotplate unit and to wall.

All cables installed in steel lighting posts and in ducts constructed of steel, concrete, brickwork, masonry or other approved material, are to be either sheathed cable or installed in rigid or flexible PVC conduit. Single insulated cables passing through cable pits are to be enclosed in flexible PVC conduit.

Conduits installed in solid and cavity masonry or brick walls and brick veneer walls are to be installed vertically and plumb and fixed to prevent bridging of cavity. Provide damp proof course where conduits do breach cavity. Refer to QBuild Standard Details for meter box installation.

Provide a separate minimum 20mm diameter rigid PVC conduit for each circuit. Provide approved wall boxes for accessories where installed on brickwork and concrete filled masonry walls. Conduits to enter wall boxes.

Conduits are to be sized so that the combined internal cross-sectional area of the enclosed cables does not exceed 40% of the internal cross-sectional area of the conduit. Changes in direction of conduits are to be by means of bends. Do not use elbows or T pieces.

Flexible corrugated PVC conduit is not approved for use except where it is joined to rigid PVC conduit to enter wall boxes and with a maximum of 150mm in length. Heavy duty flexible corrugated PVC conduit complying with AS 2053 and flexible corrugated PVC conduit with equivalent mechanical strength are approved for use in concrete slabs and decks only.

Protect all exposed conduits emerging from the ground up an external wall or post with a 1.5mm thick galvanised steel cover to a minimum height of 2 metres above finished ground level. Where bottom of steel cover does not rest on a concrete or paved area, provide a concrete platform 50mm above finished ground level for cover to rest on.

During construction, seal ends of all conduits to prevent entry of water and/or foreign bodies, and suitably protect cables from mechanical damage.

Wiring enclosed in conduit is not permitted to be embedded in external concrete slabs such as car parking areas, driveways and paths. All wiring external to a building is to be installed as underground wiring.

Enclose underground wiring in heavy duty rigid PVC conduit to AS/NZS 2053, installed with large sweep bends to enable easy replacement of cables. Install underground wiring conduits in trenches in accordance with AS/NZS 3000 and AS/NZS 3008.1.1, generally not less than 500mm below finished ground level. When installed in a common trench lay under other services and provide a minimum 100mm clearance from other services. Trenches and wiring must be inspected by Principal before backfilling can commence.

Joints in underground wiring are not permitted.

4.8 WIRING - PARTICULAR REQUIREMENTS

Provide the requirements for the following dwelling units:

- Attached Houses / Row or Townhouses.
- Dual Occupancy and Duplex Units.
- All Unit and Apartment Blocks.
- Cluster Houses not supplied directly from Electricity Distributor service pillar.

Refer ‘SWITCHBOARD MULTIPLE INSTALLATIONS’ ‘WIRING GENERALLY’ herein.

Reticulation from the main switchboard to the distribution switchboards (sub boards) within the units is to be installed beneath the ground floor concrete slab of the building and enclosed in heavy duty rigid PVC conduit complying with AS/NZS 2053, then rising vertically to the distribution switchboard (sub board) enclosed in rigid PVC conduit. Reticulation is not to be installed through roof spaces.

Where installation consists of more than one building, reticulation from the main switchboard to other buildings is to be installed underground in heavy duty rigid PVC conduit complying with AS/NZS 2053 and be provided with electrical cable pillars or electrical

cable pits at each building in positions where shown on Drawings. Conduits are to loop in and out of cable pits and cable pillars to allow ready access to wiring for withdrawing purposes. Electrical cable pits installed in vehicular traffic areas are to be constructed of polymer concrete or similar insulated material, be fitted with a hot dipped galvanised steel lid, and have a minimum dimension 600mm high x 300mm wide x 700mm deep. Electrical cable pits installed in non-vehicular traffic areas are to be constructed of high-density polyethylene (HDPE) or similar insulated material, fitted with a polymer concrete or similar insulated material lid, and have a minimum dimension of 550mm high x 350mm wide x 500mm deep. Electrical cable pit lids are to be imprinted with the word 'ELECTRICITY'. Electrical cable pillars are to be similar to Electricity Distributor service pillars, be constructed of high-density injection moulded polyethylene material and be of the ventilated type. Cover is to be secured to the base with D head or socket button stainless steel screws. Underground conduits are to finish above base of electrical cable pillars to prevent water from entering conduits.

The minimum size of submains between the main switchboard and the distribution board (sub board) in each unit is to be 16mm^2 cable for light and power and 4mm^2 cable for water heating.

Where a common submain neutral conductor is used with light and power and water heating submains, neutral conductor is to be a minimum size of 16mm^2.

Reticulation from the distribution board (sub board) within each unit to the various luminaires, socket outlets, accessories, appliances and equipment shown on the electrical layout plan is to be concealed within floors, ceilings, walls and partitions. The electrical installation to each unit is to be within the area occupied by that unit and be completely independent of the adjoining installation.

Install communal light and power circuits where practicable within buildings otherwise, as in the case of external lighting, install underground.

4.9 EARTHING

Install earthing system to comply with the requirements of the relevant Electricity Distributor and AS/NZS 3000 Wiring Rules.

A separate earth bonding connection is required for each house/unit. Connect conductor to cold water pipe with a brass clamp in an accessible location. Mark location on both switchboard and distribution board.

Set and saddle earth electrodes to wall. Enclose earth electrode with rigid PVC conduit between ground level and the underside of the earth connection where earth electrode is installed in turfed areas. Bends in earth electrodes are to be made in a manner which prevents breakage of the copper sheathing.

All metal posts supporting luminaires including bollard light posts are to be earthed with an earthing conductor connected directly to the post.

4.10 SURGE PROTECTION

When a social housing apartment complex has a lift (or lifts), provide surge protection as follows:

- On the main switchboard communal power section, provide a surge diverter that has an IEC 61643-1 maximum discharge current (Imax) rating of 100kA, 8/20µs, protecting each Phase to Ground.
- On all lift control panels/switchboards, provide a surge diverter that has an IEC 61643-1 maximum discharge current (Imax) rating of 40kA, 8/20µs for each Phase to Ground, and Neutral to ground.

All surge diverters must have visual failure indication and must be installed so that they can be seen without opening up the switchboard escutcheon.

All surge diverters and connecting cabling shall be protected by dedicated fuses or circuit breakers.

Connecting cabling to the surge protection shall be kept as short as possible. Connecting cabling and the upstream protection, shall be provided and sized, as recommended by the surge diverter manufacturer.

4.11 COMMISSIONING

On completion, clean faceplates, luminaires reflectors and diffusers, and the like. Replace faulty lamps, reinstate ground surfaces and finishes disturbed by trenching, and hand over the completed installation in working order.

Liaise with the relevant Electricity Distributor, to connect supply to site, erect all metering and pay all costs, fees, charges, and the like in connection therewith, prior to acceptance of the installation by the Principal.

Provide a completed copy/copies of the electrical subcontractor's Request for Initial Connection, Metering Change or Service Alteration (Form 2) to the Superintendent prior to Practical Completion. The Form 2 is to nominate the specified water heating tariff.

5 EQUIPMENT

5.1 ACCESSORIES

Flush mounting

Install flush mounted accessories on standard wall boxes in exposed brickwork and concrete filled masonry walls, and on standard mounting brackets in stud framed walls.

Where conductive building materials such as insulation, tie down rods, bracing and plumbing pipes are installed behind or within 200mm of the rear of accessories such as switches and socket outlets (SOs), approved insulated shrouds are to be fitted to the rear of accessories to maintain double insulation.

Colour: White or off-white.

Any snap on surrounds to be approved type.

Switches: Minimum rating: 240 V AC, 10 A.

Accessories

Standard pattern unless otherwise specified.

5.2 LUMINAIRES (LIGHTING)

General

The lighting and lighting installation shall comply with both the requirements and recommendations of AS/NZS 60598.1, AS/NZS 3820, AS/NZS 1680.1, AS/NZS 1158, AS/NZS 4282 and other applicable Australian Standards.

All lighting must be supplied by companies that are Australian Lighting Distributors. Direct importation of

the lighting by the Contractor, from companies in other countries, is not acceptable. All lighting must comply with the requirements of the Australian standard, AS/NZS 3820 'Essential safety requirements for low voltage electrical equipment'. All luminaires are to be Electro Magnetic Compatibility (EMC) compliant.

Incandescent/ halogen, fluorescent and discharge luminaires (metal halide, high pressure sodium, etc) are not to be used, unless otherwise approved.

LED type luminaires with LED light sources shall be provided and they are to have a rated average operational life of at least 50,000 hours.

Light points

As a minimum, provide light points in the following locations:

Location/Room	**Lighting provision (Minimum Requirement)**
Front and rear entries	one exterior light to each front and rear entry. Wall lights or ceiling lights allowed. NB: Position the lights so as not to interfere with opening of security doors.
Patios and balconies and/or pergola areas	one exterior light to each. Wall lights or ceiling lights allowed
Entry Foyer	One light. Ceiling mounted.
Living Room	One light minimum. Ceiling mounted. At least one additional light required if area is over 15 m^2. Provide more lights if required due to light type selected.
Kitchen	One light (minimum) in the centre of kitchen, and one task light above the cooking bench/sink area. Where over bench cupboards are installed the task lighting may be provided by using an LED strip light under those cupboards. Independently switch the task lights.
Dining area	One light. Ceiling mounted. At least one additional light required if area is over 15 m^2. Provide more lights if required due to light type selected.
Bedroom	one light (minimum), ceiling mounted in each bedroom.
Multi-purpose space	One light (minimum). Ceiling mounted over the work desk.
Bathroom/Ensuite	one on the ceiling in the middle of the room and one on the ceiling above the vanity unit;
Hallway	One light (minimum). Ceiling mounted.
Water Closet/Amenities	One light. Ceiling mounted.
Laundry	One light. Ceiling mounted.
Storeroom	One light. Ceiling mounted.
Carport/Garage	One light (minimum). Ceiling Mounted.
Clothesline area and access path	One exterior light (minimum). Wall light or sensor floodlight.
Access Paths	Exterior lights as required. Bollards or wall lights or flood lights.
Car Parks (No Roof)	Pole mounted street lights.
Carparks (Roofed)	Exterior roof mounted lights as required.

Dwelling light fittings must:

Have lights which have (3000K to 4000K) colour temperature.

Be designed to limit lamp source glare using diffusers or shielding.

All general lighting (including ceiling fan lights) is to be LED, with replaceable globes. For task lighting, fixed LED lights are acceptable.

Be durable and resistant to impact damage. NB: Glass diffusers and covers are not permitted.

Be positioned to provide even lighting to the room and be located away from ceiling fan blades to avoid producing light strobing.

Be suitably weatherproof (IP rated) in wet and external locations.

Be IP54 rated (or better) in bathrooms and ensuites.

Where surface mounted, be secured directly to structural timber, ceiling framing or noggings or to concrete ceilings, or to external walls.

- For wall mounted lights, be mounted at 2100mm above finished ground or floor level.
-
- NOTE: Ceiling fans containing a light may be used in the bedrooms, dining and living rooms if desired. However additional supplementary ceiling mounted lighting is to be provided where combination ceiling fan/lights are used in dining and living rooms.
-

5.3 COMMUNAL LIGHTING

following types and installed where shown on Drawings:

external wall mounted;

external soffit mounted;

pole mounted;

bollard;

recessed brick.

Communal external lighting levels are to comply with the categories defined in AS/NZS 1158 – Lighting for Roads and Public Spaces, as listed below:

Location	**AS 1158 Category**	**Maintained Average Horizontal Illuminance**
Roadways/Driveways	PR1	7 lux
Roadways/Driveways – Also for Pedestrian Use	PR1	7 lux
Pathways and Other Pedestrian Areas	PP1	10 lux
Steps/Stairways/Ramps	PE2	Same as highest level required for connecting elements. Not less than 7 Lux.
Car Parking Spaces – For General Use	PC1	14 lux
Car Parking Spaces – For Use by People with a Disability	PCD	14 lux or greater, and greater than the overall carpark average.

Communal Light fittings are to be LED light fittings with fixed LED light sources. Fittings must be cost effective, vandal resistant and durable (colour temperature range 3500K to 4500K).

All communal lighting must comply with the requirements of AS/NZS 4282 - Control of the obtrusive effects of outdoor lighting.

Each communal luminaire is to be fitted with an internal fuse.

Solar powered lighting

Solar powered external communal lighting may be provided where an assessment and design has been carried out by an RPEQ electrical engineer and that engineer has confirmed:

- The solar lighting is expected to provide the required lux levels for the life of the fittings.
- The lights are expected to remain fully functional with only minimal maintenance (such as cleaning) for at least 10 years.
- The lights each contain a battery that is designed when fully charged, to power the lights for operation over a full night time period for at least 3 consecutive days, without further charging.
- The lights each contain a photovoltaic solar panel that is sized to keep the battery fully charged during overcast cloudy days.
- Shading due to existing and proposed new trees, bushes and buildings are not expected to affect the solar light ability to operate as specified, over the life of the fitting.
- The lights (and solar panels) are weatherproof, impact/vandal resistant, and suitable for the proposed location where they are being installed.
- The lighting is supplied and backed by an Australian company that has operated for at least 5 years
- A five-year (minimum) warranty is provided for the lights, by the supplier or an Australian manufacturer.

A copy of the RPEQ engineers' assessment of any proposed solar lighting is to be submitted for review and approval, during the contract design stage of the project.

Time switch and a photoelectric (PE) switch

Communal lighting is to be controlled by a time switch and a photoelectric (PE) switch, connected to the communal lighting circuit, and set to operate between dusk and 1:30 a.m., unless otherwise advised.

Refer 'Time and Photoelectric (PE) Switches - Communal Lighting 'herein.

Shared internal/external stairs

Where communal lighting is installed on stairs which provide access to more than one dwelling unit, luminaries provided are to include general lighting and emergency lighting. Also, approved push button time delay switches are required to be installed at the bottom of the stairs and at each living level above, to operate/override the general communal lighting on each set of stairs separately, in the 1:30 am and dawn period (when the general communal lighting is normally off). Provide an additional push button time delay switch where access is at mid-level of stairs or at the top of stairs where they split from a common mid-landing. NB: An alternate solution using movement sensors instead of pushbutton time delay switches, is also acceptable.

Wall mounted luminaires

Wall mounted luminaires are to be mounted 2100mm above stairs and finished ground level.

Communal emergency lighting

Where communal emergency lighting is installed to comply with the National Construction Code / Building Code of Australia, an additional unswitched supply is required from the load side of each communal lighting circuit protection at the main switchboard to the associated emergency luminaries, to provide a continuous battery charging supply.

Pole mounted luminaires

Where communal luminaires are pole mounted, unless otherwise specified by manufacturer, poles are to be set and plumb into a concrete footing allowing for conduit and cable entry.

Unless otherwise specified, pole mounted luminaires are to be installed 2500mm above ground level on a proprietary pole that is prepared to take the fitting, mounting bolts and the like. The pole footing is to be 20 Mpa concrete 300mm x 300mm x 600mm deep (minimum) with 25mm weathering at top to finish level with ground at edges.

Certification of the suitability of the proposed light poles, with the light fittings and proposed foundations, (for the particular site and pole locations), is required by an RPEQ structural engineer.

5.4 SWITCHES

Except for weatherproof and large rocker types, switches are to be standard pattern in size. Except for weatherproof types, switches are to be white in colour. Switches are to be vertically mounted types and have a minimum current rating of 10 Amps.

Silver and General Levels accommodation:

Install switches for, lights, exhaust fan/s, and ceiling fan/s controls, where shown on Drawings and mounted 1000mm above floor unless otherwise specified on Electrical Drawings.

Platinum and Gold Levels accommodation:

- Install switches for, lights, exhaust fan/s, and ceiling fan/s controls, where shown on Drawings and located at a consistent height between 900mm – 1100mm above finished floor level and horizontally aligned with the door handle at the entrance to a room.

Platinum Level accommodation:

- Light switches and Isolating switches to be AS 4299 compliant large rocker types.

All lights are to have independent switches, except for two-way switched lights and communal lights. Except for weatherproof and large rocker types, switches are to be standard pattern in size.

Provide two-way switching for hallway light.

Provide two-way switching for garage and carport lights with one switch located inside the house/unit, other switch located in car accommodation area at driver's side entry.

Isolating Switches:

Provide separate wall mounted isolating switches for Range, Wall Oven/Under Bench Oven, Hotplate and Electric Water Heater.

Where a separate wall oven unit and hotplate unit are specified, provide a separate isolating switch to each.

Install isolating switches on rear wall beside and not behind range/hotplate. Locate 100mm above bench level and at least 600mm from corners (prefer to right side of range/hotplate).

Install water heater isolating switch on wall beside water heater at a minimum of 600mm above floor/finished ground level.

Where Solar Hot Water Heaters are required, provide an isolating switch in the electrical switchboard (Class 1 construction) or the sub-board (Class 2 construction) within the dwelling for the thermostatically controlled heating (booster) element. Refer to drawings; Section 330 Plumbing and Drainage Services; and Schedule of Requirements.

External switches are to be weatherproof types.

Refer *Schedules of Requirements.*

5.5 TIME AND PHOTOELECTRIC (PE) SWITCHES - COMMUNAL LIGHTING

Provide a time switch and a photoelectric (PE) switch to control communal lighting.

Photoelectric (PE) switch is to be wall mounted above meter box between 2400mm and 3000mm above finished ground level. Fixing to top of meter box is not permitted. Refer 'Communal Lighting' herein.

Install time switch on front of main switchboard panel in an approved enclosure with a transparent cover which requires the use of a tool for removal. Removal of cover is not to expose bare terminals.

A suitable contactor is to be installed behind the switchboard panel to operate the communal lighting as specified. The time switch and photoelectric switch wiring are to be wired to the coil of the contactor.

Provide an unmarked switch adjacent to time switch to override both time switch and photoelectric (PE) switch for testing purposes.

5.6 SOCKET OUTLETS (SOS)

Single phase - 10 Amp - 3 pin - Flat pin – Switched
Socket outlets, Except for weatherproof and large rocker types:

Type: standard pattern size.

Colour: White.

Socket outlets are to be horizontally mounted types.

SOs for Platinum Level accommodation and special needs accommodation are to be AS 4299 compliant large rocker types.

Kitchen SOs are required to be on a separate circuit to the remainder of the SOs within an individual dwelling.

Provide socket outlets (SOs) in the following locations. *Note:* All external SOs are to be weatherproof rated.

one single SO for refrigerator recess*);*

two double SOs above benches in kitchen;

one single SO for microwave oven;

Four double SOs in living/dining room. One near the antenna outlet and the others distributed around the room;

one double weatherproof SO in outdoor living;

one additional double SO in living room adjacent antenna outlet;

one double SO in dining room;

one single SO in hallway/corridor;

two double SOs in bedroom 1, one either side of the nominated bedhead location;

plus

- one additional double SO on wall opposite bed position *(1200mm nom. above floor level adjacent data/phone outlet)*;
- two double SOs in remaining bedrooms (other than bedroom 1) one either side of the nominated bed-head location,
- *plus*
- one double SO at the desk location;
- two double socket outlets in multi-purpose spaces of 1-bedroom dwellings.
- one double SO for vanity bench in bathroom;
- one double SO (minimum) for washing machine and dryer in laundry;
- one double SO for NBN equipment and wireless router.
- one double SO adjacent to each data/phone outlet;

- one double weatherproof SO for general use in attached garage for Houses only *(position to rear of vehicle space – opposite vehicle entry)*;
- one double SO for future remote-controlled door motor in attached garage *(position near vehicle entry 1800mm above floor level)*;
- one single SO on the main switchboard with stainless steel flush plate with lockable flap connected to the communal power circuit.
- one single SO in each television installation splitter box enclosure connected to the communal power circuit.

Locations

Locate refrigerator SO on rear wall of recess.

Locate one kitchen SO on outside of wall oven carcass, refrigerator recess wall, or return wall, within 300mm of the front edge of the kitchen bench wherever achievable.

Note: Silver and General Levels accommodation - where no wall oven carcass or refrigerator recess exists, locate both SOs on wall above bench.

Locate bathroom SO on side wall at vanity bench – at 150mm from front edge of bench.

Locate laundry SO on the wall at rear of washing machine recess.

Mounting heights

Unless otherwise specified in the Schedule, mounting heights are to be as follows:

Generally:

. In all levels of accommodation: 300mm above floor and not less than 150mm away from internal corners, adjacent to nominated bed-head position.

Kitchen and Bathroom Vanity:

. In Gold and Platinum Levels accommodation: 100mm above bench top, not behind hotplates, and not less than 600mm away from internal corners.

. In General and Silver Levels accommodation: 300mm above bench top and not less than 150mm away from internal corners.

Refrigerator: 1800mm above floor.

Microwave: 1500mm above floor within microwave recess.

Laundry: 1500mm above floor.

Bed 1: One double SO opposite bed position - 1200mm above floor adjacent data/phone outlet. Other SOs - as nominated in *"Generally".*

Carport and garage: 1000mm above floor.

Garage (adjacent roller door for future remote-controlled door motor): 1800mm above floor.

Measuring requirements

Where mounting heights are specified above floor and above bench top, measurements are to be taken from floor/bench top level to the underside edge of the socket outlet.

Where horizontal clearances from corners are specified, measurements are to be taken from the corner to the vertical edge of the socket outlet closest to the corner.

Refer *Schedules of Requirements.*

6 APPLIANCES

6.1 GENERAL

Wiring

For permanently connected appliances (including appliances the provision of which is specified in other sections herein), provide an approved wall box for exposed brickwork and concrete filled masonry walls and an approved mounting bracket in stud framed walls with flush blank plate, and angle take off terminator. Enclose cable between wall and appliance in flexible PVC conduit.

Anti-tilt device

Upright ranges are to be designed and installed with anti-tilt features or are to be supplied and installed with anti-tilt brackets. Ranges must be removable for cleaning behind by tenants. Permanent bolting of cooker to floor is not permitted.

Refer *Schedule of Requirements, Schedule of Appliances, Plumbing and Drainage Section, Hot Water Heaters.*

6.2 CEILING FANS

Refer to the Social Housing Design Guidelines.

Install ceiling fans to manufacturer's requirements and connect to the dwelling unit lighting circuit.

Standard: AS 4226.

Requirements

Controller: Three-speed minimum; Hard wired to wall control. Provide a single switch plate with separate switches to control the ceiling fan and ceiling/fan light.

Platinum Level accommodation:

Provide a single switch plate with a single large dial switch (to suit accessibility requirements) to control the ceiling fan.

Durability: Long-life; Heavy duty sealed bearings.

Fan rotation: Reversible.

Accessories: Provision for integrated luminaire and diffuser option.

Noise: Operational noise level of fan and switch to suit low ambient noise level of room/s. e.g. quiet operation required for bedroom installations.

Sizing and finish

Blade diameter: 1200mm.

Blade material: Aluminium or stainless steel.

Finish: White enamel or brushed stainless steel.

Method of fixing

Accessible Roof Spaces: Screw a 75mm x 50mm hardwood timber nogging across top of ceiling joists or bottom chords of roof trusses. Use a proprietary 10mm diameter metal threaded J hook to secure ceiling fan to nogging. Use a nut and washer below the nogging and two nuts and a washer above the nogging to secure the J hook to the nogging. Lock nut the two nuts above the nogging.

Inaccessible Roof Spaces: Use a proprietary metal saddle to secure ceiling fan to underside of ceiling joist or roof truss. Screw a 75mm x 50mm hardwood timber nogging between ceiling joists or roof trusses if necessary. Secure saddle in position with two 14 gauge 50mm long type 17 Deutcher hexagonal head screws. Do not secure saddle to ceiling battens.

Raked Ceilings: Where raked ceilings exist, the ceiling fan canopy is to be cut on the angle to provide a neat finish with the ceiling.

Concrete Ceilings: Use a proprietary metal saddle to secure ceiling fan to underside of concrete ceiling. Secure saddle in position with two 10mm diameter 75mm long expanding type metal masonry fixings e.g. dyna bolts.

Clearances

Installation of Ceiling fans permitted only where ceiling height allows 2300mm minimum height clearance from finished floor level to fan blades for safety, and 300mm (nom.) to ceiling.

Refer *Schedules of Requirements*.

6.3 EXHAUST FANS

Install exhaust fans where shown on Drawings and to manufacturers requirements and connect to the dwelling lighting circuit.

Exhaust fans are required to each bathroom and ensuite. Include suitable ceiling and wall ducting with insect screened exterior wall venting grille.

Exhaust fan flow capacity - Air Charges per Hour (ACH):

Bathrooms / Ensuites: (15) Fifteen.

Platinum Level accommodation: Approved IP54 rated exhaust fans are required for bathrooms and ensuites.

Platinum Level accommodation:

Provide 35mm large rocker type switches.

Refer *Schedules of Requirements*.

7 PROVISION FOR FUTURE INSTALLATIONS

7.1 AUTOMATIC DOOR OPENERS

Self-closing Entry Doors

Gold and Platinum Level accommodation:

Make provision for future installation of an electric automatic swing door opener and associated components, to all self-closing entry door situations.

Provide mains power for the future connection of an electric automatic swing door opener, and terminate behind blank plate above door, towards hinged side.

Notes:

Provision not to compromise fire rating, where applicable.

Location of components not to obstruct or interfere with closer for fire rated door, where applicable.

Locate blanking plates to both sides of door.

External Sliding Doors

Gold and Platinum Levels accommodation:

When acoustic rated aluminium framed glazed sliding doors are required, make provision for future installation of electric automatic sliding door opener and associated components.

Provide mains power midway above the acoustic doorway/s and terminate behind blank plate above door.

Notes

Locate blanking plates to both sides of door.

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8 SPECIAL SERVICE PROVISIONS

8.1 TELECOMMUNICATIONS INSTALLATION

Standards and Compliance

Comply with the requirements of the following:

Telecommunications Act 1997

The Australian Communication Media Authority (ACMA) standards and requirements

AS 11801

AS/CA S009

The 'Queensland Government Enterprise Architecture, Information and communication technology ICT cabling, Infrastructure Technical Standard'

Telstra requirements and Standards

NBN Co requirements and Standards.

General

Determine if the NBN is available at the site or whether it will be available prior to Practical Completion of the project.

Make application to Telstra or NBN Corporation, as applicable, for provision of the required telecommunications services, cabling, equipment and phone connections. Pay all associated costs.

For installations in areas where the NBN service is existing. The telecommunications installation must fully comply with NBN Co Ltd (NBN) requirements and be approved by NBN.

For installations in areas where NBN is not available. The telecommunications installation must fully comply with both Telstra requirements and NBN requirements. Full provision for future easy installation of NBN telecommunications cabling and equipment must be made.

All telecommunications cabling work must be performed by a registered cabling provider. An individual who is not a registered cabling provider (unregistered cabling provider) may perform cabling work only if the individual is directly supervised, at all times while performing cabling work, by a registered cabling provider.

The Contractor is responsible for ensuring that sub-contractors installing Telecommunications infrastructure hold a current "Cabler Registration in accordance with the Australian Communication Media Authority (ACMA).

All cabling products to be used must comply with the Requirements for Authorised Cabling Products Standard.

Refer to Schedules to Specification - Appendices 2 & 3 - QBuild A4 pictorial drawings E6.01 and E6.02 for typical telecommunication installation details.

Scope

Provide telecommunications services including, but not limited to, the following:

Registration of the site with Telstra or NBN Co, as applicable, as early as possible. NB: This is required at least 3 months prior to construction commencing.

The relevant Telstra web site is:

https://www.telstra.com.au/smart-community

The relevant NBN web site is:

- https://www.nbnco.com.au/develop-or-plan-with-the-nbn/new-developments
- Application to Telstra or NBN Co Pty Ltd (NBN), as applicable, for provision of the required cabling, equipment and phone connections. Pay all associated costs.
- Liaison with Telstra and NBN (as applicable) to obtain telecommunications network advice to confirm particular requirements and avoid rework.
- Preparation and submission of the telecommunications infrastructure designs to Telstra and or NBN (as applicable), for approval.
- Arranging for the telecommunications service provider to provide service pre-cabling (lead-in cable or NBN cable etc), prior to any application for phone connections. Pay all associated costs.
- Provision of telephone service cabling to the site, to each Unit and each telecommunications outlet. NB: This cabling is to be suitable for the provision of phone and internet connection to the outlets via either ADSL, ADSL2+ or the NBN (as applicable to the site).
- Provision of telecommunications distribution frames, Premises Connection Device, Network Termination Devices as applicable.
- Provision of underground conduits for the telecommunications service cabling

  NB: When NBN is not available in the area, also provide additional separate spare conduits to allow easy future installation of NBN fibre optic cabling, without having to first remove the existing cabling.
- Provision of concealed conduits for telecommunications cabling to distribution frames/NTDs and cabling to telecommunications outlets.
- Provision of telecommunication outlets in each Unit that can be connected as phones or Category 6A data outlets and can be easily patched to a router in each respective Unit.
- Provision of an NBN recessed wall 'Nook' for locating NBN equipment, and/or the provision of a recessed proprietary Home NBN distributor. NB: This allowance is required whether the NBN installation occurs as part of this project, or at some time in the future.
- Provision of power outlets for the telecommunications equipment, modem/routers, including all NBN active equipment and battery backup units. This is to include power outlets for those items which will be future provision.
- Liaison and coordination with the telecommunications services provider to achieve connection of the required services prior to Practical Completion.
- Connection of a telephone service to the telecommunications outlet in the living area of each Unit, so that the outlet is active and functional and allocated a telephone number. For each of the dwelling units, the Contractor is required to open a basic phone service Telstra account (in the Contractor's name) and pay the initial connection fee. It is the Contractor's responsibility to obtain telephone numbers to individual Units and finalise account/s with Telstra at Practical Completion.

  The Contractor is to provide telephone numbers to the Superintendent at Practical Completion. Handsets are not to be provided.

NB: The purpose of this process is to ensure connection of the phones by the tenants will be quick and easy and at minimal cost.

Payment of all fees and charges, including costs of Telstra or NBN Co, or their approved contractors where required to be used.

Data/Phone locations

The data/phone outlets are to be RJ45 Category 6A type, wired in 4 pair category 6A cable to patching outlets at the respective Unit's proposed NBN equipment location.

Provide a data/phone outlet in the living area of each dwelling unit, except when the unit is single bed type with a Multi-purpose space. In single bed units that are provided with a Multi-Purpose space, in lieu of providing a data/phone outlet in the living room, locate it in the Multipurpose space.

Provide an additional data/phone outlet in each Unit's 'Bedroom 1' on the wall opposite to the bed head location. Mount it at 1200mm above floor level.

Unless otherwise specified, mount the telecommunications outlets at the height of the adjacent socket outlet (SO).

Fire Alarm Services phone outlet (when required)

Provide a telephone outlet for fire alarm services where it is required to be monitored by QFES. NB: When that service is needed and is provided via the NBN, then also provide an alternate alarm communications path via a wireless communication gateway using the mobile phone network.

Customer premises cabling

Where communication pits are specified, they are to be the same as the types specified for electrical cable pits in Clause 4.8 – Wiring Particular Requirements. Communication pit lids are to be imprinted with the words "COMMUNICATIONS".

Conduits are to be underground or built into ducts, concrete slabs or brickwork. Cables and conduits of one unit are not to be installed through roof spaces of other units. Conduits are not required where cables are installed in timber framed walls. Do not install telephone cables and electrical cables in the same void in timber framed walls.

Where installation consists of more than one building, provide a Building Distribution Frame/Hub on each building in a position where shown on Drawings. NB: This is not required when the additional building is a single detached dwelling unit.

Conduits in external cavities are to be installed plumb and fixed to prevent bridging of cavities.

Provide a 1.5mm thick galvanised steel cover over all exposed conduits.

Fit L331 locks to doors of Building Main Distribution Frame/Hubs. Key alike. Provide 2 keys per lock.

Cables and conduits

Telecommunication cables are to be approved type. Telecommunications cabling within units to be data cable, category 6A. Underground cables are to be grease filled type.

Cables are to have a minimum of four pairs to each telephone / data outlet.

Cables installed underground, beneath building slabs and external to buildings are to be enclosed in approved telecommunications conduit coloured white. Orange or grey coloured electrical conduit is not permitted.

All conduits are to be installed as far as possible in straight lines and where bends are unavoidable, make with 800mm radiused curve. Do not use elbows and "T" pieces. All conduits and fittings are to be glued with solvent cement.

Underground conduits entering building footings or cavities are to exit to the external wall of the building, or other suitable access point so as not to provide a covert entry for ground water or termites.

Conduit from boundary to MDF or NBN PCD, to be 50mm diameter.

When NBN is not initially available at the site, provide one additional NBN dedicated conduit complete with draw wire alongside each telecommunications conduit between the MDF and final distribution frame of each unit.

Certification
Prior to Practical Completion, arrange for the registered cabling provider to provide:

a completed Telecommunications Cabling Advice (TCA1) Form or equivalent written certification for the installation. The installer is also to provide a written guarantee to attend, at no cost to the Principal, as necessary to maintain satisfactory performance of the system for a period of 12 months. Written certification and guarantee are to include the registered cabling provider's name, address, registration number and name of registrar.

a certificate of acceptance of the installation by the service provider (Telstra or NBN)

8.2 PARTICULAR NBN INSTALLATION REQUIREMENTS

Equipment and Installation requirements
Section 4 of the NBN Document titled '*Residential Preparation Guide: SDUs and MDUs'*, outlines space and locational requirements for the installation of NBN equipment inside dwellings. Comply with that.

As per Section 4.4 of the document mounting locations may include:

An *Open Enclosure* (refer to section 4.4.3 for design requirements).

Note however that *Open Wall Locations* (as described in Section 4.4.2) are not acceptable for this project.

Other requirements
NBN equipment must be located in a common space, accessible by all residents (i.e. not in bedrooms or bedroom wardrobes).

Provide an NBN recessed wall 'Nook' for locating NBN equipment, and/or provide a proprietary Home NBN distributor (recessed preferred).

Ensure space and a small shelf space is provided for a locating a wireless router with the NBN equipment.

Patch leads used, must be as short as practical and run neatly, and preferable be able to be run out of sight.

Provide a double socket power outlet with the NBN equipment for use of that equipment and a wireless router.

Location must be easily accessible, yet unobtrusive, and must not restrict furniture placement. Suitable locations could include hallway or dining area walls.

Space occupied by NBN equipment must not encroach on other spaces. Minimum dimension requirements for other spaces (e.g. broom cupboards, linen cupboards, wardrobes) must be met without including the space occupied by the NBN equipment.

For Gold and Platinum Levels accommodation, the shelf and double socket outlet (SO) must be located within 900mm to 1100mm of the finished floor level.

8.3 PARTICULAR TELSTRA INSTALLATION REQUIREMENTS

General
The telecommunications network up to the Network Boundary (MDF, first socket) is the property of Telstra.

Only Telstra's preferred contractor can install telecommunications infrastructure on Telstra's behalf.

Cabling beyond the Network Boundary is competitive and can be installed by a Registered Telecommunications Cabler.

8.4 TELEVISION INSTALLATION

General
Installation is to be carried out by a member of either the Television Electronic Services Association or the Certified Electronic Technician Association.

Refer to Single and MATV Television Installations herein for additional requirements.

Antenna
Antenna is to be of a type which will ensure clear reception on all commonly received free to air channels.

Secure antenna to a proprietary hot dipped galvanised support bracket. Mount and install antenna and proprietary support bracket in accordance with AS 1417 Part I designed to sustain wind surface pressure of 55 m/s. Antenna support bracket is to be located in a position approved by the Principal.

Antenna support bracket is not to be fixed solely to a barge or fascia board. A stay may be secured to same provided bargeboard is solidly backed by a rafter and the fascia is backed by and nailed to a 100mm x 50mm hardwood trimmer between ends of rafters.

Fixing of antenna support bracket to brickwork by use of expansion bolts in perforated bricks is not permitted.

Cable
75 ohm with attenuation not to exceed 24 db at 800 MHz per 100 metres.

Do not install antenna cables and electrical cables in the same void in timber framed walls.

Sockets
Sockets are to be white 75 ohm flush mounted on wall at height of adjacent socket outlet (SO). Sockets to be capable of providing 240 Volt AC mains

isolation on both conductors and a type which secures the socket to the plate with fixing screws.

Conduits
To facilitate the installation of future pay television cables, Contractor is to provide a separate 25mm diameter rigid PVC conduit between the television socket in each house/unit and the roof space. Finish-off inside the house/unit with proprietary blank wall plate identified for pay television cable.

Where installed in external wall cavities, conduits are to be fixed to prevent bridging of the cavities.

Galvanised steel draw wires are to be provided in conduits to permit the future drawing in of cables.

Testing
Carry out all tests required by the Principal including:

taking readings with a signal level meter;

using a colour television receiver (minimum 34 cm of normal design) to ensure clear reception on all commonly received free to air channels.

Prior to Practical Completion, arrange for the installer to lodge written certification of work which includes a guarantee to attend, at no cost to the Principal, as necessary to maintain clear reception from the installation for a period of 12 months. Written certification is to include installer's name and address.

8.5 TELEVISION - SINGLE SYSTEM INSTALLATION

Provide the requirements for the following dwelling units:

Detached Houses;

Dual Occupancy;

Duplex Units; and

Cluster Houses.

Provide an antenna and a proprietary antenna support bracket on each house/unit. Provide an approved type TV socket in the living room of each house/unit in position shown on Drawing. Connect antenna to socket with 75 ohm approved and unjointed cable.

Refer: Schedules of Requirements to this worksection.

8.6 TELEVISION - MATV SYSTEM INSTALLATION

Standard: To AS 1367.

Provide the requirements for the following dwelling units:

Attached houses.

All Unit and Apartment Blocks.

Install Master Antenna Television System (MATV) to distribute all commonly received free to air channels to the site to each dwelling unit including antennas, proprietary antenna support brackets, antenna cables, amplifiers, splitters, sockets and accessories necessary to provide clear reception.

Provide splitters, amplifier where required and socket outlet (refer "SOCKET OUTLETS (SOs)" herein) connected to the communal power circuit in an approved ventilated, lockable recessed enclosure with square key carriage lock on the door and located not more than two metres above ground or floor level in a readily accessible position approved by Principal.

Provide an approved type TV socket in the living room of each unit (1 Bed Units: Living-Dining shared area; Studio Apartment: Living-Dining-Sleeping shared area) in position shown on Drawing. Provide an additional television antenna outlet to Bed 1 (multi-bedroom dwelling) to wall opposite nominated bed position, adjacent SO at 1200mm above floor level. Connect between splitter and socket with a separate, identifiable and unjointed 75-ohm cable.

Cables installed between splitter/splitters and sockets are to be enclosed in concealed conduits. Conduits are to be built into ducts, concrete slabs or brickwork. Cables and conduits of one unit are not to be installed in the roof spaces of other units. Conduits are not required when cables are installed in timber framed walls.

Provide a 1.5mm thick galvanised steel protective cover over all exposed conduits.

Where installation consists of more than one building, each building is to be treated as a separate MATV system including an antenna, antenna support bracket, splitters, amplifier where required, SO connected to the communal power circuit and an enclosure described herein.

Refer *Schedules of Requirements* to this worksection.

8.7 SMOKE ALARM AND FIRE DETECTION SYSTEMS

Standards: To AS 3786, AS 1603.3, AS 1603.4, AS 1670, AS/NZS 3000.

Provide a smoke alarm system and/or a fire detection system to the class of building specified herein as required by the NCC and to comply with statutory requirements at practical completion.

Statutory requirements in Queensland:

Queensland Fire and Emergency Services (Domestic Smoke Alarms) Amendment Act 2016

Building Fire Safety (Domestic Smoke Alarms) Legislation Amendment Regulation (No. 1) 2016

8.8 SYSTEM TO BE USED WHERE A LOCAL ALARM PANEL (LAP) IS NOT REQUIRED

The smoke alarm is to be hard wired to 240 Volt AC consumers mains power, interconnected to other smoke alarms and fitted with a built-in 10-year life, non-removable lithium rechargeable battery back-up system and stainless-steel insect screens. Smoke alarms are to be photo-optical types and installed as far away as possible from bathroom and laundry entrances.

Location of smoke alarms in Class 1a buildings
Provide smoke alarms to all Class 1a buildings in locations as specified and as shown on the Drawings.

Provide a smoke alarm in every bedroom and also as follows:

One Bedroom Dwelling: In dwellings containing one bedroom, locate one smoke alarm in the living area at a maximum distance of three metres from the bedroom entrance.

Two or More Bedrooms: In a dwelling containing two or more bedrooms, locate smoke alarms between each part of the dwelling containing bedrooms and the remainder of the dwelling, or where bedrooms are served by a hallway, in that hallway.

Two Storey Dwelling: Where the dwelling is a two-storey type, provide an additional smoke alarm in the

storey not containing bedrooms, adjacent to the internal stairs.

Three Storey Dwelling: Where the dwelling is a three-storey type, ensure that there is at least one smoke alarm on each storey, in locations as specified for a two-storey dwelling.

Installation
Install smoke alarms in accordance with manufacturer's instructions, with either flush or surface mounted connection facilities as required.

Where practicable smoke alarms must be placed on the ceiling.

Smoke alarms must not be placed:

- within 300mm of a corner of a ceiling and a wall;

- within 300mm of a light fitting; or

- within 400mm of the blades of a ceiling fan.

Where smoke alarms are installed in rooms which have a ceiling fan they shall conform with the Building Fire and Safety Regulations Act, National Construction Code and all other applicable codes and standards.

Connection
Connect smoke alarms to the lighting circuit serving the dwelling. Ensure supply to smoke alarm/s is from an unswitched source and that the source is not from a switch location controlling lights or from a light. Smoke alarms are to be interconnected and must be wired on the same power circuit. Permanently identify the circuit supplying the smoke alarms at the switchboard with the words "Smoke Alarm", with indelible professional lettering. Self-adhesive labels are not acceptable. Where more than one smoke alarm is installed in a dwelling unit, they are to be interconnected so that all smoke alarms will operate when any one smoke alarm is activated.

Wiring
All wiring including the interconnect wiring between smoke alarms shall have copper conductors insulated with a minimum grade of V75 insulation and shall be thermoplastic sheathed cable rated at a minimum voltage of 240 Volt AC. Conceal all wiring within floors, ceilings, walls and partitions.

Testing
On completion of the installation of smoke alarm/s, arrange for the Installer to test the smoke alarm installation in accordance with manufacturers and Specification requirements in the presence of the Superintendent's Representative.

Location of smoke alarms in Class 2 buildings
Provide smoke alarms to all Class 2 buildings in locations as specified and as shown on the Drawings.

Install smoke alarms in each dwelling unit as per the requirements of Class 1a dwellings.

8.9 SYSTEM TO BE USED WHERE A LAP IS REQUIRED

Install smoke alarms in each dwelling unit as per the requirements of Class 1a dwellings.

The smoke alarm is to be hard wired to 240 Volt AC consumers mains power, capable of interconnection to other smoke alarms and fitted with a built in non-removable 10-year life lithium rechargeable battery back-up system and stainless steel insect screens. Smoke alarms are to be photo-optical types and installed as far away as possible from bathroom and laundry entrances.

Provide one (1) visual alert unit in each dwelling, located internally, above the main entrance. The visual alert unit must be triggered by the LAP and must trigger the sounding of the internal smoke alarms. The internal smoke alarms must not trigger the LAP.

Install enclosed thermal alarms rated for outdoors use in all internal public areas as specified and as shown on the drawings.

Provide one (1) Local Alarm Panel (LAP) for the site. All alarms installed in public areas, and all visual alert units on the site are to be connected to the LAP.

Lap configuration
The system is to consist of a Local Alarm Panel (LAP) which has a 12V rechargeable battery. The LAP must include an associated MIMIC display panel. 'MIMIC display panel' is a secondary display panel indicating activated detector/smoke alarm locations.

The primary power source to the LAP is required to be 240V AC supply from the communal power circuit, which is to be capable of operating the system in the event of failure of the secondary power source. The LAP is to be provided with a secondary power source that is capable of operating the system in the event of failure of the primary power source. The secondary power source is required to be rechargeable sealed lead acid batteries that comply with the requirements of AS 1603.4. The battery shall have sufficient capacity to maintain the system for 96 hours and thereafter 15 minutes in alarm.

The LAP must include the following features:

an associated MIMIC display panel;

latching of the MIMIC display panel;

non-latching of smoke alarms;

no time delay is needed between the operation of internal public space, enclosed staircase and corridor smoke alarms and the operation of the visual alert units;

the facility to connect a Manual Call Point with no time delay or latching; and

the facility to interface with a Residential Sprinkler System.

Only one LAP is required per site.

Alarm configuration
Visual alert units and detectors in public areas are to be energized from the LAP via approved red sheathed Extra Low Voltage (ELV) cable. This cable is to be enclosed in medium duty rigid PVC conduit where installed underground, in external cavities, or in concrete slabs and decks. Conduits in external cavities are to be installed plumb and fixed to prevent bridging of external cavities. Install underground conduits not less than 500mm below finished ground level. Where installed in a common trench provision is to be made for a minimum clearance of 100mm from other services.

When a detector is activated in an internal public corridor, or an internal public space that alarm is required to register on the associated MIMIC display panel of the LAP to indicate which detector/s operated. The LAP must then initiate all alarms and visual alert units within the building. Each visual alert

unit must activate the sounding of the alarm/s within the respective dwelling unit. All alarms and visual alert units are required to operate for the duration of the activated alarm/s. Separate activation is required for each building. Only the alarms and visual alert units within the building in which the detector has operated is to sound. Locate the LAP in an approved lockable steel cabinet. The door of the cabinet is to be fitted with a 003 lock and key as required by the Queensland Fire and Emergency Services (QFES).

Locations

Install smoke alarms in each dwelling unit as per the requirements of Class 1a dwellings.

Install thermal alarms in the common area of a community room and in any internal public space or public corridors. Where a building contains internal public corridors, install thermal alarms at a maximum spacing of 10 metres. Thermal alarms in internal public corridors are to be multi station alarms which are interconnected to any other alarms in the corridors of the building. When any alarm is activated in an internal public corridor, all alarms within that building are to operate.

Location of smoke alarms in Class 1b and Class 3 buildings (Boarding houses)

In a Class 1b boarding house, smoke alarms must be located in every bedroom, associated hallway and in each storey.

In a Class 3 boarding house, smoke alarms are required as for a Class 1b boarding house. In addition, smoke alarms are required in all other habitable rooms except in the kitchen.

Install a thermal alarm in the kitchen.

8.10 SYSTEM TO BE USED WHERE CONNECTION TO THE QFES IS REQUIRED

In Class 3 buildings, a smoke/heat detector system complying with AS 1670 is required under the following conditions:

Buildings with dwelling units greater than two (2) storeys above the ground; or

Buildings providing accommodation for the aged, children, or people with special needs, where there are greater than twenty (20) residents.

The Fire Detection Control and Indicating Equipment (FDCIE) is to be built to AS 7240 part 2, AS 7240 part 4 and AS 4428 part 3 (fire brigade panel) and be of an addressable type with a range of field devices including an addressable IP66 rated thermal detector. Programming of devices shall be by handheld programmer. Smoke and heat detectors are to be connected to a commercial FDCIE. The FDCIE is to be connected by land line direct to the Queensland Fire and Emergency Services (QFES). Locate the FDCIE in an approved lockable steel cabinet. The door of the cabinet is to be fitted with a 003 lock and key as required by the Queensland Fire and Emergency Services (QFES).

8.11 LOCATION OF FDCIE'S AND LAPS

Locate FDCIEs and LAPs close to the entrance to the site, having due regard for access by the QFES and key holders. The QFES require that FDCIEs and LAPs should not be located on western walls or locations where direct sunlight would cause difficulty in identifying the source of an alarm on the panel. FDCIEs and LAPs are to be installed not less than 750mm or more than 1850mm above finished floor or finished ground level. Provide a schematic diagram of the dwelling units and floor levels to identify the source of an activated alarm. The diagram is to be on an engraved plaque or laminated sheet fixed within the lockable cabinet. A strobe is to be installed to indicate the location of the FDCIE/LAP.

The cabinet is to have the words in painted or other permanent letters not less than 50mm high on the exterior of the door: "LOCAL FIRE ALARM PANEL", followed by a warning in smaller but clearly visible lettering; "Not connected to a Fire Brigade - In case of fire phone 000". Provide the initial logbook as part of the installation.

8.12 TESTING

Arrange for the completed system to be inspected and tested by the QFES public safety officer when the project has a community room, and/ or internal public corridor/s, and/or internal public space/s. The Contractor shall also arrange for the Installer and the Superintendent's representative to be present during the inspection.

When the project does not have a community room, and/or internal public corridor/s and/or internal public space/s, the Contractor shall arrange for the installer to test the completed system in accordance with the manufacturers and Specification requirements, and in the presence of the Superintendent's representative.

8.13 CERTIFICATION OF SYSTEM INSTALLED IN CLASS 1B, CLASS 2 AND CLASS 3 BUILDINGS

Prior to Practical Completion, the Contractor is to provide written certification from the Installer to the Superintendent's representative, that the system has been installed in accordance with this Specification and the relevant Australian Standards.

Refer Drawings.

9 REFRIGERATED COOLERS (AIR CONDITIONERS)

9.1 AIR CONDITIONING DESIGN

Standards

General: To the recommendations of one or more of the following:

AIRAH Design Application Manuals.

ASHRAE Handbook.

CIBSE Guides.

Method of calculation: Manual or software that employs the data and methods in the above standards.

Design criteria

Outside design conditions: Use outdoor design conditions listed in AIRAH DA09, Table 1 or Table 1A for the following:

The location geographically closest to the site.

Comfort (or non-critical process) conditions.

Inside design conditions:

Summer: 24°C dry bulb, 50% relative humidity.

Winter: 21°C dry bulb.

Temperature variation: Limit the temperature difference in air-conditioned spaces served by the same zone or system to 2°C as follows:

Between any 2 points in the space from floor level to 1500 mm above floor level.

More than 2000 mm from cooking equipment and more than 1000 mm from any other appliance.

When outside conditions are in the range specified above.

After the plant has been operating for one hour.

With the temperatures measured in the same 5 minute period.

Zoning: Divide the systems into temperature-controlled zones to meet the specified permissible limits in temperature variation and the system divisions documented.

Fresh air: Supply fresh air to spaces with air conditioning systems via the air handling system.

Heating: Reverse cycle.

Windows, walls, floors and roofs: Refer to drawings for construction and insulation.

Internal window shading type:

Ambient noise emitted: Lower than the level that can be heard within a habitable room in any neighbouring residential premises, regardless of whether any door or window to that room is open.

9.2 AIR CONDITIONING EQUIPMENT

Standards

Ducted air conditioners: To AS/NZS 3823.1.2.

Non-ducted air conditioners: To AS/NZS 3823.1.1.

Equipment

Performance: Supply equipment as follows:

Made by a manufacturer with a demonstrated ability to provide spare parts and service promptly to the site.

Operational within the documented range of outdoor design conditions under the calculated loads without excessive head pressure or icing.

Labelled to AS/NZS 3823.2.

Reverse cycle units: Provide effective outdoor coil defrost facility that prevents room temperature dropping more than 2°C during defrost.

Cabinet: Aluminium, powder coated steel or moulded ABS plastic with metallic-coated steel or stainless-steel fasteners. Insulate and vapour seal cabinet and drain trays to prevent external condensation under all operating conditions.

Drain trays: Aluminium, stainless steel or plastic to collect all moisture inside indoor and outdoor units.

Filters: Washable panel type with at least 85% of arrestance when tested to AS 1324.2, Test Dust No.4.

Coils: Copper tube with aluminium plate fins.

Supply diffusers:

Type:

Material:

Return air grille:

Type:

Material:

Controls

General: Provide the following functions:

Temperature control for each zone located to accurately sense zone temperature.

Fan speed selection for multi and variable speed fans.

Day/night zone changeover if scheduled.

Time switch for each system with ≥ 6 temperature programs per day, separate programs for each day of the week, manual set point override and Vacation temperature set back.

9.3 DUCTWORK

Standard

Flexible duct: To AS 4254.1.

Rigid ductwork: To AS 4254.2.

Flexible duct

Material: Aluminised fabric clamped on formed metal helix with insulation blanket wrapped around duct and covered with an outer vapour barrier.

Installation: Install flexible duct as straight as possible with minimum number of bends. Maximise bend radius but not less than required by AS 4254.1 clause 2.5.3(i). Check for and rectify any crushed flexible duct.

Support: To AS 4254.1. Limit sag to less than 40 mm/m.

Duct insulation

General: Insulate ducts to reduce heat gain and prevent condensation. Provide continuous vapour barrier around ducts carrying conditioned air. Insulate flexible connections on ducts carrying air below ambient temperature.

Cleaning

General: Clean interior of ductwork progressively during installation.

9.4 REFRIGERATION PIPEWORK

General

Pipes: To AS/NZS 1571.

Deemed to comply: Split system manufacturer's standard pre-charged piping kit Standard.

Pipe insulation

General: Insulate all refrigerant and drain piping that may sweat with chemically blown closed cell nitrile rubber in tubular form to ASTM C534. Protect insulation from sunlight and mechanical damage.

Insulation thickness: 13 mm for pipes less than DN 20, 19 mm otherwise.

Condensate drains

Requirement: Provide trapped, at least DN 20 condensate drains to AS/NZS 3666.1 from each indoor coil and safety tray. Provide drains from each reverse cycle outdoor coil unless casing freely drains to a roof or other location where condensate will not cause damage or pond.

9.5 UNIT INSTALLATION

General

Outdoor equipment: Provide clearance around units for condenser air flow and maintenance access. Make sure discharge air does not short-circuit to condenser intake.

Equipment at ground level: Mount on 100 mm level concrete plinth or equivalent impervious material.

Duct connections: Provide internal or external flexible duct connections at indoor unit.

Vibration isolation

Suspended units: Provide at least 4 metal spring or rubber-in-shear isolation mountings with at least 25 mm static deflection and 98% isolation efficiency.

Floor mounted units: Provide neoprene waffle pads. Bolt in place.

Safety trays
General: If leaks or condensation from equipment could cause nuisance or damage to the building or its contents, provide a galvanized steel safety tray under the equipment.

9.6 COMPLETION

Commissioning
General: Commission the systems to manufacturer's recommendations using instruments calibrated within the past 12 months.

Checklist: Submit signed commissioning checklist before the date for practical completion.

Cleaning
General: Clean filters, outdoor coils, grilles and diffusers before the date for practical completion.

Operating and maintenance instructions
Requirement: Provide written operating and maintenance instructions containing the following:

Contractor's contact details for service calls.

Manufacturers' maintenance and operation literature.

Manufacturers' warranty certificates if the manufacturers' warranty period is greater than the defects liability period.

Description of day-to-day operation.

Setting of time switches.

Schedule of recommended maintenance.

Record drawing: Provide a drawing of the system as installed.

9.7 MAINTENANCE

General
Maintenance period: The greater of 12 months from the date of completion of commissioning of the systems and the duration of the Defects Liability Period.

Corrective maintenance: Attend site and undertake corrective maintenance within 24 hours of receipt of verbal or written advice.

Preventative maintenance: Provide preventative maintenance recommended by the equipment manufacturer. Provide all materials including consumable items and refrigerant.

Summer preventative maintenance visit: Provide at least one preventative maintenance visit during the months of December, January or February. Carry out preventative maintenance and provide electronic data logger or thermohydrograph to record temperatures at one location in each zone over a period of 7 days. Submit results. If the temperature recorded is outside the specified tolerance identify and correct the cause and repeat the test.

Maintenance reports: Submit a signed maintenance report setting out the work done and any measured values after each visit.

9.8 REGULATIONS

NCC - National Construction Code (formerly Building Code of Australia - BCA)

AS1668 - Parts 1 and 2: Mechanical Ventilation and Air Conditioning

AS1677 - Refrigeration Systems

AS2107 - Acoustics - Recommended Design Sound Levels

AS3000 - Wiring Rules

AS3666 - Air Handling and Water Systems of Buildings

All other relevant Acts and Regulations, Local Authority Requirements, Australian Standards and Codes having jurisdiction.

10 EVAPORATIVE COOLING UNITS

10.1 GENERAL

Specified in this section
Single package evaporative coolers factory designed, manufactured and type tested for both ducted and free discharge arrangements, supplied by an approved manufacturer.

Evaporative cooler definition
A factory manufactured and tested unitary cooling only air conditioning unit that uses direct evaporation of water in the air stream as the cooling process consisting of centrifugal fan, evaporative pads, water reservoir, circulating pump, water distribution system, piping, valves, electrical equipment and a casing suitable for external use.

Evaporation efficiency definition
The ratio of the actual wet bulb depression of the air leaving the evaporative cooler to the available wet bulb depression.

Type tests
Tests performed on a single representative appliance to establish whether the type of appliance represented is capable of complying with the stated requirements. Results of type tests are assumed to apply to production units of the same type, provided that they are functionally identical with the sample tested.

Standards
The whole of the evaporative cooling installation shall comply with the National Construction Code (NCC), local authority requirements and all relevant Australian Standards including:

AS 1668. Part 1 and 2.

AS 3666.

AS 2913.

AS 2107.

AS 3000.

AS 4254.

AS 3999.

AS/NZS 3500.

All other relevant Acts and Regulations, Local Authority Requirements, Australian Standards and Codes having jurisdiction.

General system requirements
The provision of the evaporative cooling installation shall include: supply, transportation, delivery, loading/offloading, positioning, support, installation, testing, commissioning and maintenance and warranty during the defects liability period, all strictly in accordance with the manufacturer's recommendations.

Each separate dwelling or unit tenancy shall be served by a dedicated evaporative air conditioning system, permanently wired and connected via a

separate power circuit to the distribution switchboard of that tenancy.

The installation shall comply with the NCC in respect to maintaining the fire integrity of all fire compartments which are penetrated by the evaporative cooling installation.

All building elements such as walls, roofs, etc… which are disturbed, removed, modified as part of the installation works shall be fully reinstated and made good to the satisfaction of the inspecting officer at the completion of the works. All damage caused to building elements e.g. roofs etc. through execution of the works shall be made good at the contractor's expense to the satisfaction of the inspecting officer.

All roofs and guttering shall be left in a clean and tidy condition.

Storage: All units on site are to be protected from damage and the ingress of dirt, dust, water etc.

Inspections: Give sufficient notice so that inspections may be carried out at the following stages of the installation:

Arrival on site for quality and condition.

Witness testing following commissioning.

Required Notice: Unless otherwise specified, not less than:

Four hours for on-site inspecting personnel.

Twenty-four hours for off-site inspecting personnel.

Two working days prior to witness testing.

10.2 TESTING AND COMMISSIONING

Adjustments
Carry out tests to determine the following specific characteristics during commissioning:

Airflow.

Evaporation efficiency.

Sound output level.

Carry out all adjustments in accordance with the manufacturers written instructions.

Water level control
Adjust to maintain correct water level.

Bleed control
Adjust to discharge the bleed water at the flow rate shown.

Sump dump facility
Adjust to discharge at the frequency shown in the Appliances Schedule.

Controls
Calibrate, set and adjust all control instruments, control systems and safety controls.

Air balancing
Balance air systems to give flow rates for "Standard Air" to within -0% to +10% of those specified.

Method
Balancing should not take place unless windows and/or doors are open to provide a test condition where no excessive system backpressure will interfere with flow volumes. Clean air-handling system, remove all dust and foreign matter before energising fans. Ensure that water level is correctly adjusted and pads fully wetted before balancing.

Test records
For each completed test, provide a report or certificate suitable for inclusion in a manual recording the details of the testing method, procedure, instrumentation, readings, calculations and the test results.

Equipment
Provide everything necessary for carrying out the tests.

Supply
The unit(s) shall be supplied by an approved specialist supplier and shall include all components necessary for satisfactory operation.

10.3 DESIGN AND CONSTRUCTION GENERALLY

Standard
To AS 3666 and AS 2913.

Performance
As a general guide, the evaporative cooling systems shall be capable of supplying a minimum of 50 air changes per hour (AC/H) or to suit manufacturers recommended requirements, whichever is greater (except Croydon and Georgetown where the minimum air change rate shall be 55 AC/H).

The above specified minimum air change rate shall be an actual volume as measured at the outlet grilles and an allowance shall be made for the external resistance of the duct work system when selecting the evaporative cooling unit duties.

Each dwelling unit shall have one air outlet in each bedroom, lounge room, dining room and kitchen. Hallways, bathrooms, and toilets are not to be included in the air change calculations.

Enclosures
Enclosure for each unit to comprise structural frame, panels, doors and the like fabricated and reinforced where necessary with stiffening sections, capable of supporting and retaining the components of the assembly without excessive noise and vibration.

Design units for easy access for maintenance of all components. Construct all internal corners and edges of sumps to facilitate cleaning. Comply with the requirements of the relevant authority for water supply and drainage.

Structural frame
Construct from:

Stainless steel 304 to AS 1449.

Aluminium 5251 H34 to AS 1734.

Structural polymer.

Water reservoir
Construction from fibreglass to AS 2634 or other non-corrosive material to AS 3666 Clause 2.6.1. Make provision for drain, dump valve, overflow and bleed outlets. Incorporate a ball float valve to AS 1910.

The sump shall include a sloped base and incorporate a sump dump facility. The sloped base of the sump shall direct concentrates of minerals and dirt to gravitate towards the sump dump outlet, subsequently removing an amount of accumulated sludge, solidifying salts and dirt.

Evaporative pads
Shredded Aspen Wood fibre or Celdek pads, enclosed by stainless steel or thermo-plastic frames. Design to ensure that water does not carry over into

the air stream or splash outside the unit. Design for high saturation efficiency.

Refer *Appliances Schedule* at the end of this section.

Water distribution system
Self-priming centrifugal pump of plastic construction, electric motor drive, plastic water tubes and manifold with flow and bleed controls designed to distribute the water uniformly over the evaporative filter pads.

Unit controls
Provide all automatic and manual controls required for safe and efficient operation of the unit(s). Comply with AS/NZS 3000.

Remote control panel
Provide each dwelling unit with its own hard-wired wall mounted remote control panel. The control panel shall be of the extra low voltage type and incorporate a room sensor to provide automatic control of the unit to maintain space conditions.

Install a wall mounted control where shown on the electrical drawings, 1500mm above floor level. The control panel shall be installed 1200mm above finished floor level in Platinum and Gold Levels accommodation and special needs accommodation.

The control panel shall be located clear of any direct conditioned airflow path, that would adversely affect the control of the unit. The control panels should not be installed in hallway.

Control functions
Provide the following control minimum functions:

Unit on/off.

Fan speed selection.

Ventilate/cool selection.

Sump dump facility
Provide a sump dump facility including all valves time switches etc, to dump the entire contents of the sump at the frequency shown in the Table in the Schedule. The facility shall have the following minimum functions:

Adjustable time switch for dump frequency. Timer shall be adjustable between 5 and 48 hours.

Adjustable time switch for duration of dump cycle. Time switch shall be adjustable between 1 and 10 minutes.

During the sump drainage period, the pump shall be off.

Timer switches shall be secured to a structural roof member just inside the ceiling manhole to enable easy adjustment.

Ductwork
The Australian Standard AS 4254 - Ductwork for Air Handling System in Building is to be used in its entirety.

Air velocities
The maximum velocity of air in the ductwork is 8.0m/s, and at outlets, 3.8 m/s or as recommended by manufacturers if the velocity is less.

Requirement
Balancing of supply air to the outlets shall be via butterfly dampers in the main duct spigots or by stream splitters. Opposed blade dampers are not required.

The system shall incorporate a backdraught shutter to prevent backdraught when the system is not in use.

The internals of ductwork and supply air outlets, which are visible through the outlets, are to be painted matt black.

Main ductwork and dropper to be adequately fixed and isolated from the unit by flexible duct connections to limit the generation of noise and vibration.

Painting of external ductwork. External ductwork shall be painted in a colour to match the roof. All exposed ductwork shall have a smooth appearance with no external flanges.

Painting of internal ductwork - internal exposed ductwork may be manufactured from pre-painted sheet metal to comply with the specification or painted to match the surrounding colour.

Supply air registers / outlets to ceilings / walls shall be of the multi directional type, with shut off capability, securely fixed in position.

All ductwork exposed to the weather shall be internally lined with 25mm polyester insulation and faced with non-perforated water-proof sisalation.

All ductwork within 3 metres of the unit shall be internally lined with 25mm polyester insulation and faced with non-perforated water-proof sisalation.

Ductwork within the roof area shall be externally insulated with 25mm polyester insulation.

Flexible ducting
Supply air, from the main duct to the outlets, shall be via flexible 25mm polyester insulated ducting with non-perforated water-proof lining and spiral wire reinforcing. A sample of the proposed ducting is to be provided for approval prior to installation.

Access panel
An access panel is required as per AS 1851.6 and AS 3666:1991 Clause 2.11.3. Provide a duct access panel within 2 m of the supply fan.

10.4 INSTALLATION

Install units strictly in accordance with the manufacturer's recommendations, with local authority regulations and the National Construction Code / Building Code of Australia. Supply all necessary components.

Ground or wall mounted units shall be installed as documented and not visible from the street or public areas where possible.

Cooling unit colour shall be consistent with the colour and materials of the wall colour and shall compliment the building on which it is located.

Structural integrity
The operational weight of an evaporative cooling unit for domestic use (excluding ducting) shall not exceed 100 Kg.

During the installation, the structural integrity of structural components of the wall and roof shall not be compromised, which means:

Structural members must not be cut or reduced in dimension in any way or form.

With the exception of roof battens, structural member sizes shall not be moved or relocated without the approval of the Superintendent and a registered structural engineer.

Any approved structural alterations shall only be undertaken by an appropriately licensed contractor or sub contractor.

Any major structural alterations and /or modifications to the roof structure shall be certified by a registered structural engineer and approved by the Superintendent before commencing work.

Plinths

Ground-mounted units are to be set on a concrete plinth minimum 75mm thick and extending at least 1200mm all around the unit. Water supply lines should be laid under the slab and installed to rise adjacent to a support leg. Where the pipe penetrates the concrete, it is to be protected from contact with the concrete.

Upstands

Use structural steel sections welded into a rigid frame. Prepare surfaces by pickling to AS 1627.5 and hot dip galvanise to AS 1650 after fabrication.

All units are to be mounted on galvanised or stainless-steel frames, which provide support on all sides of the unit.

Fall prevention system

Provide roof anchor(s) (fall restrainer) fitted on the roof of every dwelling to accommodate and secure the safety of installation and maintenance personnel. The fall prevention system shall fully meet the requirements of the Queensland Workplace Health and Safety Act.

10.5 ELECTRICAL

Generally, as follows:

The units are to run-on single-phase power.

All power and control wiring shall be concealed within walls, ceilings, floors and partitions.

Each unit is to be fitted with an isolating switch adjacent to the fan motor, identified with the appropriate circuit number. A separate 2.5mm^2 circuit is to be provided for each evaporative cooler with appropriate marking on the switchboard legend or panel. The circuit shall be protected by a combined residual current device/circuit breaker. The residual current device is required to have a 30-milliamp trip current.

Under no circumstances shall any electrical cables be located directly below roof sheeting / tiles, nor shall it be placed on the top side of the roof. Generally, electrical cables shall be placed over the ceiling joists.

Electrical wiring must not be covered by insulation. Refer to AS 3999: “thermal insulation of dwellings” and AS 2627.1.

Provide surge and low voltage protection to each unit and its ancillaries. Protection devices shall be located within the cooling unit and be suitable for the working environment. Protection devices shall provide continuous protection at the operating loads of the unit.

10.6 DRAINAGE

Connect drain to approved waste. Incorporate an approved air break so that the discharge from the bleed and sump drain is visible and measurable.

Water and drains

Generally, as follows:

The water supply and drainage installation shall comply with the Queensland Sewerage and Water Supply Act.

The water supply to each unit shall be provided with an isolating valve securely fixed in a location approved by the Superintendents Representative and within easy access/ reach of the tenants, i.e. not more than 1800mm above finished floor level.

Water supply lines are to be fitted with backflow prevention devices in accordance with AS/NZS 3500.1.2:1998. Where multiple units share the same supply, one valve is sufficient.

All valves shall be installed on the ridge side of the units to facilitate maintenance access.

Provide a 12mm Hose cock adjacent to each unit. Hose cocks are to be fitted with or incorporate a check valve. This is not required where the hose cock is installed downstream of the backflow prevention device.

The overflow pipe may be incorporated with the dump line.

Waste water is to be discharged to the requirements of the Local Authority. Generally, the following methods will be adopted to deal with waste water:

Where downpipes discharge to the ground or waste water discharge shall be via a 25mm ID bore UPVC pipe, as follows:

- The discharge pipe shall extend from the cooler via the top of the roof corrugations and penetrate the roof at the soffit line, then run down the vertical wall and terminate 200mm above ground level. The termination of the discharge pipe is to be securely connected to a 15 metre long x 30mm clear flexible broadcast hose. The waste water shall discharge onto the garden.
- The UPVC pipe is to be clipped every 750mm. Appropriate pipe connectors (elbows) shall be used wherever the pipe changes direction. Roof and soffit penetrations are to be weatherproof.
- Where downpipes connect to existing sewer or rainwater drains:
- Terminate 25mm UPVC discharge line at approximately 100mm inside the top end of the downpipe. The discharge pipe shall extend from the cooler via the top of the roof corrugations. The pipe is to be clipped every 750mm appropriate pipe connectors (elbows) shall be used wherever the pipe changes direction.

10.7 MAINTENANCE

Operational maintenance

During the defects liability period carry out all preventative and corrective maintenance required for safe and reliable operation of the units, as required by AS 3666 and the manufacturer’s recommendations. Minimum service intervals shall be 6 monthly or prior to end of defects liability period, whichever is sooner.

Maintenance records

Comply with the requirements of AS 3666 Clause 5.6.2.

On call maintenance

Provide On Call Maintenance to place the installation into working order after breakdown or malfunction of the installation. Make available, under this service, adequate technical staff and skilled tradesmen for attendance to the installation within 24 hours of the call out.

10.8 COMPLETION

Manuals

At the date of Practical Completion provide 2 copies of an operating and maintenance manual complying with the requirements of AS 3666 Clause 5.6.

Warranty

To be made out in the name of the Principal.

Refer *Schedules of Requirements* to this Specification.

361 LIFT SERVICES

1 GENERAL

1.1 SCOPE

This Section specifies the provision of lift services as shown on Drawings and including all mandatory equipment and accessories.

1.2 STANDARD

General

To AS 1735.12.

To SAA Lift Code, parts 1, 2, & 12.

To National Construction Code (NCC) requirements, particularly Part E3.

To AS/NZS 3000.

1.3 CROSS REFERENCE

Requirement

Refer to the following worksections:

- Electrical and Mechanical Services.

1.4 PERFORMANCE CRITERIA

Requirement

Design, manufacture, supply, deliver, install, test, commission and maintain the lift having the characteristics scheduled in the 'LIFT SCHEDULE' as specified.

Building Works: Refer to the Architectural and Structural drawings for building details.

Number of floors and lift travel: Refer to the Lift and Architectural Drawings to determine the number of floors and lift travel required.

Ambient Conditions: The whole of the installation and materials shall be capable of continuous operation at full load under the following ambient conditions.

Temperature: At any temperature between 5°C and 45°C.

Humidity: At any humidity up to 98% within the above-mentioned temperature range.

Lift Shaft: Construction of lift shaft with a vertical tolerance of ± 13mm and finishes complying with the requirements of the SAA Lift Code and relevant local statutory requirements and authorities.

Accessibility: Designed to enable movement and use by People with Disabilities (PWD).

Lift Type: The lift is to be a traction 'machine-roomless' type lift, unless otherwise specified.

Battery Backup: The lift must have battery backup allowing the lift car to operate from a battery supply of at least adequate capacity, so that in the event of power failure during transit from the upper level, the lift is able to safely reach ground level, or the closest floor when not possible to run to ground level, and the lift doors are to then automatically open. Size the batteries allowing an adequate safety margin to allow for loss of capacity over time.

Lift Access Control: Access to lifts must be limited to residents and legitimate visitors. This may include Key or Card access control to the lift itself. Confirm with Builder whether this is required on this project.

1.5 RELATED BUILDING AND ELECTRICAL WORK

The following related work is required to complete the installation:

- Building-in of landing doors and frames.
- Provision of block-outs and building in of landing appointment boxes.
- Building-in of bond blocks.
- Construction of a pit for the lift sized as required (1650mm max depth).
- Building of hoistway and fittings in accordance with the Building Code.
- Waterproof sump pit complete with equipment plinths and drainage pipes for liquid collection. Refer to drawing – *'Lift Shaft Sump Detail (Typical)'* for additional requirements.
- Weather protection to prevent water entering lift cars, thresholds, and lobby area - refer to drawings.
- Monorail at top of shaft. Refer to the structural documentation.
- Totally weatherproof lift shaft smoke vent.
- Backup power Battery enclosure/room as necessary.
- Smoke detector at the top of the lift shaft.
- Openings as necessary for piping and steel conduits and the fire sealing after installation of the piping and conduits.
- Power to the lift switchboard.
- Power to the lift.
- Supply and installation of all lighting, including emergency lighting, required by the relevant Codes in the lift tower.
- Painting of related rooms or enclosures.
- Painting of door frames and doors.
- Power to the lift switchboard in the form of submains from the site main switchboard to the lift switchboard. This would typically be a 40A, 3 phase circuit.
- Access control to the lifts where not provided as part of the lift installation.

2 QUALITY CONTROL

2.1 REGULATIONS AND AUTHORITIES

Requirement

Carry out the work in accordance with the requirements of the following bodies, Acts and Codes:

- SAA Lift Code AS 1735.1, AS 1735.2 and AS 1735.12;
- AS/NZ 3000 Wiring Rules;
- SAA Rules for Access for the Disabled AS 1428.1;
- The National Building Code - National Construction Code / Building Code of Australia, with Queensland Amendments;
- The Supply Authority;
- Electrical Safety Act and Regulations;
- Queensland Fire and Emergency Services Services;
- The Queensland Workplace Health and Safety Act;
- The Queensland Workplace Health and Safety Regulations; and
- The Queensland Workplace Health and Safety Approved Codes of Practice.

In addition, all other local statutory authorities having jurisdiction over the installation.

All notices required by the Statutory Authority shall be provided and mounted where directed.

Approvals and Certificates
Obtain all necessary approvals and certificates, including registration of plant equipment, from the relevant Authorities to enable operation of the lift.

Plant Equipment Registration
Refer to *010 PRELIMINARIES - Statutory Requirements - Approvals, Certificates and Plant Registration*, for registration requirements.

3 DATA SUBMISSIONS

3.1 GENERAL

Inclusion
Include all required data submissions in the 'Building Maintenance Manual' as specified in *Preliminaries*.

3.2 RETURNABLE SCHEDULE

Schedule of technical data
Complete and submit a completed 'SCHEDULE OF TECHNICAL DATA - LIFT SERVICES' with 14 days of acceptance of tender. The schedule template is provided by the Principal with the tender documents.

3.3 SHOP DRAWINGS

Requirement
Supply shop drawings of the lift installation prepared in accordance with AS 1100 showing the relevant details of the installation including:

- Lift dimensions and details.
- Machine tower dimensions and details.
- Landing appointments.
- Car interior.
- Car front wall.
- Landing frame.
- Shaft.
- Battery room/enclosure (as applicable).

3.4 "WORK-AS-EXECUTED" DRAWINGS

Requirement
Submit, prior to Practical Completion, drawings showing the "as installed" lift installation with all relevant details.

Record, during the progress of work, all changes to equipment and services layouts, wiring, and any other items, which may have been incorporated in original works.

The drawings shall be in the form of AutoCAD drawings and shall be produced by competent draughtsmen. Pencil or freehand drawings will not be accepted.

The drawings shall show the "as installed" locations of all equipment and cables included in this contract, together with all relevant information which would assist the principal in the carrying out of maintenance, additions to the installation.

Electronic PDF copies of each drawing shall be submitted for approval.

Working drawings prepared and submitted prior to installation shall be amended to show all variations and will be accepted as the "as installed" drawings for the portion of the work.

Provide high quality "Work as Executed" drawings and "Control and Wiring" Diagrams as follows:

- Full size photocopy of each drawing size A3 or similar: 2 Sets.

Drawing Identification: Provide the following identification on each work as executed drawing in a format and location similar to that on the Tender Drawings:

- Site No.
- Project No.
- Vendor Drawing No.: Any job unique number.

3.5 OPERATION/MAINTENANCE MANUALS

Requirement
Provide three (3) copies of operator's and technical manuals, in the form and, with reference to the complete installation, containing the categories of information required for the complete operation and maintenance of the lift.

Form
A4 size, machine printed or typed on durable printing paper, properly bound in durable covers, consisting of a title page listing the supplier's name, address and telephone number, a table of contents, and technical descriptions, instructions and recommendations written in clear concise English.

Operator's manual
Provide an operator's manual containing the information necessary for the satisfactory long-term operation and regular maintenance of the installation.

Number of Copies: Three (3).

Technical manual
Provide a technical manual containing a detailed technical description to the operation of the lift, including performance data and diagrams or illustrations where appropriate.

Include in this manual copies of the lift services ‘As Installed’ drawings, lift shop drawings, the Lift power/control board layout and schematic drawings, and the lift controller printed circuit board schematic.

Number of Copies: Three (3).

3.6 APPROVALS/CERTIFICATES

Requirement
Submit the approvals and certificates obtained from the relevant Authorities.

4 TECHNICAL REQUIREMENTS

4.1 GUIDE RAILS

Type
Straight lengths of standard tee section steel of uniform brinell hardness with working surfaces accurately machined and smoothly finished.

Tolerances
The variations in the thickness of the working portion of any one guide rail shall not exceed +0.8mm, -0.12mm throughout their entire length and at all rail joints.

Assembly
Use fish plates and steel bolts and nuts at joints between rail lengths. Fill working surfaces smooth at joints.

Set up
Set up guide rails plumb and securely fix in proper alignment. Bring rails to their correct gauge to ensure an even track.

Drip tray
Provide a 0.6mm aluminium/zinc coated steel drip tray under the bottom of each oil-lubricated guide rail between the rail and steel channels on the floor of the pit.

Size: 300 x 300 x 100mm minimum.

Dry Type Slide Guides: Drip tray not required.

4.2 GUIDES

Type
Self-aligning slide type with provision for adjustment and fitted with replaceable machined guide shoes.

Shoes
Either:

- With lubrication facilities;

or

- Quiet operating low-friction dry sliding type with adequate load capacity and replaceable slides;

or

- New roller guide assemblies, to manufacturer's standard, to ensure smooth and silent operation.

Guide rollers
Shall be of the spring-loaded type, with high strength metal alloy roller wheels fitted with durable bonded tyres to provide a smooth ride. All roller guide assembly shafts/axles shall be fitted with lifetime lubricated ball bearing sets.

Roller tyres shall be of an approved high-density compound to ensure freedom from 'flat-spotting' resulting from extended car parked periods during periods of low lift service demand.

Be provided with approved bolster plates or keepers, to provide a 'fail safe' guide to the rails system should a roller fail.

Be held against the lift rails by means of compression springs. Spring compression shall be adjustable and shall be lockable to enable the maintenance of adjustment.

Any roller guide assembly causing noise or vibration due to the running of the car shall be adjusted or replaced.

4.3 BUFFERS

Type
Spring type.

Installation
Secure for lateral movement and install on substantial steel supports bolted to concrete plinth in the pits.

4.4 CIRCUIT BREAKER BOARD

Location
On or near to the lift shaft.

Requirement
Provide a circuit breaker switchboard in accordance with the relevant Standards and as specified.

Mounting
Wall mounted, recessed type.

Equipment and wiring
Provide circuit breakers to supply all lift circuits including lift ventilation, car lighting, lift power, batteries, associated lighting and outlets.

Enclosure
House the circuit breaker switchboard within a complete zinc annealed painted steel enclosure.

Connection and Mounting: Front connect and mount the equipment so that any item can be readily removed and replaced without access to the rear of the mounting.

Identification: Colour all connections between items of equipment to indicate phases.

Engraved Laminated Plastic Labels: Provide engraved laminated plastic labels showing the lettering on a black background, to indicate the function of each piece of equipment. Provide any other notices required by the authorities in the same form. Fix the labels with chrome-headed self-tapping screws or escutcheon pins.

Circuit breaker switchboard rating
Rated for a minimum of 6,000 amps for 0.1 second minimum RMS short circuit fault level. All equipment shall have the same fault current rating unless it is protected by fault current limiting HRC fuses of suitable category and continuous current rating.

Cable entries, cut-outs and terminating facilities
Provide cable entries, cut-outs and terminating facilities of sizes and locations to suit the size and run of the cables concerned.

4.5 STAND-BY EMERGENCY SUPPLY

Requirement
Supply and install an Automatic Lowering Rescue System utilizing a backup emergency power supply/stand-by battery system as an integral part of the lift installation.

Function
Arrange the system so that, in the event of an interruption to normal power supply, the emergency power supply shall ensure that:

- the lift doors automatically open if the lift car is already located at a floor.
- If in transit when power fails, the lift returns to the **GROUND** floor (or the closest floor where not possible to run to ground), and opens the lift car doors. The doors are then to remain open until normal power is restored.

Safety Devices and Controls: Arrange the emergency power supply so that all safety devices and controls normally required are operational when the emergency power supply is operating.

Type
Sealed rechargeable type batteries and battery charger.

Battery Charger: The battery charger is to be at least capable of charging (to 100% full capacity) the fully discharged batteries within a 16-hour period and is to be suitable for continuous charge operation.

Alarm: Provide the unit with a 'loss of normal supply' alarm consisting of an illuminated light and buzzer to indicate when the normal supply has failed or been disconnected. Provide a momentary push type alarm silence switch.

4.6 LIFT ACCESS CONTROL

Requirement
Access to lifts is to be limited to residents and legitimate visitors.

Methods of achieving:

a) Secured access to the lift by proximity card and keypad security;

Requirements:

- Adjacent to lift call button (external), provide a combination proximity card reader with keypad security to access the lift.
- Vandal, tamper and weather resistant.
- IP65 Rated.
- Keypad – Robust and durable materials with high-contrast permanently marked alphanumeric characters, clearly legible for the life of the product.
- Backlit keys.

Number of proximity cards required:

- 2 per unit.
- 2 masters to Principal.

The lift supplier is to liaise with:

- Main Contractor, to determine the allowances required in the lift installation for this project.
- Principal, to determine the final requirement for secure access control.

b) A secure lift lobby area, restricted access by means of an intercom system and remote door release operated from each apartment.

c) Secured access to the site.

4.7 KEY LOCK ISOLATOR

Requirement

Provide an impact resistant, metal clad, weatherproof isolator on the Ground Floor outside the lift. Isolator is to be lockable in either the "on" or "off" positions to enable or disable the operation of the lift, while maintaining power to any battery chargers.

4.8 LIFT CAR

Controller

Provide a main controller to initiate and control the car movements with the following attributes:

- all contactors, switches, relays, electronic devices, resistors, reactors, capacitors and similar items shall consist of standardised equipment and shall be so designed and constructed and accurately set up and adjusted as to:
  - . operate the lift under the conditions of load and speed specified, silently and without undue arcing;
  - . provide absolutely smooth acceleration and retardation of the lift under all conditions of loading; and
  - . give satisfactory service with a minimum amount of attention and maintenance.

Contact area and pressure shall be adequate for the currents and voltages applicable and where necessary arc shields and/or blow out coils shall be provided to ensure that all contacts have long life compatible with other controller equipment.

All auxiliary contacts shall have silver tips. All moving contacts shall be mounted on suitable spring-controlled contact fingers.

Provide an ON/OFF Key-switch plus 'OUT OF SERVICE' illuminated indicator.

Car control panel

Provide 2 vandal-resistant car control panels located on each side wall with the following attributes:

- panels shall comply with and be in accordance with AS 1735.12;
- floor call buttons corresponding to the landings served. Buttons shall show the floor to which they correspond, illuminate when a call is registered and extinguish immediately the call is cancelled;
- door close button designed to close doors immediately on operation;
- door open button which, when pressed momentarily, causes closed or closing doors to re-open and, when held pressed, causes doors to remain open;
- telephone / alarm button (the telephone button shall also operate the lift alarm bell).

Car operating panel

Construct the front wall from folded 1.6mm stainless steel overlayed with stainless steel 'Rigitex' 2WL finished or approved alternative with all exposed corners rounded and all edges smoothed.

Components: Provide the car operating panel components as shown on the Drawings and including:

- Control panel.
- Regulation notice, to be photo-anodized onto aluminium and mechanically fixed to the front wall.
- Position indicator.
- Emergency stop button coloured red, which when pressed will cause the lift to stop without shock to the passengers or damage to the equipment. There shall be an adjustable time delay of up to 3 seconds before the lift can re-start after release of the stop button.
- Car light switch being a key operated switch having two positions labelled OFF and ON.
- Fan switch being a key operated switch having 2 positions labelled OFF and ON.
- Exclusive Service key switch.
- Fireman's key switch - three position switch:
  - . Off – Lift to normal.
  - . On – Door protective device to become inoperative.
  - . Override fireman's ground floor switch.
- Cancel all other car calls when the lift arrives at the first assigned stop.
- Start – Cause the door to close and lift to start in response to registered car calls.
- Emergency phone, hands-free, auto-dialling, flush mounting, vandal-resistant type, with stainless steel grille to speaker/microphone housing, for communication between car and emergency service.
- GPO above skirting level with stainless steel cover.

Labelling: All operating devices shall be clearly, permanently and individually labelled to indicate the purpose for which they are used. Such labelling shall be by means of engraving on the panel faceplate, button face or key-switch collar, as appropriate.

Exclusive use service

Provide an exclusive service key switch to enable the lift to be removed from the normal control system.

The key switch shall be a three position "OFF" - "ON" - "PARK" switch with the key removable in the "OFF" and "PARK" positions only. Selection of the “PARK” mode shall cause the Lift to park at the floor, with doors open.

The functional label “EXCLUSIVE SERVICE”, with all switch positions also clearly labelled shall identify the switch escutcheon.

Car ventilation
Provide an exhaust fan to the lift car in addition to the required natural ventilation. Mount the exhaust fan in an acoustically insulated plenum with an inlet baffle to the fan. The fan shall operate at low speed on a selection graph to exhaust 30 litres per second from the car. Fresh air is to be drawn through the car via a ceiling mounted axial flow fan and discharged via down flow exhaust cowling on the car roof.

Fan
The fan shall be axial flow, of blade diameter not less than 200mm, with RPM/tip speed set for low noise operation, (below 55dBA at 1.0 metre), and capable of a delivery not less than 40 litres/second.

Power supply
Provide 240 Volt supply to the ventilation system, controlled via a separate key switch from the car lighting and power circuit.

Protection quilt
Provide a canvas protective quilt tailored to neatly fit the car for the full height. The quilt shall be double stitched with turned over edges and fitted with brass hook eyes. Fixings shall consist of plastic-coated hooks permanently fastened to the quilt and design to fit over the car panelling to hold the quilt in place.

Provide an enclosure to store the quilt or locate it in a suitable room on a bracket fixed to the wall.

Car position indicator
Install a car position indicator in the car and at the landing to show the position of the car at all times.

Type: Either:

- Digital type using LED Dot Matrix type (or similar), providing two-character fields, the left field offering a direction of travel arrow, and the right field a designated alphanumeric character set identifying the landings. Each indicator character (50mm MINIMUM HEIGHT) shall illuminate brightly, and the characters shall clearly identify the position of the lift and its travel direction at all times. The lift car position indicator shall be centrally located over the doorframe.

or;

- Illuminated plastic letters or numerals with the characters in the form of through-engravings, in a faceplate, filled with suitable translucent plastic. Characters shall be of material that is not discoloured or deformed by cleaning agents ordinarily used on indicator faceplates. The indicator faceplate shall be satin finished stainless steel fixed as for the car operating panel.

Indicator boxes:

- Divide each indicator box into light-tight compartments, corresponding to the number of floors, with white enamelled or white porcelain reflecting surfaces.
- Have light visible through the letters or figures only.
- Arrange the faceplate for easy removal to facilitate the renewal of lamps.
- Provide Led indicator lamps.

Car doors
Provide lift car doors as follows:

- of dimensions given. Finished thickness shall be not less than 25mm;
- all door panels shall be constructed of pressed furniture steel sections, filled with an approved sound-deadening and fire-resistant material which will not burn or smoulder;
- provide panels with internal steel reinforcing bars, interlocked and/or fixed, to withstand service conditions;
- reinforce door panels where necessary for attachment of hangers, guide shoes, links door operator mechanisms and similar items.

Line exposed surfaces and return edges of the panels with stainless steel 'Rigitex' 2WL finished or approved alternative.

Emergency car lighting (self-contained)
Type: One or more non-maintained LED ceiling lights.

Operation Duration: A minimum of 4 hours, after loss of supply.

Illumination: At least 20 lux magnitude on the face of the car button panels.

Arrangement: The emergency lighting fittings shall contain a rechargeable battery, together with charging equipment embodying fast and float charge modes which shall automatically maintain the battery fully charged.

Testing: Provide for test/isolation of emergency lighting installation via key switch controller or similar.

Car superstructure
Provide a lift car superstructure with floor covering, lighting fittings and roof trap door, complete in all respects.

Superstructure Structure: Heavy gauge pressed metal or substantial timber sections to provide a rigid box, strong and free from racking and squeaks, drumming and similar noises.

Superstructure Sheeting: Exterior use plywood. Particleboard (which shall be high moisture resistant type) shall not be used except for hung-on type panels and similar easily detachable components.

Fixings: All screws associated with metal construction shall be provided with effective lockwashes.

Roof Construction: Constructed for maintenance live and dead loads. The upper surface of the roof shall be smooth and level.

Trapdoor: Provide trapdoor to 23.14 of AS 1735.2. Provide robust hinges, an electromechanical interlock and a bracket or the equivalent to support the trapdoor in the open position. The upper edges of the trapdoor and the roof opening shall be metal trimmed to prevent damage.

Vinyl Tile Floor Covering: Minimum 3mm thick.

Mechanically Operating Parts: Do not mount mechanically operating parts, other than the trap door contact, on the superstructure.

Ceiling Access Panel: In the car false ceiling, provide a push-up ceiling panel for access to the trapdoor. Panel to match the false ceiling.

Provide the panel with:

- Felt/melamine laminate runners on the top surface of the ceiling, and rollers on the top of the panel and suitable guides on the underside of the roof.

Flooring Material: 20mm structural plywood.

Under Floor Lining: Line the underside of the plywood flooring with 0.1mm aluminium/zinc coated steel sheet.

Car Door Sill: Provide a continuous length steel car door sill with surface suitably contoured to prevent slipping and incorporating the grooved tracks for the horizontal sliding door panels. (The material used shall be at least as durable as that used for the landing door sill tracks). Install the sill on the platform at the car entrance, flush with the finished flooring.

Car Alignment: Install the car free from twist, i.e. the guide shoes shall lie in one plane independently of the effect of the guide rails.

Car Balancing: Locate the car supporting beams and ram attachment to compensate for the unbalancing effect of car doors, door operator gear and the like. After the installation of the car superstructure and all equipment and wiring on the car has been completed, undertake a final balance by adding balance weight to the car frame where necessary to ensure that the completed car is truly balanced.

Door protective system

Provide the car door set with a door protective system which does not rely on physical contact with, or the motion of, a person or object to inhibit door movement, or initiate door reversal.

Detection of Items: The system shall be able to detect a 50mm diameter rod introduced at any position within the door movement and between the heights 50mm and 1550mm above sill level.

Operation: The system detection, of intrusion into the protected area, shall cause the doors if fully open to be held in the open position and if closing to reverse to the fully open position.

Intrusions: The first intrusion during a stop at any landing shall cancel the normal dwell time and substitute a door protective system delay which shall be adjustable between 1 to 10 seconds commencing with removal of the intrusion. If during this period a further intrusion occurs, upon its removal, the same delay period shall be reimposed and this cycle shall continue until traffic through the doorway ceases.

Removal of Intrusion: The doors shall commence to close immediately after the expiry of the determined period once the last intrusion has been removed.

Light Beams: The system shall incorporate light beams, the light source shall not require the use of incandescent filament lamps but shall operate in the invisible portion of the light spectrum, preferably infra-red.

Design and Installation: All units shall be rigidly constructed and mounted in an approved manner, to ensure stability of aim and focus and to minimise any ill effects of vibration and bumps. The design and arrangement shall be such as minimises the effect of dust.

Maintenance and Adjustment: Provide facilities for easy adjustment and maintenance of units. Lights source and sensing units shall be easily accessible for adjustment of focus and aim and for the locking of these adjustments. If it is necessary to protect a ray through any portion of the car, provide an inspection cover, held by Phillips head screws, to afford access to the unit concerned.

Landing door closing devices

Provide each landing door with a door closing device which shall close the door fully in the event of the car leaving the landing for any reason with landing door open.

Operation: Door closing devices shall operate quietly when the doors are normally opened and closed by power. They shall comply with the following requirements, as applicable.

Weight Actuation:

- The closing device shall be actuated by a guided weight in conjunction with a steel air cord or other approved type of connecting cable.
- The weight guide shall be supported from the landing door structural sub-frame, shall embrace the weight for substantially its full travel and be provided with a bottom stop to retain the weight within the guide in the event of it falling through failure of the air cord or other means connecting it with the door panel.
- Means shall be provided to ensure that the weight cannot be withdrawn from its guide by tension applied to the horizontal run of cable.
- Each cable diverting pulley shall be suitably grooved and provided with a sealed type ball bearing and an effective guard to retain the cable in the pulley groove.

Lever Actuation:

- The assembly shall have ample lateral rigidity, in particular to ensure that the closer members have adequate clearance from the landing door panel and from components on the car.
- Links, pins or bolts shall be of ample strength and be firmly attached to the landing door structural sub-frame, the landing door panel and the relevant link.
- Bearings shall be ball type of ample strength.

Actuating Springs:

- All springs shall have a force characteristic which ensures that the doors will close reliably from any position.
- The rating, terminations and attachments of springs shall be such as affords long life of springs and attachments under intensive conditions of service.
- Any guiding registers for springs shall be of durable material that is either self-lubricating or requires a minimum of lubrication.

Lift car voice annunciator system

Provide and install to the lift car a programmable multi-function speech annunciator unit, complete with loud speakers, field adjustable outlet level control,

encoders, power supply, all interface to lift controller, cabling and connection. Securely mount and locate all equipment to system manufacturer's recommendations to ensure full audio coverage of the lift car passenger occupation space.

The voice annunciator system shall be provided with pre-recorded speech messages using a clear female voice source in Australian English, (synthesised speech shall not be used), to make suitably worded and phrased announcements covering the events/situations following:

- Arrival Announcements: To include - lobby arrival, each lobby unique by level/description/no.
- Direction Announcements: To include - going Up/Down.
- Warning Announcements: To include a selection to later advice of the Principal.
- Miscellaneous Announcements: To include a selection to later advice of the Principal.

The voice annunciator system shall be capable of providing a playback time of not less than 2 minutes of continuous speech.

The system shall offer not less than the functionality and features provided by Dewhurst SM016 Series Speech Units.

4.9 LIFT CAR OPERATION INDICATORS

Landing button station

Install a landing button station at each landing served. The faceplate at intermediate floors shall incorporate "UP" and "DOWN" illuminating buttons. Those at terminal floors shall incorporate one such button.

Car Position and Direction: The faceplates shall incorporate car position and direction indicators which illuminate only when the lift is on normal service.

Floor Designation: At the top of each faceplate, engrave the designation of the floor in 13mm letters.

Fire Warning: Engrave each faceplate with the following sign, in letters 8mm minimum high with 1.5mm stroke thickness:

DO NOT USE LIFT

IF THERE IS A FIRE

The call buttons shall be tactile, compact, RED LED, illuminated raised legends, semi-recessed pressel, single level illumination as operation acknowledgement, installed to linish finished stainless steel flush plates as indicated on the drawings.

All call buttons shall be provided with an audible tone acknowledgment function to AS 1735.12 requirements.

All Hall Call button plates shall:

- Have a satin finished stainless steel faceplate of at least 2.5mm thickness, with radiused corners and bevelled edges, incorporating:
  - Illuminated call button/s.
  - Illuminated, backlit, "OUT OF SERVICE" message panel, in RED LED 12mm high characters (This message panel shall illuminate whenever any "fail to start" system condition arises.)
  - Bear engraved legend featuring "IN CASE OF FIRE DO NOT USE LIFT" message.
- Utilise tamperproof stainless steel screw fixings.

At Ground Floor level, incorporate a "FIRE SERVICE" recall key switch suitably identified. The fire service key switch shall be of "MEDECO" manufacture, 5 pin, and tumbler type lock using a restricted style of blank. The Key switch escutcheon shall finish flush with the button plate.

Hall lanterns

Provide an "UP" lantern at the bottom landing and a "DOWN" lantern at the top landing.

Gong: Provide a distinctly audible single-stroke mellow-tone gong within each lantern box of each lift.

Operation: Immediately a car begins to slow down for a floor, its "UP" or "DOWN" hall lantern on that floor shall illuminate in accordance with the direction in which the car will next travel. The gong shall sound only at the first lighting of the hall lantern. The "UP" hall lanterns on the main dispatching floor shall be arranged to flash brightly and rhythmically when illuminated.

Identification of lift at landings

Provide an international symbol for access for the disabled as shown on Drawings, at each of the floors served.

Symbol: The symbol shall comply in both shape and colour with AS 1428.1, be at least 100mm high and be displayed in a clearly visible position (Double sided).

4.10 LIFT SHAFT

Lift shaft lighting

Adequate lift well lighting shall be provided in accordance with the requirements of AS 1735.2.

Light fittings shall be LED weatherproof batten lights, located clear of lift shaft rails, hydraulic rams and like items of equipment.

Each light fitting shall be provided with a three cores PVC flex and plug top. The flex shall not exceed 600mm in length.

3 Pin plug sockets shall be provided for each lift shaft light fitting and shall be controlled by two-way switching located at the top and bottom of the shaft.

The lift shaft lighting shall be supplied from a circuit breaker connected to the line side of the main control on the lift switchboard. The circuit breaker shall be labelled "Lift well Lighting".

Travelling cables

Travelling cables shall be provided as necessary for the correct and proper operating of all equipment, controls and safety devices.

Travelling cables shall:

- comply with the requirements of AS1979 "Electrical Cables - Lifts - Flexible Travelling";
- be multi-core flexible cable with a minimum of 10% spare cores two (2) of which at least shall be shielded;
- have a fire, acid, and moisture resistant outer sheathing;
- be installed in a manner that will prevent unnecessary stress being imposed on the conductors or terminals;
- be free from twists and kinks and not subject to abrasion or mechanical damage;
- be connected through fire resistant junction boxes. All terminals shall be clearly labelled, and all wiring

shall be laced together in a neat and regular fashion.

Install the cables in such a manner as to prevent their being damaged due to abrasion or catching on equipment in the lift shaft.

In addition to the required number of control and power cables, plus spares, cables shall be provided, installed and terminated to approval, for the following:

- Emergency Telephone System.
- Lift Maintenance Intercom System (If applicable).
- Cat 5, 4 pair cable for future electronic access controls.
- 75-ohm coaxial cable for the future termination of CCTV camera equipment with all terminations, between the lift car and a termination box on the exterior face of the lift shaft wall on the upper level.

4.11 PAINTING AND FINISHING

All steelwork unless otherwise treated in accordance with this specification shall be cleaned prepared and properly painted as part of these works.

Note that the following items shall be manufactured from hot dip galvanised finish steel:

- sill support plates;
- door sub-assemblies including sill, side, and door header supports;
- guide rail fixing brackets;
- pit sump covers;
- pit buffer support assemblies.

Shaft equipment painted prior to delivery to site shall be thoroughly cleaned of grease, grime and scale, given one coat of a rust inhibiting primer and painting with a high-quality equipment enamel to provide a high standard of finish. All such equipment marked during delivery, storage or installation shall be touched up, to approval in a matching colour, prior to the date of Practical Completion.

Shaft equipment requiring painting on site shall be thoroughly cleaned of grease, grime and scale, given one coat of approved rust inhibiting primer and two coats of a high-quality equipment enamel in the normal colours to approval of the Superintendent.

All equipment visible between the car and landing doors, when the car is at a landing and including header plates, well flushing, car toe guard, inside faces of landing doors, outside faces of car doors, etc. shall be finished, in a first-class workmanlike manner, with an approved matte black enamel.

4.12 WARNING SIGNS

Requirement

At the entrance to each level, provide a machine engraved label with the following words in letters 8mm minimum high with 1.5mm stroke thickness:

DO NOT USE LIFT

IF THERE IS A FIRE

5 COMMUNICATIONS

5.1 EMERGENCY COMMUNICATIONS

Standard

To AS 1735 Clause 6.6(h).

Lift Phone System Requirements

Provide a duplex hand free loud speaker, direct auto-dialling telephone system complete with alarm bells and all connections from the lift emergency phone to a location to be advised by the Superintendent.

System Composition

Be telephone line powered.

Have telephone communications failure, Lift Voice Alert.

Connected to a mobile phone network wireless communications gateway. See details further below.

Have two-way loud speaking communication.

Have adjustable amplifier receiver volume.

Store 10 (maximum) digit telephone numbers, selectable down to one digit.

Have auto hang up on detection of busy tone (adjustable).

Have auto hang up on silence detection (15 seconds approximately).

Have auto hang up when 3-minute time elapses selectable to 1.5 minutes.

Dial tone detection prior to dialling (adjustable).

Accepts incoming calls.

Relay contacts provided (normally open - normally closed [requires 12V supply]) operates on ring signal and when system is switched on.

Switch on time selectable from 1 sec, 2 sec, 4 sec, 8 sec (set to 8 sec).

Tone pulse switchable.

PABX pause (3 sec).

Relay contacts isolated by OP-TO coupler.

Compact design.

Have dimensions of 160mm high x 240mm wide x 70mm deep.

Have the following requirements:

New type dial tone line (425 Hz).

DTMF (M.F.) line.

Training cable, 1 x twisted screened pair.

Communications System

Regardless of whether the NBN network is available in the area or not, the lift emergency phone communication system is to comply with the following:

- Lift phones are to be set up to communicate using the 3G/4G GSM mobile phone network via a wireless communications gateway which incorporates two sim cards, which are on different mobile phone networks. NB: Upon failure of one mobile phone network the alternate network is to be automatically selected by the communications gateway.
- The communications gateway is to be provided and installed by the Contractor and must have battery backup allowing for at least 2 hours talk time. The communications gateway is to be Pixel Technologies model EM-4GE2 or approved equal.
- The Contractor is responsible to test and verify the functionality and communications gateways of the emergency phone system.
- Sim card/s will be set up by the Principal and provided to the Contractor for changeover, connection to nominated network/s, and

certification of the emergency phone system, prior to Handover.

- The wireless communications gateway should be located in a suitably secure common area room or cupboard.
- If Telstra and Optus mobile phone signal levels are not both strong/good in the area selected (i.e. Generally, a minimum of 3 or 4 bars consistently on a mobile phone), then provide external antennas connected to the communications gateway.
- Power to the wireless communications gateway is to be run via an adjacent isolator which is lockable in the 'ON' or 'OFF' position. Wire the circuit from the lift control panel/switchboard on a separate circuit that is not RCD protected. Provide a permanent label next to both the circuit breaker and the isolator, reading 'LIFT PHONE – DO NOT TURN OFF'.

Notice
Provide a notice adjacent the main car operating panel as follows:

FOR EMERGENCY PRESS "TELEPHONE" BUTTON

FOR EIGHT (8) SECONDS FOR

DIRECT CONNECTION TO SERVICE

THIS IS LIFT 1

BLOCK .....

ADDRESS.....

(The Superintendent will provide the data on the Block and Facility name during the Contract.)

Alarm bell
Provide an alarm bell system to AS 1735 clause 32.4.2. Provide one alarm bell on the lift car and a second bell at the main entrance. Test the bell alarm system prior to Practical Completion.

5.2 ANCILLARY FACILITIES

Well flushing and screening
Provide all well flushing and other screens required under the SAA Lift Code, and by the Statutory Authority, for the lift as installed.

Construction: Fabricate the screens from 1.2mm aluminium/zinc coated steel. Fix the screens securely in position.

Battery Room and lift shaft ventilation
Supply and install the necessary control for exhaust ventilation of the battery room (where applicable) and/or shaft based on the particular equipment heat rejection, to include:

- Suitably sized circuit breaker.
- Cabling to exhaust fan.
- Dual step thermostat to operate fan when room temperature exceeds 24^0C and to operate the external bell in the event of the room temperature exceeding 43^0C.

Installation Standard: To 5.15.4 of AS 1735.2.

Sump Liquid Level Visual Alert System
Provide a lift shaft Sump Liquid Level Visual Alert system (no audible alert permitted) to indicate the sump pit requires emptying. Install Visual alert in a noticeable location. Refer to drawing – *'Lift Shaft Sump Detail (Typical)'* for additional requirements.

Note: The power to the visual alert system controller is to be via a weatherproof isolator, lockable (locked in the 'ON' position) located adjacent. Power connection using a socket outlet that is accessible to the public is not acceptable.

Cabinet for spare parts and maintenance manuals
Supply and install, in an approved position, a suitable steel cabinet of minimum nominal size 900mm wide x 450mm deep x 1000mm high equipped with sufficient shelves to adequately house the spare parts and materials. Fit strong hinged doors with a reliable latch.

Finish: Paint the cabinet with a Full Gloss Solvent-borne paint system.

6 TESTS

6.1 TESTING

Standard
To AS 1735.

Requirement

i) Load the lift unit to rated capacity and test for several cycles to insure proper operation. Inspect the unit after operation to ensure no undue wear or failures has occurred.

ii) Test the lift for correct operation and control under conditions of power failure.

iii) Carry out all tests required by the Division of Workplace Health and Safety, of the Department of Justice and Attorney-General. Carry out the tests in the presence of the nominated inspecting officer from that Department.

7 MAINTENANCE

7.1 OPERATIONAL MAINTENANCE AND SERVICE VISITS

Requirement
Carry out the full maintenance and service requirements as required by the SAA Lift Code and the manufacturer. The regular service visits shall be quarterly, for the period of the Lift Maintenance Period.

Lift Maintenance Period: 12 months.

7.2 LONG-TERM CONTRACT COMPREHENSIVE MAINTENANCE

Tenderers are required to submit a proposal for the on-going long term comprehensive maintenance of the lifts at the completion of the Contract. The long-term maintenance agreement shall be a performance-based contract, providing a comprehensive maintenance service throughout the five (5) year service contract period.

Full comprehensive service/maintenance shall include for the supply of all consumables, replacement of all worn or defective parts including burnouts, and emergency call back service.

The quotation submitted for comprehensive maintenance service shall state the annual prices that would apply, based on five (5) year service contract tenure.

Satisfactory contract performance will be assessed by the Principal through the application of two measurements, viz.,

(a) the continuously monitored ability of the lift installation and service to have met a set of quantified pre-agreed key performance indicators.

(b) the results of regular audits of the condition of the lift machinery, plant and controls, as indicative of the fullness of execution of the pre-agreed scheduled contract/service maintenance programme.

An independent third-party auditor appointed by the building owner or his delegated representative will conduct these audits.

The lift installation performance indicators referenced at (a) above shall include, but not be limited to the following guaranteed items maximum emergency maintenance call out response times (normal working hours/outside normal working hours, weekends):

- maximum average call waiting time, period 07:00 to 18:00 hours;
- maximum number of call-backs/unit/annum;
- maximum average waiting interval for lift service, Non-Peak;
- noise levels within travelling car;
- floor levelling;
- maximum single floor DO to DO time;
- maximum downtime/unit/annum.

The price quoted for the ongoing comprehensive maintenance will be taken into consideration in the evaluation of any tenders received for this Contract. The acceptance of a tender for this Contract shall not bind the Principal into accepting any such quotation for the ongoing comprehensive maintenance of the lift installation at the completion of the Contract, and the Principal reserves the right to accept or reject any such quotation.

Tenderers shall submit copies of the comprehensive maintenance agreement they propose and shall state whether they desire to incorporate a clause covering variations in the charge for maintenance, up or down, in accordance with the variation of wages and cost of materials.

Notes:

(a) The price quoted for the on-going comprehensive maintenance may be taken into consideration in the evaluation of any tenders received for this Contract.

(b) The acceptance of a tender for this Contract shall not bind the Principal into accepting any such quotation for the on-going service/maintenance of the lift at the completion of the Contract and the Principal reserves the right to accept or reject any such quotation.

370 FENCES AND EXTERNAL WALLS

1 GENERAL

1.1 CROSS REFERENCES

General

Refer to Standard Fence Detail LD402.

Within regions of *"Southern Queensland" substitute pine with treated hardwood, H3.

* *'Southern Queensland'* is defined as climate zone 5 and the part of climate zone 2 from Fraser Coast and south. Refer NCC Queensland Climate Zone Map.

https://www.abcb.gov.au/sites/default/files/resources/2022/Climate-zone-map-qld.pdf

Related worksections

Refer to the following worksections:

- *General Requirements*;
- *Landscaping*;
- *Timber Finishes and Treatment*;
- *Painting*.

2 QUALITY

2.1 INSPECTION

Witness points

Give sufficient notice so that inspection may be made of:

- set out before placing posts;
- erection of posts and rails before fixing of palings, pickets or chain wire or panels.

Submission

Submit proposals and obtain the approval of the SR before ordering or erecting feature fencing.

3 MATERIALS AND COMPONENTS

3.1 TIMBER

Refer to Drawing Details.

Preservative treatment

Standard: To AS 1604.1

Where the preservative-treatment has been compromised due to timber working, reinstate the equal level of treatment protection, including where appropriate, deemed to satisfy BCA requirements and AS 3660.1

3.2 STEEL

Steel tubes

Posts, rails, stays: To AS 1163.

- Grade: C350L0.
- Steel components to be hot dip galvanised after manufacture as applicable. Tubing to be hot dip galvanized inside and out. Other internal protective applications are not acceptable.

Wire

Chainwire, cable wire, tie wire and barbed wire: To AS 2423.

- Coating mass for outdoor locations: Type A.
- Coating mass for indoor locations and PVC coated wire: Type B.

Finish: Match chainwide.

3.3 CONCRETE

General

Standard: To AS 1379 Grade N20.

4 EXECUTION

4.1 CONSTRUCTION GENERALLY

General

Refer to the Landscape Drawings and Drawing Details for requirements.

Set out

Set out the fence line and mark the positions of posts, gates and bracing panels.

Termite Mitigation

The installation of fencing must not result in any breach of termite barriers on/to the building/s. *e.g. allow 75mm gap between side return fence/s and building/s to mitigate possible breach of termite barriers*

Clearing

Except trees or shrubs to be retained, clear vegetation within 1 metre of the fence alignment. Grub out the stumps and roots of removed trees or shrubs and trim the grass to ground level, but do not remove the topsoil.

Excavation

Excavate post holes so that they have vertical sides and a firm base. Spread surplus material on the principal's side of the fence.

Line and level

Generally: Erect posts vertically. Set heights to follow the overall contours of natural ground, keeping changes in levels to a minimum.

Feature Fences: Submit proposals to the Superintendent for approval before ordering materials. Depending on the fall of the land and the type of fence panel, it may be preferable to maintain a horizontal top line and to step panels.

Ground clearances

Maintain a clearance from finished ground of 50mm min – 100mm max. Fill with topsoil or level excessive ground depressions and humps below fences and make good. Where the fence sits above a mowing strip and/or a retaining wall a finished ground level of 75mm is required.

Concrete mowing strips

Provide below fences in public areas of multi-unit residential properties where lawn or garden abuts.

Elsewhere, provide to the extent specified on the drawings or Project Specific Schedules.

Strike off neatly with a steel trowel to prevent ponding of water.

Size: 200 x 100mm.

Earth footings

Backfill with earth around posts, compacting firmly by hand or machine in 150mm deep layers.

Concrete footings

In ground: Place mass concrete around posts and finish with a weathered top falling 25mm from the post to ground level. Gravel under for timber posts.

On slabs: Provide welded and drilled post flanges and fix using 3 masonry anchors per post.

4.2 GATES

Refer to Drawing Details for gate construction.

- LD410 (1200mm high);
- LD412 (1500-1800mm high); or
- LD415 (Double gates) (1500-1800 high).

Gates to match fence type.

Pedestrian gate width: 900mm.

Hardware
Provide the following:

- Drop bolt and ferrule to each leaf of double gates.
- 'D' Latch or similar approved to single leaf and to one leaf of double gates. Use D-latch with extended lever to outside for Platinum and Gold Levels accommodation.
- Provision for locking of D-latch by padlock.
- Hinges to ensure smooth operation.
- Where normal gates cannot open inwards due to rising ground, recess fence line to allow gates to open outward within the property line.
- Alternatively, in restricted locations and where practical, provide proprietary rising hinges.

Hand access
Where required, provide hand holes to give access from outside to reach locking provision.

5 FENCE TYPES

5.1 TIMBER FENCING

Note: Timber fencing not to be used in 'zone 3 or zone 5' (of the BCA Vol 2 Fig. 1.1.4 Climate Zones for Thermal Design). Other fence type/s to be selected.

Treated pine picket fence
Height (mm): 1200mm.

Maximum post spacing: 2400mm.

Picket pattern: Refer Dwg LD407. Square top.

Member sizes:

- Treated hardwood Posts: 100 x 100mm.
- Treated hardwood Rails: 100 x 50 mm.
- Treated Pine Pickets: 75 x 15mm. Dressed.

Picket spacing: 100mm max.

Footing type: 20 mpa concrete.

Footing size: 250mm diameter x 600mm depth.

Treated pine paling fence
Height:

- 1800mm to rear, side boundaries and return fencing/gates; and
- 1200mm to street boundary/s.

Type: Steel Post. Ref Detail LD 402/ LD 405.

Timber post: Ref Detail LD 403/ LD 401.

Maximum post spacing: 2400mm.

Member sizes (sawn):

- Intermediate posts: 100 x 75mm.
- End, corner and gate posts: 100 x 100mm.
- Rails: 100 x 50mm. Treated pine. Natural finish.
- Capping for lap and cap type: 100 x 50mm dressed with weathered top.
- Palings:
  . General: 100 x 13mm.
  . For lap and cap: 150 x 13mm.

Footing type: 20 mpa concrete.

Footing size: 300mm diameter x 600mm depth.

Paling Spacing: Close butt palings or 10 mm gap.

5.2 CHAINWIRE BARRIERS

Standard
General: To AS 1725.

Fence dimensions
Maximum post spacing: 3000mm.

Component sizes
Intermediate posts: 42.4mm diameter, 2.6mm wall thickness.

End, corner and gateposts: 60.3mm diameter, 2.9mm wall thickness.

Chainwire: 3.15mm diameter wire woven to form uniform mesh.

- Selvedges: Knuckled.
- Mesh generally: 50mm. Refer Drawings for special sizes.

Tie wire: 2mm diameter.

Post and rail barriers:

- Rails and gooseneck stay: 33.7mm diameter, 2.6mm wall thickness.

Rail-less barriers:

- Struts: 42.4mm diameter, 2.6mm wall thickness.
- Cable wires:
  . Two strands: 3.15mm diameter wire.
  . One strand: 4mm helicoil wire.

Security barriers:

- Chainwire selvedges: Twisted and barbed.
- Barbed wire to security fencing post extensions: Barbs at 95mm maximum centres.

Installation
Posts: Do not splice members except at posts when splice is embedded at least 150mm into concrete. Fit tightly fitting steel caps to posts, except where fixed to overhead structure.

Chainwire: Lace chainwire to end and gate posts. Tie chainwire twice around members at 250mm maximum intervals. Twist ends twice and cut off neatly.

Cable wire: Tension cable wire(s) to support chainwire after at least 24 hour curing of concrete footings.

Footing type: Concrete.

- Footing size:
  . Intermediate and end posts: 225mm diameter x 600mm depth.
  . Corner posts and gate: 225mm diameter x 900mm depth.

Bracing:

- Internal partitions: If at least each alternate point is fixed to the overhead structure, bracing is not required.

Post and rail barriers:

- Rails: Connect rail(s) to posts using bolted split pipe fittings and purpose-made caps and brackets with rail apertures.
- Continuous rail type fences: Join the rails together in long lengths using purpose-made sleeves or socketed connections and pass them through the apertures of caps and brackets on intermediate posts.

Rail-less barriers:

- Struts: Provide struts at ends, corners and gates.

Security barriers:

- Security fencing: Strain barbed wire between post extensions.

Gates

Frame tubes: 33.7mm diameter, 2mm wall thickness.

Chainwire: Match fence.

Maximum width: 3600mm.

Security barriers:

- Barbed wire security gate extension supports: 26.9mm diameter, 2mm wall thickness.
- Barbed wire: Match fence.

5.3 TUBULAR STEEL OR ALUMINIUM FENCES

Standard

General: To AS 1926.1

Where shown on Drawings construct approved welded tubular metal fencing and gates.

Tubular steel fencing to be hot dipped galvanised after welding and before painting.

Metal to receive pre-treatment before powder coating in accordance with the recommendations of the Australian Standards.

Style **- Rod top**:

Steel: Smorgon ARC - 'Bass' or equal.

Aluminium: Smorgon ARC - 'Byron or equal.

6 RETAINING WALLS

Related worksections

Refer to the following worksections:

- *Earthwork*;
- *Concrete*;
- *Masonry*.

Refer to the drawings and/or Project Specific Schedules for details.

380 LANDSCAPING

1 GENERAL

1.1 CROSS REFERENCES

General

Refer to the *General Requirements* worksection and the Drawing Details.

Related worksections

Refer to the following worksections:

- *Site Preparation*;
- *Earthwork*;
- *Fencing*;
- *Paving*;
- *Hardware* for fixed items;
- *Electrical and Mechanical Services*.

1.2 STANDARDS

The specification requires reference to the following Standards:

- AS 1289: Methods of Testing Soils for Engineering Purposes.
- AS 4373-1996: Pruning of Amenity Trees.
- AS 4419-1998: Soils for Landscaping and Garden Use.
- AS 4454-1999: Composts, Soil Conditioners and Mulches.

The drawings may provide reference to additional Standards.

1.3 APPROVED SUPPLIERS

Plant material

Obtain plant material, including plants, turf, topsoil, top dressing and mulch, from approved suppliers subject to prior written approval. Advise immediately if supply difficulties are encountered.

Proof of ordering

Place orders for plants scheduled in 'PLANT SCHEDULE' shown on Drawings, allowing sufficient time for supply and delivery for the project. If requested by the Superintendent, furnish proof of ordering plants with sufficient lead time. All plants are to be set aside in a separate common area at the nursery prior to planting. No extension of time will be granted because of late ordering of plants. Order sufficient quantities to allow for failures.

1.4 APPROVED SUB-CONTRACTORS

Requirement

A member of the Queensland Association of Landscape Industries or approved alternative qualifications shall perform all work.

1.5 INTERPRETATION

Definitions

Site rock: Rocks approved for salvage.

Site topsoil: Soil excavated from the site which has the following characteristics:

- Contains organic matter.
- Supports plant life.
- Free from unwanted matter.

Unwanted matter (in topsoil):

- Stones over 25mm diameter.
- Clay lumps.
- Weeds and tree roots.
- Sticks and rubbish.
- Deleterious material
- Material toxic to plants.

2 QUALITY

2.1 INSPECTION

Witness points

Give sufficient notice so that inspection may be made at the following stages unless required otherwise by the Superintendent:

- Setting out completed.
- Subgrades cultivated or prepared for placing topsoil.
- Topsoil spread before planting.
- Grassing bed prepared before turfing.
- Plant holes excavated and prepared for planting.
- Plant material set out before planting.
- Planting, staking and tying completed.
- Grassing or turfing completed.
- Paving trim, fixtures and furniture completed.
- Trees before arboricultural works.
- Completion of planting establishment work.

Hold points

Obtain approval for use of proposed imported soil mixes prior to importation to site.

2.2 SAMPLES

General

General: Where specified in the Requirements Schedules, submit representative samples of the material, packed to prevent contamination, and labelled to indicate source and content.

2.3 SUBMISSIONS

Submit the required certification from approved suppliers.

Materials

Supplier's data: Submit supplier's data including material source of supply. (Top soil, Filling, Filter fabric)

3 SITE AND EARTHWORKS

3.1 PREPARATION

Weed eradication

Herbicide: Eradicate weeds using environmentally acceptable methods, such as a non-residual glyphosate herbicide in any of its registered formulae, at the recommended maximum rate.

Regularly remove, by hand, rubbish and weed growth throughout grassed, planted and mulched areas. Remove weed growth from an area 750mm diameter around the base of the trees in grassed areas. Continue eradication throughout the course of the works and during the planting establishment and throughout the Defects Liability period.

Vegetative spoil

Remove vegetative spoil from site or recycle as mulch where specified. Do not burn.

Earth mounds

Location: Form earth mounds in the positions and to the contours shown on the Drawings.

Construction: Place clean filling in layers approximately 150mm thick compacted to 85% of the dry density ratio of the surrounding soil as determined

by AS 1289.5.4.1. Minimize slumping and further internal packing down. Construct changes in grade over a minimum width of 500mm to smooth, gradual and rounded profiles.

Matting overlay
Refer to Schedule of Requirements.

3.2 ROCK LANDSCAPE WORKS

General
Where shown on Drawings protect rock, shelves and rock outcrops from mechanical damage and surface defacement by anything including but not limited to fire, paint and cement.

Placed rocks
Place rocks where shown on the drawings while ground formation work is being carried out. Provide approved imported rock. Bury rock two thirds by volume, with weathered faces exposed. Protect the weathered faces from damage.

Imported rock
Imported rocks shall be of a similar type and character, with natural weathered surfaces undamaged on rock face to be exposed. Select for approval by the Superintendent prior to delivery from an approved source and as specified on the Drawings. Imported Rocks shall vary in sizes and number depending on the scale and extent of works Nominal range of rock sizes are:

- 1200 to 900mm.
- 900 to 600mm.
- 300 to 600mm.

Provide temporary fences where shown on the Drawings and remove on completion.

Restoration
If landscape feature rocks are damaged or defaced during the course of the Works, restore them by such means as directed, or replace them if so directed, at no additional cost to the Principal.

3.3 SUBSOIL

Ripping
General: Rip parallel to the final contours wherever possible. Do not rip when the subsoil is wet or plastic. Do not rip within the dripline of trees and shrubs to be retained.

Ripping depths: Rip the subsoil to the following typical depths:

- Compacted subsoil: 300mm.
- Heavily compacted clay subsoil: 450mm.

Cultivation
Cultivation depths (mm):

- Grassed areas: 100mm.
- Planting areas: Excavate and remove subsoil, builder's debris and other deleterious material from the planting area to a minimum depth of 300mm below the finished surface level of topsoil unless otherwise detailed. Shape subgrade to fall to subsoil drains where applicable. Prior to backfilling, the base of the planting areas shall be broken up to a minimum depth of 100mm.

Services and roots: Do not disturb services or tree roots. If necessary, cultivate these areas by hand.

Cultivation: Thoroughly mix in materials required to be incorporated into the subsoil. Cultivate manually within 300mm of paths or structures. Remove stones exceeding 25mm, clods of earth exceeding 50mm, and weeds, rubbish or other deleterious material brought to the surface during cultivation. Trim the surface to design levels after cultivation.

Method
Submit details of the proposed method to be used. Obtain approval from the Superintendent prior to commencing cultivation.

3.4 TOPSOIL

Imported soil mix
Definitions:

- Imported Soil Mix to AS 4419, clause 4.2 "Low Density Soil":
- Imported Soil Mix to AS 4419, clause 4.6 "Soil Blend":

Soil mix types: The required soil mix types are nominated on the drawings.

Soil mix depths: The required depths of soil mix are nominated on the drawings or otherwise, as specified herein.

Source: Import specified soil mix on to the site from an approved source.

Nitrogen draw down index (NDI): The Contractor shall be responsible for any additions of soluble nitrogen to the proposed topsoil mixes which may be necessary to achieve the required NDI requirements of AS 4419 clause 5.12 and or as indicated as necessary by delivery documentation as per AS 4419 clause 8(d) refer SPECIFIED SOILS DELIVERY – LANDSCAPE.

3.5 IMPORTED SOIL MIX ALTERNATIVE

Site strip topsoil raised to the standard of the appropriate imported soil mix type by the use of additives such as organic matter, lime, sand etc, may be approved for use at the Superintendent's discretion, subject to compliance with the relevant test criteria outlined in TESTING-LANDSCAPE, and provided that there shall be no contract variation involving additional cost.

Upgrading proposal to be based on Agronomist's recommendations based on the analyses of the results of soil tests carried out in accordance with Table 1: "Scheme of soils testing" of AS 4419 for Natural Soils and Soil Blends and a particle size distribution analysis, all in accordance with specification section TESTING-LANDSCAPE.

Sample for Testing: Take 15 samples over the whole area to be stripped to the depth of elevation. Blended sample size to be 250 grams.

Upgrading proposal: Forward original test certificates from a NATA testing authority together with the Agronomist's upgrading proposal to the Superintendent for approval prior to upgrading the site soil.

Test upgraded material in accordance with in accordance with Table 1: "Scheme of soils testing" of AS 4419 for Natural Soils and Soil Blends and carry out a particle size distribution analysis , all in accordance with specification section TESTING-LANDSCAPE to demonstrate compliance with the specification of the relevant imported soil mix.

Deficiencies in the required quantities of upgraded site strip soil to be made up with imported soil mix to

AS 4419, Clause 4.6 'Soil Blend' at the Contractor's expense.

3.6 TOP DRESSING

Definitions

Top Dressing: To AS 4419 clause 4.7 suitable for application to turf or grass areas and complying with the requirements of AS 4419 sections 6, 7 and 8.

Top dressing depths

Maximum depth of topdressing is to be 10mm unless noted otherwise.

3.7 TESTING

Timing

Do not bring imported soil mix or top dressing onto the site until the approval of the test information has been received from the S.R.

Requirement

For each of the soils proposed for use in the works, provide certification that it meets the relevant specification and supply the test data outlined in AS 4419 Table 1 "scheme of soils testing" used to verify specification compliance. Testing to be carried out in accordance with the requirements of AS 4419 appendices A to I. Carry out particle size distribution analyses where specified.

Particle size distribution analyses to be carried out by both the hydrometer method as in AS1289.C6.3-1977 and by sieving.

Particle size distribution to be provided as a percentage passing by mass the following AS sieve apertures: 2.36mm, 1.18mm, 0.60mm, 0.30mm, 0.15mm, 0.075mm, 0.002mm.

Materials to be representative of product proposed for supply to site. Include batch identities on certificates.

Carry out the tests specified in
TESTING - LANDSCAPE' to the relevant Australian Standards by an approved NATA testing authority.

Certificates

Forward original test certificates from a NATA testing authority to the Superintendent.

3.8 SPECIFIED SOILS DELIVERY

Deliveries of soil to site must from an approved supplier and be accompanied by the documentation referred to in section 8 of AS 4419. Submit documentation to the S.R.

3.9 PLACING SPECIFIED SOIL

Contamination

Where diesel oil, cement or other phytotoxic material has been spilt on the subsoil or specified soil, excavate the contaminated soil, dispose of it off the site, and replace it at no extra cost with imported topsoil, as directed, to restore design levels.

Placing

General: Spread the topsoil on the prepared subsoil and grade evenly, making the necessary allowances to permit the following:

- Required finished levels and contours may be achieved after light compaction.
- Place the appropriate specified soil on the prepared subsoil to the areas and depths shown on the Drawings. Spread and grade evenly, making the necessary allowances so that the required finished levels and contours may be achieved after light compaction.
- Grassed areas are required to be finished flush with adjacent hard surfaces such as kerbs, paths and mowing strips.

Compaction

Prevent excess compaction by constructional plant. Compact lightly and uniformly in 150mm layers. Progressively tamp backfilling topsoil to avoid later subsidence, and thoroughly water to prevent voids. Rake over lightly to attain finished profiles. Avoid differential subsidence and produce a finished topsoil surface, which is:

- at design levels as shown on Drawings;
- smooth and free from stones or lumps of soil;
- graded to drain freely, without ponding, to catchment points;
- graded evenly into adjoining ground surfaces; and
- ready for planting.

Topsoil depths generally

Spread topsoil to the depths shown on the drawings.

3.10 EMBANKMENT STABILISATION

Erosion control netting

Where shown on Drawings cover mulch with Sarlon Erosion Control Netting or approved alternative. Lay net with overlaps and buried edges in accordance with the manufacturer's recommendations. Securely fix mesh by 450mm long, 6mm diameter galvanised hooked pegs driven into the soil at maximum 1000 x 1000mm centres with maximum 500mm centres at the edges.

Erosion control matting

Where shown on Drawings cover nominated area with heavy grade biodegradable fibre matting reinforced with lightweight polymer mesh.

Matting installation: Plant after matting is installed, where planting is nominated. Peg the matting into 300 x 300mm anchor trenches at top and bottom, backfill the trenches with soil and compact.

Matting pegs: U-shape galvanized steel 450mm long, 6mm diameter, at 1000 x 1000mm intervals generally, 250mm at overlaps.

4 MATERIALS

4.1 FERTILISER

Supply

Provide proprietary fertilisers, delivered to the site in sealed bags marked to show manufacturer or vendor, weight, fertiliser type, N:P:K ratio, recommended uses and application rates. Use in accordance with the recommendations.

Fertilizer Types & Rates: As shown on Drawings.

Application

Turfing: Mix the fertilizer thoroughly into the specified soil:

- prior to spreading topsoil;
- immediately prior to the end of Establishment Period.

Plantings: Place fertilizer as shown on Standard Landscape Detail LD 126 at the time of planting.

4.2 MULCH

Generally

Use mulch which is free of deleterious, toxic and extraneous matter such as soil, weeds, stones, fresh pine bark, sticks and the like.

Mulch types
Slash Pine Bark: From mature trees, graded in size from 50 x 50 x 25mm to 25 x 15 x 15mm, free from wood slivers.

Hoop Pine Bark: 50mm hoop pine bark from mature trees, free from wood slivers.

Hoop Pine Bark: 25mm hoop pine bark from mature trees, free from wood slivers.

Forward original test certificates from a NATA testing authority to establish specification compliance and that the upgrading procedure has been carried out.

Requirement
Refer to Schedule of Requirements.

4.3 TURF

Turf
Obtain turf from an approved specialist grower of cultivated turf. Provide turf of even thickness, free from weeds and other foreign matter.

Supply
Deliver the turf from the supplier within 24 hours of being cut, and lay within 36 hours of cutting. Prevent it from drying out between cutting and laying.

Warranty
Furnish a warranty from the supplier that the turf is free from weeds and other foreign matters.

Turf species
Refer to the drawings for turf species.

Grade 'B' turf with a minimum of 25mm attached topsoil unless otherwise specified.

Grade B: Shall have minimum 80% of the specified species.

4.4 PLANTS

Generally
Supply plants which:

- have large healthy root systems, with no evidence of root curl, restriction or damage;
- are vigorous, well established, free from disease and pests, of good form consistent with species or variety; and
- are hardened off, not soft or forced, and suitable for planting in the natural climate conditions prevailing in the location of planting.

Trees: Use trees which, unless required to be multi-stemmed, have a single leading shoot.

Substitutions
Make no substitutions unless approved in writing by the Superintendent. Substitutions will not be approved if proof of order of plants has not been submitted within 30 days of the contract being awarded.

Labelling
Label at least one plant of each species or variety in a planting group with a durable printed plastic tag.

Replacements
Order sufficient quantities to allow for failures. Use plants of the same type, quality and size, replace any plants which are damaged whilst being transported to the site or during the work under the Contract or which fail or are rejected.

Warranty
Furnish a warranty from the supplier attesting that the plants are true to the specified species and type, and free from diseases, pests, weeds and the like.

Storage
Deliver plant material to the site on a day to day basis, and plant immediately after delivery. If this is not possible, keep them in good condition on the site, adequately protected from frost, wind, sun, and vermin by appropriate storage methods, including on-site nursery of sufficient size, with provision for watering the stock.

Potting on
Do not carry out potting on unless authorised.

Plant containers
Supply plants in weed-free containers of the sizes specified in the 'PLANT SCHEDULE' shown on Drawings.

Plant sizes
Where a minimum plant height is specified in the 'PLANT SCHEDULE', the height shall be the vertical distance between the soil level and the natural top of the plant whilst standing vertically.

Where a minimum plant height is not specified in the 'PLANT SCHEDULE', provide the plant of a height appropriate to the pot size.

5 WORKMANSHIP

5.1 MULCH SPREADING

Requirement
Spread so that after settling it is:

- smooth and evenly graded between design surface levels;
- of the required depth and areas shown on the Drawings; and
- sloped towards the base of plant stems in planting beds, but not closer than 50mm with the stem.

5.2 TURFING

Fertilizing
Mix the fertilizer thoroughly into the topsoil before placing turf.

Laying
Lay the turf.

- in "stretcher" pattern with the joints staggered and close butted;
- parallel with the long sides of level areas, and with contours on slopes;
- to design levels shown on Drawings;
- to finish flush, after tamping, with adjacent finished surfaces of ground, paving edging, or grass seeded areas;
- close butt all joints; and
- species and grade shown on the Drawings.

Tamping
Lightly tamp to an even surface immediately after laying. Roll the turf with a roller weighing not more than 90 kg per metre of width for sandy or light soils.

Watering
Immediately after laying. Moisten the topsoil to its full depth. Continue watering as necessary to maintain moisture to this depth. Keep the turf in a healthy condition.

Maintain the grass at the required height by mowing. Carry out the last mowing within 7 days before the end of the planting establishment period.

Making good
Lift failed turf and relay with new turf.

Maintenance
Maintain the turfed areas until the attainment of a dense continuous sward of healthy and evenly green grass over the whole area. Lift failed turf and relay with new turf. Where levels have deviated from the design levels after placing and watering, lift turf and regrade topsoil to achieve design levels.

Top dressing
When the turfed area is established. Mow, remove cuttings and lightly top dress to all turfed areas to a depth of 10mm with top dressing as specified in 'TOP DRESSING - LANDSCAPE'. Rub the dressing well into the joints and correct any unevenness in the turf surface.

Weeding
Remove weeds that emerge in the grassed areas, or where necessary spray with a selected herbicide for broad leafed weeds, to manufacturer's recommendations.

5.3 EXCAVATION FOR PLANTING IN TURFED AREAS

Individual planting in turfed areas
Excavate a hole to twice the diameter of the root ball and at least 100mm deeper than the root ball. Break up the base of the hole to a further depth of 100mm, and loosen compacted sides of the hole to prevent confinement of root growth.

5.4 PLANTING

Locations
Do not vary the plant locations from those shown on the Drawings unless otherwise directed in writing. If it appears necessary to vary the locations and spacings to avoid service lines, or to cover the area uniformly, or for similar reasons, apply for directions.

Planting conditions
Do not plant in unsuitable weather conditions such as extreme heat, cold, wind or rain. In other than sandy soils, suspend excavation when the soil is wet, or during frost periods.

Watering
Thoroughly water the plants before planting, immediately after planting, and as required to maintain growth rates free of stress.

Placing
When the hole is of the correct size, and not before, remove the plant from the container with minimum disturbance to the root ball, ensure that the root ball is moist and place it in its final position, in the centre of the hole and plumb, and with the topsoil level of the plant root ball level with the finished surface of the surrounding topsoil.

Fertilising
Pellets: In planting beds and individual plantings, place fertiliser pellets around the plants at the time of planting.

Backfilling
Backfill with specified soil. Lightly tamp down the mixture and water to eliminate air pockets. Ensure the specified soil is not placed over the top of the root ball, so that the plant stem remains the same height above ground as it was in the container.

Watering basins for plants in grass
Construct a watering basin around the base of each individual plant, consisting of a raised ring of soil capable of holding at least 10 L.

Containers
Collect empty plant containers daily during planting operations and remove or store on site for later removal if permitted but ensure that they are not able to be scattered by wind.

Garden edging
Provide mowing edges to planting areas except where restrained by other means such as paving.

5.5 MULCHING

Mulch
General: Provide mulch which is free of deleterious and extraneous matter such as soil, weeds and sticks.

Standard: To AS 4454.

Organic mulches: Free of stones.

Mulch material: Refer to *Schedules of Requirements*.

Placing mulch
General: Place mulch to the required depth, clear of plant stems, and rake to an even surface flush with the surrounding finished levels. Spread and roll mulch so that after settling, or after rolling, it is smooth and evenly graded between design surface levels sloped towards the base of plant stems in plantation beds, and not closer to the stem than 50mm.

Application: Place mulch clear of plant stems, and rake to an even surface flush with the surrounding finished levels.

Extent: To surrounds of plants planted in riplines and grass areas, provide a planting mats to 750mm diameter.

Depths: Spread organic mulch to a depth of 100mm after compaction.

5.6 SPRAYING

Reporting
Immediately report any evidence of insect attack or disease amongst plant material and await further instructions from the Superintendent.

Spraying
If so directed, spray with an insecticide, fungicide or both in accordance with manufacturer's recommendations, and to comply with statutory requirements. Submit proposal and obtain approval before starting this work.

5.7 STAKES AND TIES

Stakes
Material: Hardwood, straight, free from knots or twists, pointed at one end.

Installation: Drive stakes into the ground for at least a third of their length, avoiding damage to the root system.

Stake sizes:

- For plants ≥ 2.5 m high: Three 50 x 50 x 2400mm stakes per plant.
- For plants 1 - 2.5 m high: Two 50 x 50 x 1800mm stakes per plant.

- For plants < 1 m high: One 38 x 38 x 1200mm stake per plant.

Ties
General: Provide ties fixed securely to the stakes, one tie at half the height of the main stem, others as necessary to stabilise the plant.

For plants ≥ 2.5 m high: Two strands of 2.5mm galvanised wire neatly twisted together, passed through reinforced rubber or plastic hose, and installed around stake and stem in a figure of eight pattern.

For plants < 2.5 m high: 50mm hessian webbing stapled to the stake in an extended figure of eight pattern.

5.8 PLANTING MAT

Cover the top layer of topsoil with planting mat.

TYPE: As shown on Standard Landscape Detail LD 124.

5.9 TREE SURGERY

Qualifications
Employ a qualified arborist to carry out tree surgery work in a safe and progressive manner.

Pruning
General: Comply with the recommendations of AS 4373.

Operations
Remove dead and decayed wood or limbs that have been broken. Make cuts into live wood. If the trees show signs of deterioration after the work has been done, carry out a program of feeding or soil amelioration such as soil aeration, or incorporation of organic material. Continue this program until the end of the planting establishment period.

Precautions
Avoid damage to trees being treated or to nearby trees and surroundings. Do not use trees as anchors for winching operations or bracing. Provide bracing as necessary before cutting to prevent uncontrolled breakages and damage to surroundings.

Dressing
Prevent incursion of rot or disease after cutting.

6 COMPLETION

6.1 PLANTING ESTABLISHMENT

Period
The planting establishment period commences at the date of practical completion.

Required period:

Houses and Duplexes - 8 weeks.

Apartments – 12 weeks

Existing planting and grass
Where existing grass or planting is within the landscape contract area, maintain it as for the corresponding classifications of new grass or planting.

Recurrent works
Throughout the planting establishment period, carry out maintenance work including, watering, mowing, weeding, rubbish removal, fertilising, pest and disease control, returfing, staking and tying, replanting, cultivating, pruning, hedge clipping, aerating, reinstatement of mulch, renovating, top dressing, and keeping the site neat and tidy.

Replacements
Continue to replace failed, damaged or stolen plants.

Grassed areas
Water and weed as required to maintain healthy and weed free growth. Mow as required to maintain turf height specified in 'MOWING - LANDSCAPE'. Apply lawn fertilizer as specified in 'FERTILIZER - LANDSCAPE' immediately prior to the end of the Planting Establishment Period. Carry out the last mowing and fertilization not less than seven days before the end of the planting establishment period. Remove turf clippings from the site.

Product warranty
Warrant that plants are true to the required species and type, and are free from diseases, pests and weeds.

Maintenance manual
Submit recommendations for maintenance of plants.

Cleaning
Stakes and ties: Remove those no longer required at the end of the planting establishment period.

Temporary fences
Remove temporary protective fences at the end of the planting establishment period.

390 PAVING

1 GENERAL

1.1 SCOPE OF SECTION

General

This section refers to residential paving generally. Construction on public land shall comply with Local Authority requirements regarding public footpaths and crossovers.

Refer to the drawings, engineers' details where applicable, and project specific requirements.

1.2 CROSS REFERENCES

Related worksections

Refer to the following worksections:

- *General Requirements*;
- *Landscaping*;
- *Concrete* (including *Concrete Finishes*).

1.3 INTERPRETATION

Definitions

Class A foundation: Most sand and rock sites.

Class S foundation: Most silt and some clay sites.

Class M foundation: Moderately reactive clay sites.

Light traffic: Vehicles with a gross mass < 3 t.

Medium traffic: Vehicles with a gross mass between 3 t and 10 t, with infrequent use by heavier vehicles.

Density ratio: Percentage of the maximum density at optimum moisture content as determined by AS 1289.5.2.1.

2 QUALITY

2.1 INSPECTION

Witness points

Give sufficient notice so that inspection may be made of the following:

- Reinforcement in position.

3 MATERIALS AND COMPONENTS

3.1 MATERIALS

General

Refer to Project Specific Schedules and the Drawings for specific requirements if required.

Fill for subgrade: Sand, gravel or quarry rubble.

Subbase: Well-graded. Sand, gravel or crushed rock. Maximum particle size ≤ 1/3 subbase layer thickness.

Basecourse: Well-graded crushed rock or gravel, free from deleterious material. Maximum particle size 26.5mm. Uniformly graded. Maximum clay content 6% by mass.

Concrete pavements

Materials and construction: To AS 3600.

Concrete: To AS 1379.

3.2 COMPONENTS

Concrete pavement reinforcement

Welded wire fabric: To AS 1304.

Bar: To AS 1302.

Geotextile fabric

Where specified or detailed.

4 EXECUTION

4.1 GENERAL

Subgrade

General: Remove topsoil containing grass roots. Fill and compact as necessary. Ensure strength and stiffness is similar throughout, including soft spots and service trenches. If necessary, loosen the subgrade to a depth of 200mm and adjust the moisture content before compaction.

Level tolerance: + 0, - 25mm.

Clay fill: Moisture condition near long term equilibrium moisture condition.

Cohesive subgrade soils:

- Minimum dry density ratio (standard compaction) to AS 1289.5.4.1: 100%.

Cohesionless subgrade soils:

- Minimum density index to AS 1289.5.6.1: 80%.

Subbase

Minimum dry density ratio: 98% to AS 1289.5.2.1.

Thickness tolerance: + unspecified, -5mm.

Level tolerance: ± 25mm.

Basecourse

Placing: Spread and compact the basecourse. Adjust the moisture content to facilitate compaction.

Minimum dry density ratio: 98% to AS 1289.5.2.1.

Thickness tolerance: + unspecified, -5mm.

Level tolerances: Generally - 0, + 25mm, but at existing structures - 0, + 10mm. Over 3 m length of design profile, ± 10mm.

Drainage

Finished surface crossfalls: Between 1% and 10%.

Ponding: Grade pavements to even falls so as to drain away from buildings to drainage outlets without ponding.

Surface run-off: Provide channels and drains to discharge points.

Poorly drained sites: Select from the following:

- Stabilise subgrade or pavement courses.
- Provide subsurface drains or pervious granular material, slotted or pervious pipes, or both, under or beside the pavement.

At walls: Set finished level of pavements below damp-proof course, weep holes and drainage openings.

General tolerances

Surfacing layer thickness: + unspecified, - 0.

Surfacing layer level: ± 25mm. Over 3 m length of design profile, ± 10mm.

Maximum deviations:

- Across junctions between adjacent pavement surfaces: 2mm.
- Across junctions between adjacent pavement unit surfaces: 2mm.

Control joints

General: Provide movement joints over structural joints in the base (isolation, contraction, expansion) right through the paving and bed to the substrate. Fill joints with a compressible material.

Pavement finish junctions
Location: Where changes of pavement finish occur at gateways, locate the junction directly beneath the closed gate.

Dividing strip: Insert a dividing strip the full width of junctions between different pavement finishes, with the top edge flush with the finished pavement.

Fixing: Embed strip in solid finishes, or screw fix to the substrate.

4.2 CONCRETE PAVEMENTS

Standard
General: To AS 3600.

Subgrade
Preparation for placing: Moisten the subgrade to ensure a firm, uniformly moist surface at the time of placing. Remove loose material and debris from the surface. Do not operate construction equipment on the prepared surface.

Sub-base
Minimum 75mm thick.

Reinforcement
Slab reinforcement: Required for irregular panels, and rectangular panels with length: width ratio greater than 1.3:1. Lap fabric so that the 2 outermost transverse wires of one sheet overlap the 2 outermost wires of the other.

Trimming reinforcement: Required where slab surrounds another structure, and at re-entrant corners, except where isolation joints are provided.

- Type: At least one Y12 bar, 600mm minimum length.

Position: Locate in top half of slab, 30mm minimum cover. Support on bar chairs at 1 m centres.

Control joints: Stop reinforcement 50mm clear of control joints.

Concrete grade
Foot and bicycle traffic: N20.

Light traffic: N20.

Medium traffic: N25.

Slab thickness
Foot and bicycle traffic: 75mm.

Light traffic: 100mm.

Medium traffic: 150mm.

Control/contraction joints
Spacing (maximum):

- Unreinforced slabs: 2 m.
- Light traffic:
  - . F52 reinforcing fabric: 3 m.
  - . F62 reinforcing fabric: 6 m.
- Medium traffic:
  - . F72 reinforcing fabric: 4 m.
  - . F82 reinforcing fabric: 6 m.

Depth: Full depth where constructed using formwork. 1/4 to 1/3 slab thickness where constructed by scoring the plastic concrete, using a proprietary crack-inducing device, or sawing set concrete.

Width: 3mm.

Design: Tool off arrises to 6mm radius.

Placing
General: Provide formwork for sides and stop ends.

Temperature limits: The temperature of the concrete when placed in the forms must be in the range 10 – 32^{o}C. Do not place concrete when the shaded air temperature is less than 4^{o}C.

Hot weather placing: If placing concrete in hot weather, avoid premature stiffening of the mix and reduce water absorption and evaporation losses. If the air temperature exceeds 32^{o}C, place and compact the concrete as quickly as possible and then cover it with an impervious membrane or hessian kept wet.

Isolation/expansion joints
Location: Where slab wider than 1.5 m abuts rigid structures, at path intersections, over structural joints. Maximum 6 m spacing.

Design: Permit free movement of slab and exclude foreign matter. Do not tool off joint arrises abutting the seal.

- Joint filler: 10mm thick bitumen impregnated fibreboard.
- Joint depth: Full thickness of slab.

Access holes and pits at pavement edges: Thicken the slab 50mm for 100mm from the rigid structure (tapering 300mm) and reinforce the panel(s) containing the rigid structure with F62 fabric.

Other joints
Dowelled joints: Formed or sawn joints reinforced with dowels and sealed.

Tied joints: Formed or sawn joints reinforced with tie bars.

Construction joints: Locate to coincide with control or isolation joints.

Finishes
Broom finishing: Wood float and broom, using a moistened nylon broom 500mm wide, across the pavement to give an even textured slip-resistant surface with steel tooled margins. On gradients steeper than 10% roughen the surface by scoring across the slope at 50mm centres.

Exposed aggregate finish: – *Not permitted*.

Sponge finish: After floating, produce an even textured sand finish by wiping the surface with a damp sponge.

Stamper pattern: Use a proprietary system.

Finished pavement surface: Uniform in appearance and free from depressions in which water can lie, with a texture depth of 2 - 2.5mm.

Where pedestrians and vehicles share the same pathways, differentiate pedestrian pavements with a contrasting colour, to the natural concrete finish of the vehicle pavements.

Tolerance
Level: Over 3 m length of design profile, ± 6mm.

Pedestrian paving
Concrete Broom finish tooled edges.

Where pedestrians and vehicles share the same pathways, differentiate pedestrian pathways with a contrasting colour, to the natural concrete finish of the vehicle driveways.

Option: Provide Carborundum grains trowelled in (approx. 1 KG/sq m) to nominated areas.

Driveway/Car tracks
Concrete Broom finish tooled edges.

Footpaths
Provide concrete footpaths to public areas (street boundary nature strips/verges), when required by the Local Authority or when documented.

Construction on public land shall comply with Local Authority requirements. Refer to Local Authority's details and standards, drawings and engineers' details, where applicable.

5 COMPLETION

5.1 MAINTENANCE

Cleaning
Leave pavements clean on completion.

Final inspection
Cracking in bound pavements: Width ≤ 1.5mm.

Subsidence: Offset under 1.5 m length of the design profile, ≤ 15mm.

Stepping: Between adjacent elements within the pavement area, ≤ 5mm.

Chipping and spalling to pavement units: Maximum 10 per 100 units with chipped or spalled arrises.

Ponding: Maximum 10mm deep 15 minutes after rain ceases.

PART B THE SCHEDULES TO THE SPECIFICATION

1 SCHEDULES RELEVANT TO EACH SPECIFICATION SECTION

1.1 CROSS REFERENCE

The following schedules apply to each trade section within the generic standard specification for social housing projects procured under an **AS 4300 Special Conditions of Contract** – see Specification Part A. When completed, these schedules will confirm the design, components and finishes selections proposed for each project.

THIS PAGE NOT USED

2 PARTICULARS OF WORKS AND SCHEDULES OF REQUIREMENTS

2.1 DESCRIPTION OF THE WORKS

CROSS REFERENCE

This Schedules to Specification Part B (Particulars of Works and Schedule of Requirements) refers to specific information for the project and shall be read in conjunction with:

- Specification Part A (standard specification);
- Project Brief.

Scope

Nothing in this clause shall limit, modify or alter the extent or description of the Works as set out in detail elsewhere in the Contract documents. Subject to the foregoing, the Works generally comprises the Construction of:

- [complete/delete]

Number of bedrooms and construction type (e.g. 10 x 2 Bed Apartments).

Location

[complete/delete]

Real Property Description: [complete/delete]

Local Government: [complete/delete]

Contract Particulars

Document and Construct Lump Sum Tender: This is a lump sum contract not subject to rise and fall.

General Conditions of Contract AS 4300 together with Special Conditions of Contract apply.

2.2 SITE RESTRICTIONS

Site restrictions

[complete/delete]

2.3 SPECIAL NEEDS REQUIREMENTS

Accommodation construction to accord with the principles of the categories featured in the Social Housing Design Guidelines (SHDG). Refer to drawings and this specification for additional requirements.

Apply nominated levels of mobility features to following accommodation units or as identified on drawings.

General Level
Unit No's: [complete/delete]

Silver Level
Unit No's: [complete/delete]

Gold Level
Unit No's: [complete/delete]

Platinum Level
Unit No's: [complete/delete]

2.4 SCHEDULE OF ITEMS TO BE SUPPLIED BY PRINCIPAL

Building components to be supplied and delivered to the site by the Principal or the Principal's agents are scheduled here. The Contractor shall allow to unload, temporarily store, and install these items in their required locations and in accordance with the terms and conditions described in the Contract and the *General Requirements* and/or other sections of this specification.

Location	Item	Quantity
[complete/delete]	[complete/delete]	[complete/delete]

2.5 SCHEDULE OF PRINCIPAL'S PROJECT REQUIREMENTS

The Principal's Project Requirements include but are not limited to the documents identified here or in the Annexure to the Special Conditions of Contract:

Document reference	Document title	Document location
[complete/delete]	[complete/delete]	[complete/delete]

2.6 OCCUPIED PREMISES SCHEDULE

Occupants	Occupied premises	Period of occupancy
[complete/delete]	[complete/delete]	[complete/delete]

2.7 SCHEDULE OF CONTRACT DRAWINGS

The following Drawings, together with the remaining Contract documents listed in *Preliminaries*, describe the extent of the Works.

Multi-Unit accommodation
The following drawings form part of the Contract. In each instance, the full drawing number is inclusive of the master site number, project number and individual discipline sheet number as indicated.

DESCRIPTION	TITLE	DRAWING NO.
SURVEY	CONTOUR AND DETAIL PLAN	Master Site No / Project No / CS1
SITE CLEARING	DEMOLITION PLAN	… / … / …
LAYOUT / SETOUT	SITE PLAN / LOCALITY PLAN	… / … / …
SITE WORKS	EXTERNAL WORKS PLAN	… / … / …
	FENCING PLAN	… / … / …
HYDRAULIC SERVICES (DRAINAGE AND WATER SYSTEMS)	HYDRAULIC SERVICES SITE AND FLOOR PLANS	… / … / …
	HYDRAULIC SERVICES DIAGRAMATICS	… / … / …
ARCHITECTURAL	FLOOR PLAN/S	… / … / …
	ROOF PLAN/S	… / … / …
	EXTERNAL ELEVATIONS	… / … / …
	EXTERNAL SECTIONS	… / … / …
	EXTERNAL DETAILS	… / … / …
	INTERNAL ELEVATIONS	… / … / …
	INTERNAL SECTIONS	… / … / …
	INTERNAL DETAILS	… / … / …
	WET AREA DETAILS	… / … / …
	JOINERY DETAILS	… / … / …
	ELECTRICAL PLAN	… / … / …
STRUCTURAL	FOOTING / FOUNDATION / GROUND FLOOR PLAN	… / … / …
	FOOTING / FOUNDATION / GROUND FLOOR SECTIONS	… / … / …
	FOOTING / FOUNDATION / GROUND FLOOR REINFORCEMENT PLAN	… / … / …
	SLAB AND SECTIONS	… / … / …
	SLAB REINFORCEMENT PLAN	… / … / …
	ROOF FRAMING AND BRACING WALL LAYOUT PLAN	… / … / …
	DRIVEWAY / CARPARK LAYOUT PLAN AND PAVEMENT DETAILS	… / … / …
PLANTING DESIGN	PLANTING PLANS	… / … / …

Subdivisional
The following drawings form part of the Contract. In each instance, the full drawing number is inclusive of the master site number, project number and individual discipline sheet number as indicated.

DESCRIPTION	TITLE	DRAWING NO.
SURVEY	CONTOUR AND DETAIL PLAN	Master Site No / Project No / CS1
SITE CLEARING	DEMOLITION PLAN	… / … / …
LAYOUT / SETOUT	PROPOSED SUBDIVISION	… / … / …
	SITE PLAN / LOCALITY PLAN	… / … / …
CIVIL	VEGETATION PROTECTION	… / … / …
	PROPOSED PARKLAND	… / … / …
	ROADWORKS:	
	LAYOUT	… / … / …
	CROSS SECTIONS	… / … / …
	HORIZONTAL SECTIONS	… / … / …
	DETAILS	… / … / …
	EARTHWORKS:	
	FINISHED LEVELS (PLATFORMS)	… / … / …
	STORMWATER:	
	LAYOUT PLAN	… / … / …
	CROSS SECTIONS	… / … / …
	LONGITUDINAL SECTIONS	… / … / …
	DETAILS	… / … / …
	SEWERAGE:	
	LAYOUT PLAN	… / … / …
	CROSS SECTIONS	… / … / …
	LONGITUDINAL SECTIONS	… / … / …
	DETAILS	… / … / …
	SEDIMENTATION AND EROSION CONTROL PLAN	… / … / …

DESCRIPTION	TITLE	DRAWING NO.
	WATER RETICULATION: LAYOUT PLAN CROSS SECTIONS DETAILS	 … / … / … … / … / … … / … / …
	ELECTRICAL RETICULATION: LAYOUT PLAN CROSS SECTIONS DETAILS	 … / … / … … / … / … … / … / …
SITE WORKS	EXTERNAL WORKS PLAN FENCING PLAN	… / … / … … / … / …
HYDRAULIC SERVICES (DRAINAGE AND WATER SYSTEMS)	HYDRAULIC SERVICES SITE AND FLOOR PLANS HYDRAULIC SERVICES DIAGRAMMATICS	… / … / … … / … / …
ARCHITECTURAL	FLOOR PLAN ROOF PLAN EXTERNAL ELEVATIONS EXTERNAL SECTIONS EXTERNAL DETAILS INTERNAL ELEVATIONS INTERNAL SECTIONS INTERNAL DETAILS WET AREA DETAILS JOINERY DETAILS ELECTRICAL PLAN	… / … / … … / … / … … / … / … … / … / … … / … / … … / … / … … / … / … … / … / … … / … / … … / … / … … / … / …
STRUCTURAL	FOOTING / FOUNDATION / GROUND FLOOR PLAN FOOTING / FOUNDATION / GROUND FLOOR SECTIONS FOOTING / FOUNDATION / GROUND FLOOR REINFORCEMENT PLAN SLAB AND SECTIONS SLAB REINFORCEMENT PLAN ROOF FRAMING AND BRACING WALL LAYOUT PLAN DRIVEWAY/ CARPARK LAYOUT PLAN AND PAVEMENT DETAILS	… / … / … … / … / … … / … / … … / … / … … / … / … … / … / … … / … / …
PLANTING DESIGN	PLANTING PLAN/S	… / … / …

Detached, Duplex and Dual Occupancy accommodation
The following drawings form part of the Contract. In each instance, the full drawing number is inclusive of the master site number, project number and individual discipline sheet number as indicated.

DESCRIPTION	TITLE	DRAWING NO.
SURVEY	CONTOUR AND DETAIL PLAN	Master Site No / Project No / CS1
SITE CLEARING	DEMOLITION PLAN	… / … / …
LAYOUT / SETOUT	SITE PLAN	… / … / …
SITE WORKS	EXTERNAL WORKS / PLANTING PLAN	… / … / …
HYDRAULIC SERVICES (DRAINAGE AND WATER SYSTEMS)	DRAINAGE PLAN	… / … / …
ARCHITECTURAL	FLOOR PLAN ELEVATIONS JOINERY DETAILS ELECTRICAL PLAN	… / … / … … / … / … … / … / … … / … / …
STRUCTURAL	FOOTING / FOUNDATION PLAN BRACING PLAN SECTIONS FRAMING & TIEDOWN NOMINAL FIXINGS & TYPICAL FOOTING WALL BRACING CONFIGURATION FIXING OF TOP OF BRACING WALLS FIXING OF BOTTOM OF BRACING WALLS	… / … / … … / … / … … / … / … … / … / … … / … / … … / … / … … / … / …

Miscellaneous details
The details listed in the Table of Contents of the Tender Documents also form part of the Contract.

3 PARTICULAR REQUIREMENTS

3.1 CASH FLOW FORECAST

(select)

Not Required / Required.

3.2 SCHEDULE OF AGREED DAMAGES FOR DELAYS

The following provisional items are deemed allowed for in the Contract sum for the purposes stated here or in the relevant sections of the specification. Rates / allowances not submitted at the time of tendering shall be calculated by reference to the formula given in the Schedule of Agreed Damages for Delay in the Tender Form.

Description of item	**Provisional no. of days**	**Rate / day (exclusive of GST)**	**Provisional allowance (exclusive of GST)**
Provisional of Delay Days (allow xx days) (Design period)	..xx..Delay Days	$...../day	$.....
Provisional of Delay Days (allow xx days) (Construction Period)	..xx.. Delay Days	$...../day	$.....

3.3 SCHEDULE OF PROVISIONAL QUANTITIES

The following provisional quantities are deemed allowed for in the Contract sum for the purposes stated here or in the relevant Sections of the Specification.

Description of work	**Provisional quantity**	**Rate / unit (exclusive of GST)**	**Provisional allowance (exclusive of GST)**
Bad Ground	…xx……..m3	$..……..	$……
Detailed Excavation - Rock	…xx……..m3	$..……..	$..……..
Imported Fill	…xx……..m3	$..……..	$..……..
TOTAL OF PROVISIONAL QUANTITIES			**$……..……..**

3.4 SCHEDULE OF PROVISIONAL SUMS

The term "provisional sums" includes prime cost sums and other monetary provisions. The following sums are deemed included in the Contract sum for the purposes stated here or in the relevant sections of the Specification. Include the following provisional sums in the Tender:

Item	**Provisional sum ($) (exclusive of GST)**
[complete/delete]	[complete/delete]
TOTAL OF PROVISIONAL SUMS	**$……..……..**

3.5 SCHEDULE OF PROVISIONAL ITEMS

The following provisional items are deemed to be allowed for in the Contract sum for the purposes stated here or in the relevant sections of the Specification. Include the following provisional items in the Tender:

Item	**Provisional Sum ($) (exclusive of GST)**
[complete/delete]	[complete/delete]
TOTAL OF PROVISIONAL ITEMS	**$……..……..**

3.6 WORK-NOT-INCLUDED SCHEDULE

Work to be undertaken on site by the Principal or the Principal's agents and not forming part of the Contract includes:

3.7 SCHEDULE OF SALVAGED ITEMS REQUIRED FOR RE-USE IN THE WORKS

Building components to be salvaged during demolition, refurbished as required and reinstated as part of the Works are scheduled here. The Contractor shall allow to salvage, refurbish and reinstate such items in accordance with the terms and conditions described in the Contract and the *General Requirements* and/or other sections of this specification.

Location	**Item**	**Quantity**
[complete/delete]	[complete/delete]	[complete/delete]

3.8 SCHEDULE OF SALVAGED ITEMS REQUIRED BY PRINCIPAL

Building components to be salvaged during demolition works and repositioned on or adjacent to the site for subsequent removal by the Principal or the Principal's agents are scheduled here. The Contractor shall allow to salvage and reposition such items in accordance with the terms and conditions described in the Contract and in the *General Requirements* and this section of the specification.

Location	Item	Quantity
[complete/delete]	[complete/delete]	[complete/delete]

3.9 AS BUILT DRAWINGS

Required for all underground services (provide As-Built drawings for all Underground and above ground services including but not limited to Water Services, Plumbing and Drainage Services, Sewerage Services, Electrical Services, NBN &Telecommunication Services, Fire Services, etc….)

3.10 SITE OFFICE

Required - Refer to Specification Part A (Preliminaries 010).

4 020 GENERAL REQUIREMENTS

4.1 BUSHFIRE PROTECTION

To AS 3959.

Level required: [complete/delete]

4.2 CERTIFICATION AND WARRANTY SCHEDULE

Refer to 010 PRELIMINARIES.

Copy and complete the Schedule on the following pages and supply documentation as specified.

Requirement
Supply one 4- ring binder with one (1) original and one (1) copy of relevant specified documents where applicable, inserted into clear plastic A4 size sleeves in the order listed below. Supply electronic (soft copies) format as required. Complete the Handover Checklist supplied by the Superintendent's Representative and insert at the front of the Handover Manual to act as an Index and Checklist.

Building Act Compliance Documents
SUPPLY FOLLOWING DOCUMENTATION AS SPECIFIED AT OR PRIOR TO PRACTICAL COMPLETION.

Supplied

❑ **Building Code Assessment Summary** (to be supplied by QBuild by Handover subject to the Contractor's delivery of specified Building Act Compliance Documents by one week prior)

or

Certificate of Occupancy (to be supplied by Private Building Certifier by Handover subject to the Contractor's delivery of specified Building Act Compliance Documents by one week prior)

SUPPLY FOLLOWING DOCUMENTATION AS SPECIFIED **AT LEAST ONE WEEK PRIOR** TO PRACTICAL COMPLETION.

Note: Certificates are required prior to the issue of the **BUILDING CODE ASSESSMENT SUMMARY** or **CERTIFICATE OF OCCUPANCY.**

All Design Certificates are to be submitted on a **Form 15.** All Inspection Certificates are to be submitted on a **Form 16.**

Supplied

- ❑ Complied with Special Requirements set out in the Approval Letter for this Project.
- ❑ Complied with Special Requirements identified during construction.
- ❑ Land Survey Certificate to show completed building in relation to all boundaries.
- ❑ Plumbing / Drainage Compliance Certificate – Local Authority / Utility Service Provider to supply
- ❑ Termite Protection Certificate to NCC requirements (installed inside meter box and as otherwise agreed)
- ❑ Carpet / Sheet Vinyl floor coverings Fire Hazard Certificate of Compliance
- ❑ Glazing Certification
- ❑ Structural Certification of Inspections carried out, must list dates inspected & elements inspected, Form 16 required to be completed – All structural elements (slabs, wall framing, retaining walls, roof trusses, etc.)
- ❑ Structural Engineer Certification to establish footing construction is built in accordance with Contract documentation (as per QBCC subsidence policy)
- ❑ Structural Certificate for Handrails, Balustrades and Screens
- ❑ Survey Certification of Bored Piers and Piles
- ❑ Engineer Certification of Civil Works
- ❑ Truss Design and layout
- ❑ Electrical Certification (Power Supply, Protection of Emergency Power)
- ❑ Electrical Certificate – Smoke Alarm Installation
- ❑ Fire Detection & Alarm Installation Certification, Form 16 required to be completed
- ❑ Emergency Warning & Intercommunication Alarm Installation Certification, Form 16 required to be completed
- ❑ Emergency lighting Installation Certification (Emergency Lighting & Exit Signage)
- ❑ Mechanical Ventilation Installation Certification
- ❑ Waterproofing Installation Certification (Incl. Report and Guarantee)

❑ Shower Recess and Bathroom floor/s

❑ Tanking

❑ Fire Hose Reel Installation, Flow & Pressure Certification. Must hold QBCC License

❑ Fire Hydrant Installation Certification (Fire Mains & Fire Hydrants). Must hold QBCC License

❑ Fire Hydrant Flow & Pressure Test (includes 2 hr 1700kpa test) issued by QBCC licensed person

❑ Fire Penetration Sealing Certificate (where fire resistant element is penetrated) (Fire Collar)

❑ Fire Damper Certificate

❑ Sprinkler Installation Certification

❑ Certification of Lightweight Systems used to achieve a FRL by QBCC licensed installers

❑ Fire Door Certification (must be QBCC licensed)

❑ Queensland Fire & Rescue Authority Form F

❑ 2 sets of As Constructed Drawings showing the location of all fire safety installations & a list of fire safety installations as required by the Standard Building regulation 1993 S98(6)

❑ Non-slip Floor Tile test results

❑ Non-slip finishes test results

❑ Non-slip fixtures test results

SUPPLY FOLLOWING DOCUMENTATION AS SPECIFIED AT OR PRIOR TO PRACTICAL COMPLETION.

Certificates / drawings as specified

Supplied

❑ OHS Auditor's Report

❑ Compaction Test Results

❑ Concrete Test Results

❑ Security Doors, Hinged and Siding and Window Grilles

❑ Pest Extermination at Practical Completion

❑ As Constructed Drawings (all underground and above ground services including but not limited to Water Services, Plumbing and Drainage Services, Sewerage Services, Electrical Services, NBN & Telecommunication Services, Fire Services, etc….)

❑ As Constructed Drawings (Landscaping)

❑ Registration of Plant Equipment

SUPPLY FOLLOWING ADDITIONAL DOCUMENTATION IN ELECTRONIC (SOFT COPY) FORMAT AS SPECIFIED AT OR PRIOR TO PRACTICAL COMPLETION.

Building and Fire Safety Statutory Records / Certificates

Supplied

❑ Fire and evacuation signs / diagrams

❑ Fire and evacuation plan/s

❑ Building Occupancy Certificate/s

All guarantees, warranties and operating instructions as specified and/or as supplied by manufacturers, fabricators, and applicators.
Refer Preliminaries for requirements**.** Provide photocopy of Instruction Manuals at Hand-over. Originals to be placed in Kitchen Drawers

Supplied		Min. Period	Instruction Manual
❑	Termite Barrier	10 years	Maintenance Manual
❑	Roofing Installation and materials	5 years	
❑	Carpet	5 years	
❑	Ceramic Floor Tiles		Domestic maintenance manual
❑	Sheet Vinyl Flooring		Domestic maintenance manual
❑	Hot Water System	12 months	❑
❑	Evaporative Cooler	6 months	❑
❑	Air Conditioner	12 months	❑
❑	Phone installation	12 months	
❑	Television installation	12 months	
❑	Landscaping	56 days	Product Warrantee, maintenance manual and Log book
❑	Turf	56 days	Free from weeds
❑	Warranties against Fire Ants	Nil period	Management Plan and DPI approvals

Guarantees and Warranties not Specified / Operating Instructions
Contractor note: Certificates and warranties not specifically required in the specification but offered by the manufacturer / supplier are to be provided.

Supplied		Min. Period	Instruction Manual	
❑	Garage Doors, Roller Door /Tilt Door	12 months	❑	
❑	Electric Garage Door Operator	12 months	❑	
❑	Automatic Entrance Door Operators	12 months	❑	
❑	Hot plate		12 months	❑
❑	Wall Oven		12 months	❑
❑	Upright Stove		12 months	❑
❑	Ceiling Fans/ Exhaust Fans / Rangehood		12 months	
❑	Sanitary Fixtures		12 months	
❑	Tapware		12 months	
❑	_____			
❑	_____			
❑	**Schedule of Finishes**			
❑	**Schedule of Colours**			

5 080 DEMOLITION

5.1 EXTENT OF DEMOLITION

Refer to drawings.

5.2 DEMOLISHED MATERIALS CLASSES TABLE

Class	Ownership
Salvaged for re-use in the Works	Principal
Salvaged for removal by the Principal	Principal
Demolished for removal by the Contractor	Contractor
Relics, artefacts found during demolition	Principal (refer General Conditions of Contract)

5.3 SCHEDULE OF SALVAGED ITEMS REQUIRED FOR RE-USE IN THE WORKS

Building components to be salvaged during demolition, refurbished as required and reinstated as part of the Works are scheduled here. Allow to salvage, refurbish and reinstate such items in accordance with the terms and conditions described in the Contract and the *General Requirements* and/or other sections of this specification.

Location	Item	Quantity
[complete]	[complete]	[complete]

5.4 SCHEDULE OF SALVAGED ITEMS REQUIRED BY PRINCIPAL

Building components to be salvaged during demolition works and repositioned on or adjacent to the site for subsequent removal by the Principal or the Principal's agents are scheduled here. Allow to salvage and reposition such items in accordance with the terms and conditions described in the Contract and in the *General Requirements* and this section of the specification.

Location	Item	Quantity
[complete]	[complete]	[complete]

5.5 IDENTIFIED HAZARDOUS MATERIALS SCHEDULE

Item	Hazardous material	Component
[complete]	[complete]	[complete]

6 100 EARTHWORKS

6.1 GENERAL

Line of Influence/Angle of Repose:

. Soil Type: Angle from Horizontal.

. Sand: 30°.

. Clay: 45°.

. Other: ……°.

Refer to Soil Survey.

6.2 ROCK EXCAVATION

Costing: Required. All excavation is in 'other than rock'.

Costing: Not required. The Contract Sum is deemed to include for the cost of excavation in rock.

Rates: Refer *010 Preliminaries* worksection – Schedules of Requirements – PROVISIONAL ITEMS – PROVISIONAL QUANTITIES.

Rates: Refer *Preliminaries* worksection – Schedules of Requirements – SCHEDULE OF RATES.

Rates: Bill of Quantities.

Rates: Not applicable.

6.3 SITE INVESTIGATION

Geotechnical Report: A copy of the geotechnical / soils report, is appended to the tender documents for reference purposes.

Geotechnical Report: Not Available.

6.4 SPOIL

Surplus Material: Remove from site.

Surplus Material: Stockpile as shown on Drawings.

Surplus Material: Spread over site as directed.

7 110 CONCRETE

Refer also to the drawings and *Schedules*.

7.1 CONCRETE FINISHES SCHEDULE

General application

Refer to Specification Part A – Section 110 Concrete.

7.2 FORMED SURFACE FINISHES SCHEDULE

Property	**A**	**B**	**C**
Location			
Surface finish class to AS 3610.1			
Formwork lining type			
Colour control			
Bolt hole filling			
Surface finish type			
Evaluation			

7.3 UNFORMED SURFACE FINISHES SCHEDULE

Property	**A**	**B**	**C**
Location			
Flatness tolerance class			
Primary finish			
Supplementary finish			
Slip resistance treatment			
Slip resistance classification			
Slip resistance site test of completed installation			
Surface modifier			

7.4 CEMENTITIOUS TOPPINGS SCHEDULE

Property	**A**	**B**	**C**
Location			
Tolerance class			
Type			
Finish			
Colour			
Slip resistance site test of completed installation			
Surface modifier			

8 130 TIMBER FLOORING AND DECKING

8.1 FLOOR SCHEDULE

Strip flooring:

- Location: [complete/delete]
- Timber species or group: [complete/delete]
- Grade: [complete/delete]
- Size (width x thickness) (mm): [complete/delete]
- Profile: [complete/delete]

Sheet flooring:

- Location: [complete/delete]
- Material: [complete/delete]
- Thickness (mm): [complete/delete]
- Edge finish: [complete/delete]
- Fixing: [complete/delete]

Fixing

On visible flooring, sink the heads of fixings below the surface and fill the sinking flush with a material tinted to match the flooring and compatible with the surface finish.

8.2 DECKING SCHEDULE

Timber decking

Location: [complete/delete]

Species: Hardwood species of at least durability class 2, or equivalent preservative treated softwood.

Grade: Durability class 2.

Size (width x thickness) (mm): [complete/delete]

Surface finish: [complete/delete]

Finish application: Apply the first 2 coats all round before fixing.

Spacing (mm): 4mm ±1mm between edges of boards.

Preservative treatment: [complete/delete]

Arrises: Chamfered or rounded.

Installation: Lay in long lengths (minimum 3 spans) double nailed at each bearing with galvanized nails driven flush. Stagger joints and make them over joists.

8.3 SUBFLOOR SCHEDULE

Member	Timber species or group	Seasoning and stress grade	Size (mm)	Spacing (mm) (maximum)	Preservative treatment
Floor stumps					
Bearers					
Ground floor joists					
Upper floor joists					

Subfloor battens

Timber species or group: [complete/delete]

Size (mm): [complete/delete]

Clear spacing (mm): [complete/delete]

Preservative treatment: [complete/delete]

9 170 INSULATION AND BARRIERS

9.1 FLOOR INSULATION

Property	
Application	
Type/Product	
Location	
R-value	
Thickness (mm)	
R_w rating	
Compressive strength (kPa)	
Rigid cellular sheet class	

9.2 WALL INSULATION

Property	
Application	
Type/Product	
Location	
R-value	
Thickness (mm)	
R_w rating	

9.3 CEILING INSULATION

Property	
Application	
Type/Product	
Location	
R-value	
Thickness (mm)	
R_w rating	

9.4 ROOF INSULATION

Property	
Application	
Type/Product	
Location	
R-value	
Thickness (mm)	
R_w rating	

10 180 WATERPROOFING

10.1 ASPHALT TANKING MEMBRANE

Material type: [complete/delete]

Thickness: [complete/delete]

Method of fixing: [complete/delete]

Jointing: [complete/delete]

Tanking and under-slab membranes

Block or concrete walls below ground level, including vertical surfaces between adjacent units.

Location: [complete/delete]

Extent: [complete/delete]

Membrane type: [complete/delete]

Total thickness: [complete/delete]

Other particulars: [complete/delete]

Membrane protection: [complete/delete]

10.2 SINGLE LAYER MEMBRANE

Type: [complete/delete]

Location: [complete/delete]

Extent: [complete/delete]

Membrane protection: [complete/delete]

10.3 RESIDENTIAL WET AREAS

Shower trays

Location: [complete/delete]

Size: [complete/delete]

Material: [complete/delete]

Seamless membrane

Type: Liquid applied membrane.

Material: [complete/delete]

Location: All Bathrooms.

Extent: As specified and/or shown on the drawings.

Applied Finish: Screed to fall / Ceramic tiling.

11 190 ROOFING

Refer also to the drawings and the *Multi-Trade Schedules*.

11.1 TILED ROOFING

Verge Treatment: *Pointed edge or verge tile*.

11.2 SHEET METAL ROOFING AND CLADDING

Design and installation: To AS 1562.1.

Product type: Zinc/Aluminium on high tensile steel.

Prepainted finish: Pre-finished organic paint, to AS 2728. “Colorbond” or “Multicote” or approved alternative.

Profile: Corrugated.

Thickness (base metal) (BMT) (mm): 0.42 min.

Grade: [complete/delete]

Required Finish: Prepainted. Zinc/aluminium.

Colour: Refer Colour Scheme.

Fixing: Refer to manufacturer’s recommendations.

Accessories

Provide material with the same finish as roofing sheets unless specified otherwise.

Fascias

Material: pre-finished Colorbond or Multicote Steel or approved alternative.

Colour: [complete/delete]

Gutter and downpipe schedule

Gutter size and type: [complete/delete]

Downpipe size and type: [complete/delete]

Leaf guards

Leaf guards to gutter outlets: Type required: [complete/delete]

Leaf guard to gutters: [complete/delete]

Location: [complete/delete]

Type: [complete/delete]

11.3 ROOF LIGHTS

Location: [complete/delete]

Vented: [complete/delete]

(Note - always to bathrooms where possible).

Non-vented: [complete/delete]

Size (mm): [complete/delete]

Cap: [complete/delete]

Light shaft: [complete/delete]

Ceiling diffuser: [complete/delete]

Type: [complete/delete]

11.4 ROOF VENTILATORS

Passive roof vents.

Size: [complete/delete]

Number: Refer to drawings.

Locations: Refer to drawings.

Colour: To match roof colour.

12 200 CLADDING

Refer also to the drawings and the *Multi-Trade Schedules*.

12.1 HARDBOARD CLADDING

Plank cladding

Texture: [complete/delete]

Width x length (mm): [complete/delete]

12.2 TIMBER BOARD CLADDING

Preparation

Preservative treatment: [complete/delete]

Boards

Timber species: [complete/delete]

Grade: [complete/delete]

Profile: [complete/delete]

Thickness (mm): [complete/delete]

Width (mm): [complete/delete]

Milled or sawn: [complete/delete]

12.3 FIBRE CEMENT CLADDING

Plank cladding

Texture: [complete/delete]

Width x length (mm): [complete/delete]

Sheet cladding

Texture: [complete/delete]

Width x length (mm): [complete/delete]

Eaves and soffit lining

Refer to requirements in Specification Part A. – *200* Cladding.

Perforations: Preformed for roof space ventilation.

Penetration pattern: Deco-vent NSR pattern and compatible sheets or approved alternative.

12.4 SHEET METAL CLADDING

Refer to Roofing worksection for further details, and requirements in Specification Part A. – 200 Cladding.

Profile: [complete/delete]

Pre-finish: Pre-painted to AS 2728.

Colour: Refer to *Colour Scheme*.

12.5 PLASTIC CLADDING

Materials

Type, class or designation: [complete/delete]

Profile: [complete/delete]

Colour: [complete/delete]

Fire performance: [complete/delete]

Fixing: [complete/delete]

12.6 GABLE VENTS

Refer to drawings for details.

Trim openings to receiving and fixing vents.

Louvre vents must be vermin proof, insect proof and weatherproof suitable for the location.

. Aluminium: [complete/delete]

. Proprietary prefinished steel: [complete/delete]

. UV protected PVC: [complete/delete]

Size and/or shape: [complete/delete]

Finish: Painted.

Colour: [complete/delete]

12.7 FLASHINGS

Material

[complete/delete]

13 210 DOORS AND HATCHES

13.1 DOOR SCHEDULE

DOOR NO. AND LOCATION	UNIT NO'S	LEAF SIZE HxWxD	FRAME TYPE	DESCRIPTION Specify Colour for pre-finished items	ACCESSORIES (eg seals etc)
D1 Front Entry With Security door					
D1 Front Entry Where No security door allowed					
D1 Front Entry Fire Rated					
D1 or D2 Combination Security/Entry door					
D2 Rear Entry (where applicable)					
D3 Bedroom 1					
D Bedroom 2					
D Bedroom 3					
D Bathroom					
D Bathroom					
D Laundry Internal door					
D Hall Cupboard					
Concertina Door (Room dividers)					
D Garage					
D Employees Facility (WC)					

Note: Sliding glazed doors with protruding stiles not permitted where interference occurs with sliding security door hardware.

14 220 HARDWARE

Refer to this schedule and Specification Part A – *section 220 Hardware* for requirements.

14.1 DOOR HARDWARE SCHEDULE

Door / Location	Lock Type	Hardware Description
D1 D2 D3		

14.2 ALUMINIUM WINDOWS AND DOORS HARDWARE SCHEDULE

Window / Location	Unit Numbers	Hardware Description
W1 W2 W3		

14.3 MISCELLANEOUS HARDWARE SCHEDULE

Hardware Location	Unit Numbers	Hardware Description

14.4 SUNDRY HARDWARE FIXTURES

Refer to Specification Part A – *Section 220 Hardware* for requirements.

15 225 BUILDING AND FIRE SAFETY

15.1 FIRE AND EVACUATION SIGNS / DIAGRAMS SCHEDULE

Refer to Specification Part A - *225 Building and Fire Safety for requirements.*

16 230 WINDOWS

Colour: [complete/delete]

Dimensions: As per Schedule. Confirm on site.

Performance

Australian Window Association (AWC) Labelling Scheme. [complete/delete]

Serviceability design wind pressure (Pa) (Minimum): [complete/delete]

Water penetration resistance test pressure (Pa) (minimum): [complete/delete]

Window No.	Type	Dimensions	Glazing	Screening Security/insect	Lock
W	*Sliding Sash*			Note below.	Note below.
	Sliding Door. Sill for wheelchair access.				

17 240 GLAZING

17.1 GLASS TYPES GENERALLY

Refer to *Section 240 Glazing* for requirements.

17.2 MIRRORS SCHEDULE

Designation	**M1**	**M2**	**M3**
Location			
Size (mm)			
Mirror type			

17.3 SHOWER SCREEN SYSTEMS

Supply and install the following shower systems. Multiple shower systems installed to match in colour and finish. *Any trade names listed are regarded for guidance only to establish the minimum standards and quality. (Contractor may provide equivalent).*

Requirements	**Dimensions (mm)**	**Type**	**Image**	**Comments**
Dwelling with one bathroom or ensuite bathroom				
Dwelling Type				
General and Silver level	Plan size 900 x 900mm (min) internal dimensions.	Glass - enclosed (screen & door)		
Gold level	Plan size 1000x1000mm (min) internal dimensions.			
Platinum level	Plan size 1160mm W x 1100mm L forward of shower	Shower curtain only		
Dwelling with secondary bathroom (family shared bathroom)				
Dwelling Type				
General level	Plan size 900 x 900mm (min) internal dimensions.	Glass - enclosed (screen & door)		

18 250 LININGS

18.1 SHEET LINING

Sheet lining schedule

Construct required fire and sound rated walls and ceilings to NCC requirements in accordance with the manufacturer's instructions using the finishes detailed in the table below.

Otherwise, the following systems may be used generally.

Lining designation	**L1**	**L2**	**L3**
Location	Walls	Ceilings	Bathrooms and Laundry
Type	Plasterboard	Plasterboard Garage ceilings	Walls: FC Sheeting Ceiling: WR plasterboard
Thickness (mm)	13 mm	13mm ceiling grade	6 mm FC *or,* 13mm WR Plasterboard
Edge type	Recessed	Recessed	Recessed
Joint type	Set flush	Set flush	Set flush
Fixing	Screw and adhesive	Screw and adhesive	Screw and adhesive
Battens: - Size (mm) to allow for services behind	On fire and sound rated party walls		On fire and sound rated party walls
- Spacing	600	600	600
Cornice Type/Size	Plaster	Plaster	Plaster
Skirting	Timber		Ceramic Tiles
Garage	Plasterboard	WR plasterboard	-

3mm high pressure melamine lining panels and splash backs

Location: [complete/delete]

18.2 FIRE RATED WALLS TO COMMON ROOF SPACE

Scope

Provide fire separation between Apartments with common roof space to maintain party wall / fire wall separation. Fire rated plasterboard to be fixed to roof trusses either side at party wall to maintain required fire rating. Provide fire stop to top of wall and underside of roof tile.

Location

Separation between Apartments.

Required fire separation FRL

60/60/60.

Installation

Install in accordance to manufactures detail. Refer to Multi-Residential Timber Framed Construction Manual for method of construction.

19 260 PLASTERING

19.1 PLASTERING LOCATIONS

Where shown on the Drawings and/or specified below.

Plastering schedule

Location			
Background material			
Coating type			
Thickness (mm)			
Proportions			
Number of coats			
Admixtures			
Pigments Colour			
Surface finish			
Metal lath: - Location			

19.2 PROPRIETARY TEXTURED FINISH

Refer to *Painting* worksection for proprietary textured finishes.

20 270 TILING

20.1 EXTENT

Refer to Specification Part A - *Section 270 Tiling* for requirements.

20.2 SPARE TILES

Not required unless otherwise specified.

21 290 RESILIENT FINISHES

21.1 FINISHES

Refer to the Multi Trade Schedule at the end of the Specification and the *Colour Scheme*.

21.2 UNDERLAY

Provide underlay to timber or particleboard flooring.

Type: [complete/delete]

Not Required.

21.3 LOCATION

Refer to drawings and Multi Trade Schedule/Colour Scheme for locations.

21.4 COVED WALL JUNCTION

[complete/delete]

21.5 SKIRTINGS

[complete/delete]

22 310 PAINTING

Paint colour schedule

Substrate	Number of colours

22.2 INTERIOR PAINTING SCHEDULE

Interior painting schedule

Paint code	Substrate	Final coat	VOC limit	Reference No. to AS/NZS 2311	Colour reference

22.3 EXTERIOR PAINTING SCHEDULE

Exterior painting schedule

Paint code	Substrate	Final coat	VOC limit	Reference No. to AS/NZS 2311	Colour reference

23 315 METAL FIXTURES

23.1 SAMPLES

Submit samples of the following for approval before proceeding with the work.

Proposed Handrail and Balustrade.

23.2 SHOP DRAWINGS / TYPICAL DETAILS

Submit the following for approval before proceeding with the work.

23.3 SUNSCREENS AND PRIVACY SCREENS

Refer to details on the drawings.

Materials: [complete/delete]

Surface Finish: [complete/delete]

23.4 HANDRAILS AND BALUSTRADING

Refer to details on the drawings.

Design to meet the requirements of:

- NCC;
- AS 1170;
- AS 1428.1

Materials:

Top rail/handrail: [complete/delete]

Infill: [complete/delete]

Surface Finish: [complete/delete]

23.5 BOLLARDS

General

Refer to Specification work section for requirements.

Location/s: Refer to Drawings.

Type: [complete/delete]

Required / Not required [complete/delete]

Shared zones adjacent PWD carparking bays

Type: Fixed (concealed fixings) / Removable [complete/delete]

Required / Not required [complete/delete]

23.6 BICYCLE PARKING

Refer to Specification work section for requirements.

Location/s: Refer to Drawings.

Type: [complete/delete]

Required / Not required [complete/delete]

23.7 GARDEN SHED OR LOCKER

Supply and install the following garden shed. Multiple garden sheds installed to match in colour and finish.

Any trade names listed are regarded for guidance only to establish the minimum standards and quality. (Contractor may provide equivalent).

Dwelling Type	Size	Type	Image	Comments
1- 2-bedroom dwelling	Min 2.0m2	Absco Sheds 3.0 x 0.78 x 1.95m Ezislider Double Sliding Door Garden Shed Model number: 30082EK		Colour to match external colour scheme
3-5-bedroom dwelling	Min 3.5m2	Absco Sheds 3.00 x 1.52 x 2.08m Space Saver Double Door Shed Model number: 30152SK		Colour to match external colour scheme

23.8 CLOTHES LINES

Supply and install the following clotheslines. Multiple clothesline installations to match in colour and finish.

Any trade names listed are regarded for guidance only to establish the minimum standards and quality. (Contractor may provide equivalent).

Dwelling Type	Size	Type	Image	Comments
Studio apartments	Min.7.5Lm			
1 bed apartments	Min.15Lm			
2 bed apartments	Min 15Lm			
2 bed dwelling	Min. 20Lm			
3 bed dwelling	Min. 30Lm			
4 bed dwelling	Min. 30Lm			
5 or more bed dwelling	Min. 40Lm			

24 320 TIMBER FIXTURES

24.1 TIMBER STAIRS SCHEDULE

Member	Timber species or group	Finished sizes (mm)
Carriages		
Closed string		
Cut string		
Beads		
Treads		
Risers		
Nosing bead		
Soffit lining		

24.2 BALUSTRADES SCHEDULE

Member	Timber species or group	Finished sizes (mm)
Newels		
Handrails		
Balusters		
Fascia		
Bead		

24.3 TIMBER JOINERY SCHEDULE

Refer to Specification Part A – *320 Timber Fixtures for requirements,* Drawings for layout, and preferred dimensions.

25 325 WINDOW COVERINGS

Refer to the Specification Part A – *325 Window Coverings*.

26 330 PLUMBING AND DRAINAGE

26.1 APPROVED DRAWINGS AND CONNECTIONS TO LOCAL AUTHORITY SERVICES

Coordinate the works with the Local Authority and/or Utility Service Provider as applicable.

Document and Construct and House and Land contracts only

Include in the tender price all costs associated herewith including drawing perusal and approval fees and all Local Authority and/or Utility Service Provider inspection and approval fees.

Issue the Principal with one copy of the Drawings approved by the relevant Local Authority and/or Utility Service Provider, within seven days of receiving approved Drawings.

All other approvals including but not limited to the Local Government drainage and plumbing inspections and approvals to be arranged and paid for by the Contractor.

Water and Sewer connection

Apply for water and sewerage connection and pay all such fees (including those for water meters) required by the Local Authority and/or Utility Service Provider, no later than 28 days after the date of the Letter of Acceptance.

Notify the Superintendent when town water supply is specified but is not available at the time of payment of connection fees.

26.2 WATER USAGE CHARGES

Contractor is responsible for all water usage fees during the Construction Stage levied by the relevant Local Authority and/or Utility Service Provider supplying water to the site.

26.3 WATER SUB-METERS & AUTOMATIC METER READER SYSTEM

Refer to the Specification Part A *Section 330 Plumbing and Drainage – Water Sub-Meters &* Automatic Meter Reader System *for requirements*.

26.4 AS-BUILT DRAWINGS

Refer to Specification Part A – *Section 010 Preliminaries* and *020 General Requirements* for requirements.

26.5 SANITARY WARE SCHEDULE

Refer to the Specification Part A *Section 330 Plumbing and Drainage – Sanitary Ware Requirements;* and to the drawings for fixture layouts.

Supply and install the following sanitary ware. All sanitary ware installed to match in colour and finish.

Any trade names listed are regarded for guidance only to establish the minimum standards and quality. (Contractor may provide equivalent).

Item	Description/Brand/Model	Comments
STAINLESS STEEL KITCHEN SINK		
General, Silver and Gold Level accommodation		
Platinum Level accommodation		
		Maximum bowl depth – 150mm. Underside sink injury hazard protection required. All plumbing to be directed to a rear wall trap using low profile fittings, to allow knee room for wheelchair users.
LAUNDRY TUB		
Detached Houses and Duplexes of 3 bedrooms (45Ltr)		
Detached Houses and Duplexes of 4 or more bedrooms (70Ltr)		
BATH AND SHOWER BATH	Dimensions are nominal: 1500mm-1700mm length x 730mm-780mm width x 300mm-400mm depth.	
SHOWER TRAYS – General level only	White	
VANITY BASIN		
General and Silver Level accommodation		
Platinum and Gold Levels accommodation		
Semi-recessed or drop-in type		

Item	Description/Brand/Model	Comments
WC SUITE		
General, Silver and Gold Levels accommodation		
WC Suite	Dual flush suite with full seat complete with seat flap	
Platinum Level accommodation		
WC Suite as per AS 1428.1.	.	

26.6 TAPWARE REQUIREMENTS

Supply and install the following tapware. All tapware installed to match in colour and finish.

Any trade names listed are regarded for guidance only to establish the minimum standards and quality. (Contractor may provide equivalent).

Item	Description/Brand/Model	Location / Image
KITCHEN SINK MIXER (4 Star WELS Rated)		
General, Silver and Gold Level accommodation		
Single lever sink mixer (with 230mm nom. swivel long kitchen spout). Mixers to have rotation stops and not to exceed 150O		
Platinum Level accommodation		
Single lever sink mixer (with 230mm nom. swivel long kitchen spout). Mixers to have rotation stops and not to exceed 150O. Provide healthcare extended lever.		
LAUNDRY		
General and Silver Level accommodation		
LAUNDRY TUB SET (4 Star WELS Rated) Single lever mixer and 150 mm swivel laundry spout or tap set with swivel spout.	Installed on laundry tub or side wall.	
Gold and Platinum Level accommodation:		
LAUNDRY TUB SPOUT - (3 Star WELS Rated) & LAUNDRY TUB WALL MIXER - (5 Star WELS Rated)	Single lever wall mixer and separate swivel telescopic Laundry Arm.	TAP MIXER to be installed on side wall not more than 100mm from the edge of laundry tub trough / benchtop.
WASHING MACHINE TAPS (3 Star WELS Rated)		
3/4 turn ceramic disc WM cocks (Hot & Cold)		Locate within laundry tub cabinet.
BATH SET (5 Star WELS Rated)		
Single lever bath mixer Provide separate shower and bath mixer sets if shower is installed over bath. Diverter not permitted.		
SHOWER MIXER		
General, and Silver Level accommodation: Single lever shower mixer and 3 Star WELS rated wall mounted adjustable shower rose (non-adjustable arm).		Locate mixer forward of rose.
SHOWER SET (3 Star WELS Rated)		
General, and Silver Level accommodation: 3 Star WELS rated wall mounted adjustable shower rose (non-adjustable arm).		Locate mixer forward of rose.

Item	Description/Brand/Model	Location / Image
Gold Level accommodation: Adjustable handheld shower kit, mounted on an inverted (Middle fixed) T- shaped grab rail. AS1428.1 Compliant. Where required for compliance, restrict hose range with a 'shower hose retainer'.		
Platinum Level of accommodation: Adjustable handheld shower kit, mounted on an inverted T- shaped grab rail. (Left or Right fix where applicable). AS1428.1 Compliant. Where required for compliance, restrict hose range with a 'shower hose retainer'.		
VANITY BASIN SETS *(5 Star WELS Rated)*		
General, Silver and Gold Level accommodation: Single lever basin mixer.		
Platinum Level accommodation for single bathroom or Platinum ensuite bathroom:		
Single lever basin mixer with healthcare extended lever and (red and blue) indicators.		
WC STOP COCKS	Mini stop cock to cistern	
TEMPERING VALVE		
500 kPa PRESSURE REDUCTION VALVE		To each house, or each duplex unit or as specified, or as otherwise shown on the drawings.
Hose Cocks		Locate as shown on the drawings in close proximity to outdoor patio.

26.7 WATER HEATERS

Refer to the hot water heater requirements in Specification Part A - *Section 330 Plumbing and Drainage;* and to the drawings for location/s.

Item	Description Brand/Model	Location House/Unit No.	Colour
Electric Water heater	Electric Instantaneous		
Solar Water heater	Where nominated on drawings		

27 360 ELECTRICAL AND MECHANICAL SERVICES

27.1 CONNECTION OF SUPPLY

Overhead Electricity Distributor Service to Building.

Overhead Electricity Distributor Service to Property Pole.

From Electricity Distributor Service Pillar/Enclosure.

From Electricity Distributor Transformer.

Liaise with the relevant Electricity Distributor to arrange for the connection of supply and bear all costs.

27.2 SWITCHBOARD MULTIPLE INSTALLATIONS

Communal lighting and power facilities are required – Refer Communal Lighting and Communal Emergency Lighting herein.

Communal lighting and power facilities are not required.

27.3 ADDITIONAL METERING POSITIONS - MULTIPLE INSTALLATIONS

Required.

27.4 DISTRIBUTION SWITCHBOARD (SUB BOARD) MULTIPLE INSTALLATIONS

Required.

27.5 COMMUNAL LIGHTING

Requirements

Pole Mounted Type:

- Pole Size: Galvanised 76 mm OD round buried in ground proprietary style to suit specified luminaire.
- Height of luminaire is to be 3 metres above finished ground level.
- Pole Finish: Galvanised and Hand Painted.
- Pole Colour: [complete/delete]

Wall Mounted Type:

- Colour: [complete/delete]

Soffit/Ceiling Mounted Type:

- Colour: [complete/delete]

Bollard Type:

- Colour: [complete/delete]

Brick Light Type:

- Colour: [complete/delete]

Emergency Soffit Mounted Type:

- Colour: [complete/delete]

Emergency Wall Mounted Type:

- Colour: [complete/delete]

27.6 MOUNTING HEIGHTS

Light switches

Refer to SWITCHES in this worksection Specification Part A for standard mounting heights.

Socket outlets

Refer to SOCKET OUTLETS (SOs) in this worksection Specification Part A for standard mounting heights.

27.7 TELEPHONE INSTALLATION

Installation is required to all Dwelling Units. Refer to the Specification Part A, Electrical & Mechanical Services – telephone/telecommunications Installation, for requirements.

27.8 TELEVISION - SINGLE SYSTEM INSTALLATION

Installation is required to the following Dwelling Units:

[complete/delete]

27.9 SMOKE ALARM AND FIRE DETECTION SYSTEMS

System to be used where no LAP is required (No internal public areas requiring monitoring).

System to be used where a LAP is required (Internal public areas including corridors, stairwells and lifts exist).

System to be used where connection to the QFES is required (Class 3 Buildings greater than two (2) storeys, or greater than 20 residents).

27.10 APPLIANCES

Supply and install the following appliances. Multiple appliance installations to match in colour and finish.

Any trade names listed are regarded for guidance only to establish the minimum standards and quality. (Contractor may provide equivalent).

Electrical

Item	Description Brand/Model	Colour /image	Comments
Ovens			
General and Silver Levels accommodation			
Under Bench Oven or Wall Oven (refer design drawings for location)			
Gold & Platinum Levels accommodation			
Wall Oven (with separate cooktop)	*(Refer drawings to select opening side) either* Right - Vertically Hinged Door Left - Vertically Hinged Door		- Side opening oven door - Mid-shelf of oven to be level with respective benchtop (nominal)
Cooktops			
General, Silver, Gold and Platinum accommodation			
			Ceramic radiant glass with front controls. (Note: For Platinum Level accommodation - Injury hazard protection required under. Refer to section 320 Timber Fixtures - Cupboard, Shelf and Drawer Units for details).
Exhaust Fan			
Bathroom and Laundry rooms			
Rangehood			
Integrated Under Cupboard Rangehood			Ducted only Fixed type (Not to slide out)
Ceiling Fans			
Ceiling Fan (internal)		White	
Ceiling Fan (external)			External fans to be damp or wet rated for external use only

28 361 LIFT SERVICES

28.1 LIFT SCHEDULE

Refer to the Specification Part A, Project Brief; and Security Services Design Brief where applicable.

Any trade names listed are regarded for guidance only to establish the minimum standards and quality. (Contractor may provide equivalent).

Item	Description
Lift type:	Proprietary Machine Room-Less Traction passenger/goods lift. To AS 1735 Part 1, 2 & 12 and NCC requirements. Installed in a concrete/block work tower.
Capacity:	1000kg, 13 passenger (minimum).
Speed:	1.0 metres per second.
Levels Served:	Levels – refer details shown on Drawings.
Travel:	Refer to drawings (check on site).
Terminal floor:	Ground
Machine Room location:	Ground level, where required.
Pit: Lift Car Dimensions: Headroom: Clear Opening:	1650mm (max) deep. 1400mm wide x 1600mm deep (minimum internal dimensions). 4150mm (max). 1000mm (min).
Doorway clearance:	900mm wide (min) x 2100mm high (min) Note: walk-through clearances with doors fully open, free of any encroachments.
Weather protection: Lift door entrance threshold	Provide threshold ramp to lift door entrance to prevent water entering the lift shaft. Threshold to ramp up from the finished floor level in front of the lift door to enable people with prams, strollers, and mobility devices such as wheelchairs to access in and out of the lift. - Slip resistance: Minimum P3. - Chequered metal plate (sealed) or tiles acceptable. - Slope to be nominally 1:8 (35mm rise/280mm long) in accordance with AS1428.1 2021.
Power supply:	Fire rated 415 V, 50 Hz.
Battery Backup:	The lift is to operate from a battery supply of at least adequate capacity, so that in the event of power failure during transit from the upper level, the lift is able to safely reach ground level, or the closest floor when not possible to run to ground level. Size the batteries allowing an adequate safety margin to allow for loss of capacity over time.
Manual Lowering:	Provide a method in the car and externally to enable manual lowering of the lift in the event of power or component failure.
Control System:	Simplex Directional Collective.
Access/ Security Control:	Access to lifts is to be limited to residents and legitimate visitors. Access to lift control by keypad and/or proximity card. Provide a 'Multi-Tech Flex' type Reader with Keypad security to access lift controls. Refer Spec Part A work section for further details. The lift supplier is to liaise with: - Main Contractor, to determine the allowances required in the lift installation for this project. - Principal, to determine the final requirement for secure access control.
Designated alphanumeric character set identifying the landings	G, 1, 2, etc.
Lighting:	Recessed linear LED lights. 2 recessed emergency LED lights. 4 concealed LED downlights.
Door type:	Single speed bi-parting.
Landing doors, frames and car doors finish:	"Rigitex 2WL" or approved equal, stainless steel No. 4 linish finish.
Car back, side and front walls:	"Rigitex 2WL" or approved alternative stainless-steel finish.

Item	Description
	Finish with a mix of brushed/ No. 4 linish stainless steel and feature panels/strips of high-pressure laminate – faux timber finish complimenting development colour scheme.
Car floor finish:	Proprietary Item: 1800 x 900 x 3.2 mm "Walk Easy" anti-slip (R11) heavy duty resilient flexible flooring by ACL Comcork and distributed by Safety Floor Australia Pty Ltd. Colour & Pattern: To be approved by Principal. Jointing: Close butt jointed.
Skirting:	The skirting shall be matching stainless steel and is to be finished in every corner and end with metal caps.
Ceiling finish:	High-pressure laminate and/or stainless steel to match wall feature wall panels.
Ceiling trapdoor:	Door high-pressure laminate on all surfaces to match ceiling. Door opening laminated edged.
Floor Levelling:	± 6mm. Maximum. (Normal stops, all conditions).
Pit Access Ladder:	(1 of) Galvanised Mild Steel or Aluminium.
Hand rail:	Stainless steel No. 4 linish finish to 3 sides.

28.2 SCHEDULES OF TECHNICAL DATA - LIFT SERVICES

Tender schedule – Lifts

THIS SCHEDULE FORMS PART OF THE SPECIFICATION AND FAILURE TO COMPLETE AND RETURN AFTER ACCEPTANCE OF TENDER, MAY RENDER THE SUBMISSION INFORMAL.

I/We……

hereby tender for the supply, installation, testing and commissioning of Lift No. 1 in the above-mentioned building/s, in accordance with this specification and drawings.

(a) Complete lift installation: $……

(b) Maintenance during defects liability period: $……

TOTAL FIXED LUMP SUM TENDER PRICE: $……

Comprehensive Performance-Based Lift Maintenance Price, based on a 5-year period for Lift 1, (following completion of the 12 months defects liability period): $……p.a.

Technical schedule – Lifts

Item	Lift No. 1	Lift No. xx
Lift Manufacturer		
Place of Manufacture		
Contract Load (Persons)/(kg)	……/……	……/……
Contract Speed at Contract Load UP (Metres/sec)		
Car Interior Dimensions (W x D x H)	……X……X……	……X……X……

Item	Lift No. 1	Lift No. xx
Guaranteed Levelling Accuracy	± ……mm	± ……mm
Noise Level in Cars (Fans Running)	……dBA	……dBA
Starting Current	..……..Amps/Phase	..……..Amps/Phase
Full Load Running Current	……..…..Amps/Phase	……..…..Amps/Phase
Recommended TP MCCB Rating for Lift and Associated Equipment Submains Supply	……..Amps	……..Amps

SIGNATURE……WITNESS……DATE……..

29 370 FENCES AND EXTERNAL WALLS

29.1 GENERAL

Refer to Specification Part A – *Section 370 Fences and External Walls*, drawings and details for additional requirements.

29.2 FENCES

Location

[complete/delete]

Extent and type

Refer to Project drawings.

Boundary and return fence/s

Front Fence and side returns to building line: [complete/delete]

Side returns from side fences to building: [complete/delete]

Side fences: [complete/delete]

LH side fence: [complete/delete]

RH side fence: [complete/delete]

Rear fence: [complete/delete]

Other: [complete/delete]

Paling fence

Height(s):

- Front Fence: [complete/delete]
- Front Side fences back to building line: [complete/delete]
- Rear and rear side fences: [complete/delete]

Palings:

- 100 x 15 Treated Radiata Pine: [complete/delete]
- 100 x 13 mm Rough sawn treated hardwood: [complete/delete]

Palings Profile(s): Square Top.

Paling Spacing:

- 10 mm.
- Close butt.

Posts:

- 65 x 2.5mm SHS Hot dip galvanised steel.
- Treated hardwood.

Post Spacing: 2400mm max.

Footings: Concrete (Gravel under for timber posts).

Rails: Treated Pine.

Finish: Natural / Painted - Refer to the *Painting* worksection.

Colour: [complete/delete]

Picket fence

Height(s): 1200 mm nom.

Palings: 75 x 15mm dressed treated radiata pine.

Paling Spacing: 100 mm max.

Posts: Treated hardwood (Ref. LD 401).

Post Top Profile:

- Type: [complete/delete]
- Refer Standard Drawing LD 408.

Post Spacing: 2400mm max.

Footings: Concrete with gravel base for drainage.

Rails: Treated Hardwood.

Finish: Treated / Painted - Refer to the Painting worksection.

Colour: [complete/delete]

Gate(s)

Gate(s) (single or double): As shown on Drawings.

Type: Welded hollow section frame hot dip galvanised as detailed.

Match height and appearance of adjacent fence.

Hinges: Configuration, where required, vertically offset to be rising to achieve ground clearance on sloping ground or self-closing.

Single rail/chainwire fence and gate(s)

Height(s): [complete/delete]

Style: Smorgon ARC 'Economesh or approved alternative.

Chainwire: [complete/delete]

Finish: [complete/delete]

Colour: [complete/delete]

Gate(s): Matching proprietary framed hinged gate(s) and hardware.

Two or more rails/chainwire fence and gate(s)

Decorative Fence Construction: Similar to picket fences with pickets replaced by chainwire.

Type: Refer to details on the drawings.

Height(s): [complete/delete]

Posts: Galvanised tube / Treated Hardwood.

Footings: Concrete.

Rails: Galvanised tube / Treated Hardwood.

Number of Rails: 2 or 3 as detailed.

Chainwire: [complete/delete]

Finish: PVC Coated.

Colour: Black / Green.

Gate(s):

- Matching proprietary framed hinged gate(s) and hardware.
- Welded hollow section frame hot dip galvanised as detailed.

Sheet steel fence and gate(s)

Height(s): As shown on Drawings.

Style: Lysaght Neetascreen or approved alternative.

Finish: Baked Acrylic paint (Colorbond finish or approved alternative).

Colour: [complete/delete]

Gate(s): Matching proprietary framed hinged gate(s) and hardware.

Metal tubular fence and gate(s) (steel or aluminium)

Height(s):

- 1250 mm.
- 900 mm.

Panels and Gates: Raked to ground profile / Horizontal.

Style - Rod top:

Steel: Smorgon ARC - 'Bass' or approved alternative.

Aluminium: Smorgon ARC - 'Byron or approved alternative.

Finish: Powdercoated.

Colour: [complete/delete]

Gate(s): Matching proprietary framed hinged gate(s) and hardware unless detailed otherwise.

Brick screen wall and gate(s)

Height(s): As shown on Drawings.

Brick Type: [complete/delete]

Gate(s): As shown on Drawings.

Brick pier and infill panelling - screen wall and gates

Height(s): As shown on Drawings.

Brick Type: [complete/delete]

Location and size: As shown on Drawings.

Infill Panels: Treated radiata pine.

Panel Finish: Painted timber- Refer to the *Painting* worksection.

Infill Panels: Smorgon ARC Vanguard or approved alternative.

Panel Finish: Pre finished Powdercoat.

Colour: [complete/delete]

Gate(s): Height, style, and finish, to match fence.

Location and size: As shown on Drawings.

Lattice screens and gates

Material:

- Treated radiata pine.
- Rolled prepainted sheet steel slats.

Dimensions: As shown on Drawings.

Slats: 32 x 13 mm (3.2 mm radius arris).

Slats: 42 x 13 mm (3.2 radius arris).

Slat Spacing: 32 mm.

Slat Spacing: 50 mm.

Lattice Pattern: Diagonal.

Lattice Pattern: Square Horizontal/Vertical.

Frame Surround: 70 mm x 35 mm.

Frame Surround: 90 mm x 35 mm.

Finish: Treated.

Finish: Painted - Refer to the *Painting* worksection.

Colour: Refer to *Colour Scheme*.

Gate(s): As shown on Drawings.

29.3 EXTERNAL WALLS

Location

[complete/delete]

Extent and type

As indicated on the drawings or as specified below.

Blockwork walls

Requirement: Where shown on Drawings, and to Specified Engineering requirements/manufacturer's specifications construct blockwork walls.

Type: [complete/delete]

Pattern: [complete/delete]

Colour: [complete/delete]

Brickwork walls

Requirement: Where shown on Drawings, and to Specified Engineering requirements, construct brickwork walls.

Type: [complete/delete]

Pattern: [complete/delete]

Colour: [complete/delete]

Concrete crib walls

Requirement: Where shown on Drawings, and to Specified Engineering requirements and/or manufacturer's requirements construct concrete crib walls.

30 380 LANDSCAPING

30.1 SPECIFICATION

Refer to Specification Clauses for general requirements where applicable and the drawings for project specific requirements.

30.2 SAMPLES

Required.

Plant Material.

Mulch.

Top Soil.

Compost.

Not Required.

30.3 MATTING OVERLAY

Type: [complete/delete]

30.4 ROCK LANDSCAPING

Site rock.

Imported rock.

Site features to be retained.

30.5 SUB-SOIL DRAINS

Type: Refer *Drainage* worksection.

30.6 TOP SOIL

Refer Specification.

Type: [complete/delete]

30.7 SOIL ADDITIVES

Type: [complete/delete]

Application: [complete/delete]

30.8 FERTILIZER REQUIREMENTS

Turfing

Pre Turfing:

- Type: Controlled release fertiliser.
- Formulation: Approved complete fertilizer with N:P:K Ratio 13.1:14.6:12.9.
- Application rate: 25g/m2.

Post Turfing:

- Type: Slow release lawn fertilizer ‘Scotts’ or approved alternative.
- N:P:K Ratio: 21:1:16.
- Application rate: 10g/m^2.

Planting Bed:

- Type: Pelletised slow release.
- Formulation: Approved complete fertilizer with N:P:K Ratio 16:4.4:8.3.

Application Rates:

- 10g per 140mm pot.
- 20g per 200mm pot.
- 30g per > 200mm pot.

30.9 SOIL MOISTURISERS

- Type: Refer to the details on the drawings for water absorbent flakes requirement.

30.10 COMPOST

Type: Spent mushroom compost, with a neutral ph value of 7, free from harmful chemicals, grass and other seed/propagule material.

30.11 MULCH

Type: Slash Pine Bark Mulch (medium): Unscreened bark 25 x 25 mm.

Hoop pine on steep slopes.

30.12 SUB-SOIL DRAINS

Type: Refer *Drainage* worksection.

30.13 GEOSYNTHETIC MULCH MATS

Type: THE GEOLAB GROUP TREE MAT 600 mm diameter or other approved. Cover the top layer of topsoil with tree mat prior to placement of mulch.

Number of Mats: As shown on Drawings/Plant Schedule.

30.14 GARDEN EDGING

Type:

- 100 x 100 mm Concrete (N20).
- Edge Pavers as detailed on the drawings.
- Type and Colour: [complete/delete]

30.15 TREE ROOT BARRIERS

Type: “Nylex Root Barrier” or approved alternative - 600 mm wide.

Location: [complete/delete]

30.16 TREE TRUNK PROTECTORS

Type: Agricultural pipe perforated corrugated and split 150 mm (long) x 65 mm (dia.)

Number: To all plant species planted in grass/turf areas.

30.17 TREE GUARD

Type: [complete/delete]

Location: As shown on Drawings.

30.18 TREE GRATES

Type: [complete/delete]

Location: As shown on Drawings.

30.19 TREE SURGERY

Tree surgery schedule

Plant	Work required

30.20 PLANTER BOXES

Type: [complete/delete]

30.21 TEMPORARY FENCING

Type: [complete/delete]

Location: As shown on the drawings.

30.22 PLAYGROUND UNDER SURFACE TREATMENT

Types: [complete/delete]

Standard: AS/NZS 4422.

30.23 SCHEDULE OF PROOF OF ORDERING, APPROVALS, INSPECTIONS, SAMPLES, SOIL DELIVERY, ESTABLISHMENT AND LOGBOOK

	Submitted (√)	Approved (√)
PROOF OF ORDERING Furnish proof of ordering of plants within 30 days of the acceptance of the tender.		
APPROVED SUBCONTRACTORS Verify landscape works to be implemented by a contractor who holds current registration for landscape works under the Queensland Building and Construction Commission (QBCC) registration scheme and are experienced in this particular type of work.		
INSPECTION - Setting out completed. - Subgrades cultivated or prepared for placing topsoil. - Grassing bed prepared before turfing, seeding, or temporary grassing, stolonizing. - Subsoil drainage before backfilling. - Plant holes excavated and prepared for planting. - Plant material set out before planting. - Planting, staking and tying completed. - Grassing or turfing completed. - Completion of planting establishment work.		
SAMPLE AREAS Prepare a sample area of cultivation approximately 5 m x 5 m in a location to the following areas agreed with the Superintendent, and obtain approval before proceeding: - Planting areas; - Turfed areas.		
TESTING AND SAMPLES Provide the following test results and samples: - Imported soil mixes; - Improved site strip topsoil; - Top dressing.		
SPECIFIED SOILS DELIVERY Deliveries of soil to site must be accompanied by the documentation referred to in section 8 of AS4419. Submit documentation to the S.R.		
PLANTING ESTABLISHMENT PROGRAM Two weeks prior to Practical Completion, furnish a proposed planting establishment program.		
PLANTING ESTABLISHMENT LOGBOOK Maintain logbook in location nominated by Superintendent.		
SAMPLE PANEL - Paving; - Coloured concrete; - Exposed Aggregate concrete – *Not permitted*		

31 390 PAVING

31.1 PROJECT REQUIREMENTS

General

Refer to the drawings for the type and extent of pavements and finishes required or as specified below.

31.2 IN SITU CONCRETE PAVEMENT (PEDESTRIAN PATHS)

Note: Where pedestrians and vehicles share the same pathways, differentiate pedestrian pavements with a contrasting colour, to the natural concrete finish of the vehicle pavements.

Location: Where indicated on the drawings.

Surface Finish: Non-Slip.

Broomed finish with tooled edges.

Exposed Aggregate (Proprietary Blend) – *Not permitted.*

Mineral Pigment Colour: [complete/delete]

31.3 IN SITU CONCRETE PAVEMENT (CARPARKS AND DRIVEWAYS)

Location: Where indicated on the drawings.

Depth of Gravel Subbase: [complete/delete]

Reinforcing Mesh: [complete/delete]

Top Cover: [complete/delete]

Surface Finish: Broomed natural concrete finish with tooled edges.

Mineral Pigment Colour: [complete/delete]

31.4 IN SITU CONCRETE PAVEMENT (COLOURED PATTERN CONCRETE) CARPARKS AND DRIVEWAYS

Depth of Gravel Subbase: [complete/delete]

Reinforcing Mesh: [complete/delete]

Slab Thickness: [complete/delete]

Pattern: Flemish Slate.

Pattern: Paddington Slate.

Mineral Pigment Colour: Buff and Bronze.

Mineral Pigment Colour: Buff and Cinnamon.

31.5 CONCRETE STEPS

In-Situ concrete Steps:

- Surface finish: Wood Floated.
- Surface finish: Broom Finish.
- Non-slip treatment:
- Stair Nosing: Proprietary Non-Slip stair nosing: [complete/delete]

31.6 PRECAST CONCRETE PAVEMENT

Size: [complete/delete]

Finish: Scored (Non-Slip).

31.7 CARPARKING BAY DELINEATION

Road Marking Paint: [complete/delete]

Reflective Pavement Markers: [complete/delete]

Reflective Numbering: [complete/delete]

31.8 CARPARK MARKINGS

Road Marking Paint: [complete/delete]

Numbering System:

- Road marking: [complete/delete]
- Concrete stop marking: [complete/delete]

31.9 SPEED BUMPS

Type: [complete/delete]

Location: [complete/delete]

31.10 WHEEL STOPS

Type: [complete/delete]

Location: Provide as detailed on drawings.

32 MATERIALS AND FINISHES SCHEDULES

32.1 EXTERNAL CONSTRUCTION MATERIALS AND FINISHES SCHEDULE

Colours: Pre-finished colours are generally nominated in this schedule. Refer to Colour Schedules where not shown here and for applied and painted colours.

Surface	**Material and Finish**
Termite Control	Approved proprietary physical system to perimeter and penetrations, unless detailed otherwise on the drawings.
External Masonry Walls	Concrete Block Face Brick Concrete render Applied Finish
Brickwork, general Location: [complete/delete]	Face brick: [complete/delete] Type: [complete/delete] Colour: [complete/delete] Bond: [complete/delete] Mortar: [complete/delete] Joint profile: [complete/delete] Depth of raking: [complete/delete]
Blockwork Location: [complete/delete]	Manufacturer: [complete/delete] Sizes: [complete/delete] Bond: [complete/delete] Mortar: [complete/delete] Joint profile: [complete/delete] Depth of raking: [complete/delete]
Studwork	Radiata Pine: [complete/delete] Rolled Steel: [complete/delete] Other: [complete/delete]
Wall Insulation	Required as per BCA requirements specified below and specification or Refer to the Drawings. Location: To all external walls. Reflective foil: R: [complete/delete] Alternatively: Reflective 'air cell' membrane. Bulk Thermal insulation: R: [complete/delete] Total Required R-value for Walls: R: [complete/delete]
Wall Cladding - External Location: [complete/delete]	
Walls – Sheet Steel on studwork	Profile: Base metal: BTM 0.43mm TCT 0.47 mm min Finish: Pre-painted to AS 2728 Type of Product: [complete/delete]
Roof Framing	Radiata Pine Steel Truss [complete/delete] Other: [complete/delete]
Roofing, Concrete Tile	Type: [complete/delete] Pattern: [complete/delete] Colour: [complete/delete]
Roofing, Awnings, Profiled Steel	Profile: Custom Orb or approved alternative Base metal: BTM 0.43mm TCT 0.47 mm min Finish: Pre-painted to AS 2728 Type of Product: [complete/delete]
Window hoods	**Type:** Profile: Base metal: BTM 0.43mm TCT 0.47 mm min Finish: Pre-painted to AS 2728 **Alternative:** Type: Solid awning. Heka or approved alternative. Profile: Folded flat sheet with front drip edge/lip and rear flange for support to substrate. Material: Sheet / plate aluminium. Finish: Powder-coat (Duratec or approved alternative).
Carport /Garage Roof	Profile: [complete/delete]

Surface	**Material and Finish**
To match main building	Base metal: BTM 0.43mm TCT 0.47 mm min Finish: Pre-painted to AS 2728 Type of Product
Roof Insulation	As per NCC requirements and to the extent as per specification. Required R-value for roof: [complete/delete] **Metal Roof Insulation** Type: Insulation blanket bonded to reflective foil membrane Ceiling Batts between ceiling joists: [complete/delete] **Tiled Roof Insulation** Type: Reflective foil membrane/sarking under tiles Plus: Insulation batts between ceiling joists
Gutters, Downpipes	Steel Prepainted to AS 2728. Steel Quadrant Gutter 150 mm nom., DP's 100mm Dia, Square line gutter DP's 100 x 75mm
Roofing Fascias, barges etc.	Pressed steel prepainted to AS 2728 Colour: [complete/delete]
Gable ends	6mm FC Sheeting (*Hardiplank*) to profile. Painted
Soffits	6mm FC Vented Painted or Prepainted
FC planking	Painted FC Hardiplank/Type *Painted*
Exposed vertical edges to floor slabs	Off form natural/*FINISH*
Aluminium window frames Refer Windows Worksection	Powdercoated Colour: [complete/delete]
Aluminium sliding door frames Refer Windows Worksection	Powdercoated Colour: [complete/delete]
External Side Hung Timber Doors Refer to Door Schedule	External Paint grade "A bond" timber veneer faced Hollow Core where security door is fitted External Paint grade "A bond" timber veneer faced Solid Core where no separate security screen. Fire rated door: [complete/delete]
Garage Door Panel Lift	Profiled steel curtain, Pre-painted Colour: [complete/delete]
Security Screens	Approved screens as specified. Apartments – Stainless steel security mesh with powder coated aluminium frame to match windows. Mesh – black or dark bronze. Grille may be black or frame colour. Detached Houses & Duplexes – Stainless steel security mesh *or* aluminium grille with powder coated aluminium frame to match windows. Grille may be black or frame colour.
Steelwork: posts, frames handrails balustrades	Hot dipped galvanised, painted
Aluminium balustrades	Powdercoated Colour: [complete/delete]
Proprietary Balustrade	Powdercoated Colour: [complete/delete]
Concrete Floors, Porches front and rear, Carports	Non-slip wood floated concrete
Surfaces under Concrete Balconies. Paint finish applied to whole of under surface up to drip groove edge. Refer drawings.	Exterior textured paint system - Refer to Section 310 Painting – *'Proprietary Textured Finish', 'Paint Final Coat Table', 'External Paint Systems';* and Colour Schedules.
Pedestrian pathways and/or paving where pedestrians and vehicles share the same pathways. Differential pedestrian pathways with a contrasting colour, to the natural concrete finish of the vehicle driveway.	Concrete Broom finish tooled edges. Option: Provide Carborundum evenly spread grains trowelled in (approx. 1 KG/sq m) to nominated areas or painted finish.
Driveway/ Car tracks	Concrete Broom finish tooled edges

Surface	Material and Finish
Retaining walls	Concrete block *Type, Finish, Colour* Concrete capping block *Type, Finish, Colour* Crib wall *Type, Finish, Colour*
Concrete edging	100 mm wide weathered profile steel trowelled concrete
Front fencing to extent shown on the drawings	1200 high Treated Pine Paling Profile Type B Picket 2 Treated rails Painted - Refer Colour Scheme Refer Landscape Detail Drawings LD 407, 408 and 410.
Side and rear fencing to extent shown on the drawings	1800 high square top palings abutted with 3 rails. 65 x 65mm Galvanised steel posts. Refer Landscape Detail Drawings LD 402 and LD 412. Unpainted
Letter Boxes	One per unit. Powder coated MIFOB Hasp and staple provision for padlock locking only. Colour: Refer Colour Schedule
Clotheslines	Refer: *Metal Fixtures, Schedules of Requirements*
Tool/Garden Shed	Type and size as indicated on drawings and as specified. Pre-painted Steel, fixed to concrete slab. Flush threshold and sliding door/s for wheelchair access if required. All to Local Authority requirements.

32.2 INTERNAL MATERIALS AND FINISHES SCHEDULE

Area	Floor *	Walls	Ceiling
Front Entry	Ceramic tiles	Painted plasterboard	Painted plasterboard
Living/ Dining Room/ Hallway	Steel trowel finish for floor covering Ceramic tiles / Sheet Vinyl Flooring	Painted plasterboard	Painted plasterboard
Kitchen Refer Colour Scheme for Kitchen Joinery	Ceramic tiles *or* Steel trowel finish for floor covering Sheet Vinyl Flooring	Painted plasterboard Ceramic Tile Splash Back	Painted plasterboard
Bedrooms	Steel trowel finish for floor covering Sheet Vinyl Flooring	Painted plasterboard	Painted plasterboard
Bathroom Refer Colour Scheme for Bathroom Joinery	Ceramic tiles *or* Steel trowel finish for floor covering Sheet Vinyl Flooring	F.C. 6mm sheet lining Type B Cat 2 internal w/ recessed edge for flush finish. Ceramic tiles and paint finish Refer elevations for extent	Painted WR-plasterboard painted Refer Colour Scheme
Laundry	Ceramic tiles *or* Steel trowel finish for floor covering Sheet Vinyl Flooring	Painted F.C. 6mm sheet lining Type B Cat 2 internal w/ recessed edge Ceramic Tile Splash Back	Painted plasterboard
Solid masonry fire walls including fire rated and acoustically rated walls, where electrical and water services required		Sheet lining as specified above on 50 x 20mm min. timber battens at 600mm ctrs to conceal services.	
Storage areas	Steel trowel finish	Painted plasterboard Painted FC (Store)	Painted plasterboard Painted FC (Store)
Timber Trim Skirting Architraves Note: MDF trims not allowed.		Skirtings: 68 x 12 mm Bullnose Architraves: 42 x 12 mm Bullnose. Picture Rail if required: 42 x 16mm.	

Area	Floor *	Walls	Ceiling
		Painted as per wall	

*** Refer to TABLE 1: Standard and Acceptable Floor Finish Types / Slip Resistance by Room and Accommodation Level**

33 COLOUR SCHEDULES

33.1 EXTERNAL COLOUR SCHEME

Refer to Colour Schedules where not shown here or drawings.

33.2 INTERNAL COLOUR SCHEME

Refer to Colour Schedules where not shown here or drawings.

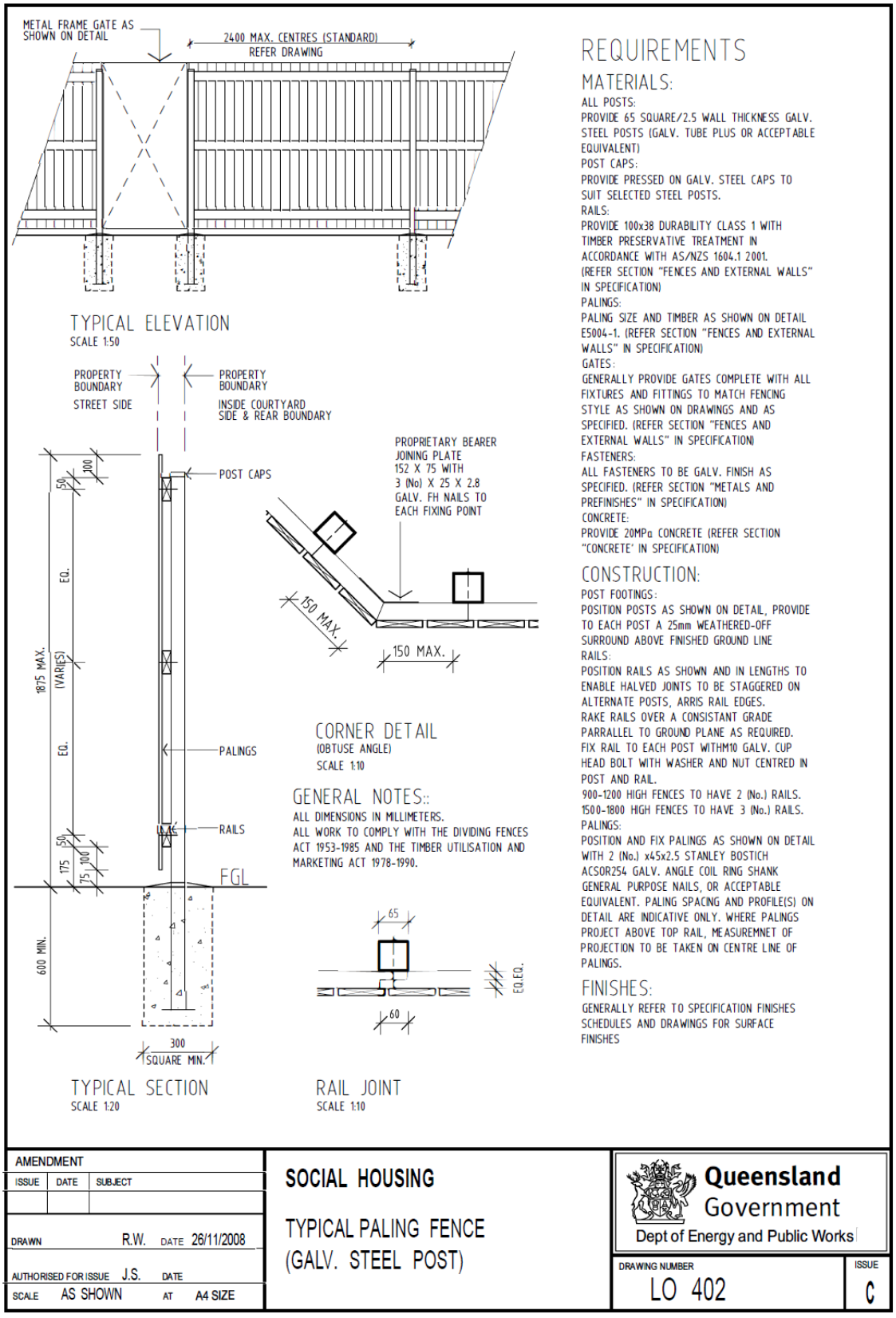
Any trade names listed are regarded for guidance only to establish the minimum standards and quality. (Contractor may provide equivalent).

Finish	Code	Colour	Comments
Building Element			
Ceilings		Flat Ceiling White	
Walls			
Entry/Hall/ Living / Bedrooms			*Washable Low Sheen*
Kitchen, Bathroom and Laundry			
Doors, skirting and architraves			
General Level			
Silver, Gold, and Platinum level			*Provide 30% colour contrast to doors or walls or skirting, architraves, and doors*
Flooring			
Sheet Vinyl			
Entry / Living/Hall Bedrooms Kitchen			*Sheet Vinyl P2 Slip resistance Domestic /timber look*
Floor Tiles – wet areas generally			
Primary and Secondary Bathrooms, Ensuite Bathroom			*All Floor Tiles to be P3 Slip resistance*
Separate wc and Laundry (if applicable)			
Kitchen			
Splashback Tiles			
Grout			
Joinery			
Benchtops			
Internal Surfaces			
Exposed carcass surfaces			
Toe Recess			
Bathroom			
General Walls and Splashbacks			
Grout			
Joinery			
Vanity Top			
Internal Surfaces			
Exposed carcass surfaces			
Toe Recess			
Accessories			
Wardrobe Frame Panels		White Powdercoat	*White Vinyl faced doors only*
Curtain rod Brackets		White	
Curtains / Fabric		White or neutral colours only. No patterns	*Metal Flick sticks to be provided for each curtain drop for Platinum Level accommodation*

APPENDIX 1: DRAWING DETAILS

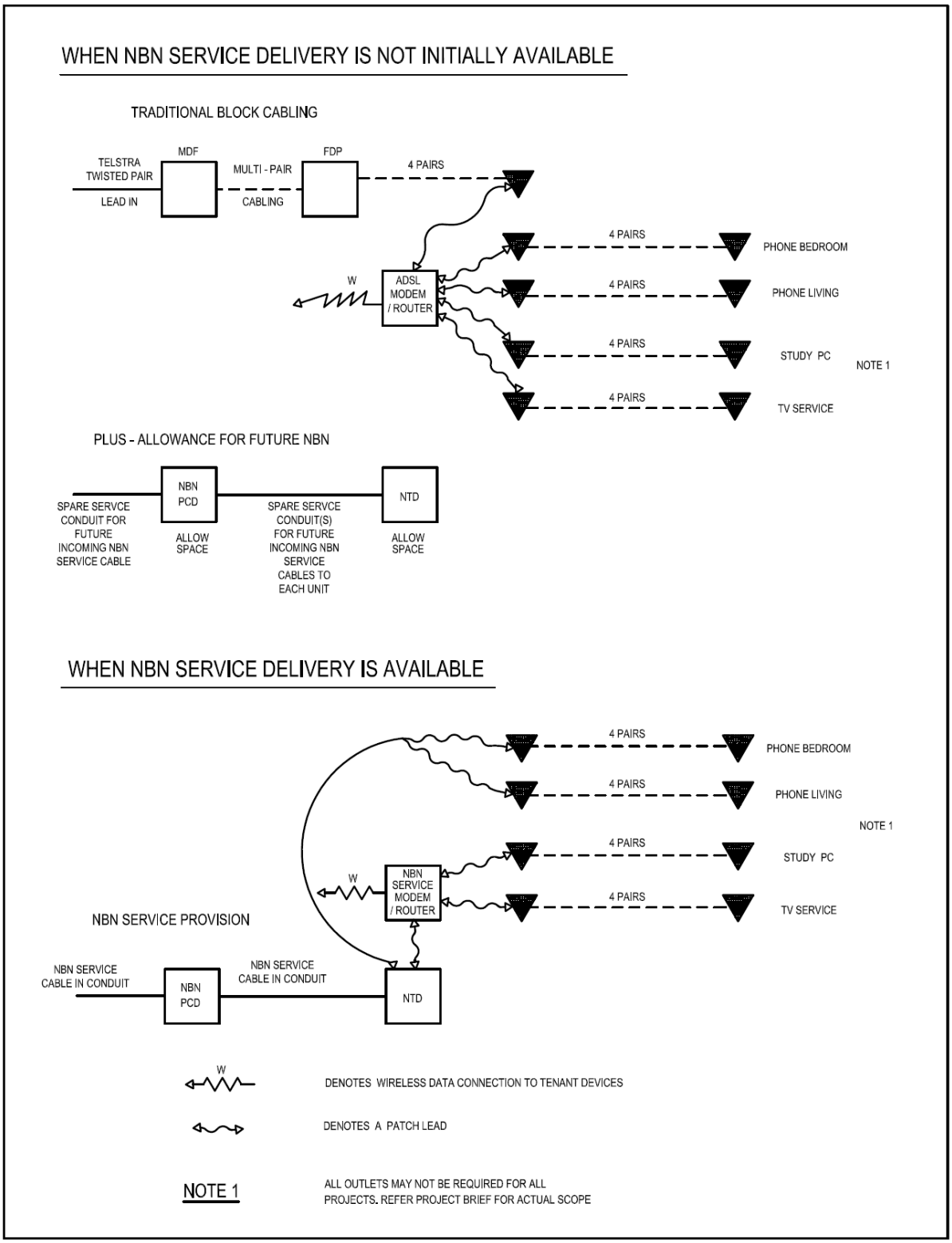
1 FENCING

1.1 STANDARD TYPICAL PALING FENCING DETAIL



2 TELECOMMUNICATIONS - NBN INSTALLATION

2.1 TYPICAL DETAIL E6.01



AMENDMENTS

DRAWING INDEX SYSTEM

Queensland Government
Department of Housing and Public Works
BUILDING AND ASSET SERVICES
80 ALBERT STREET
BRISBANE, QUEENSLAND, 4000

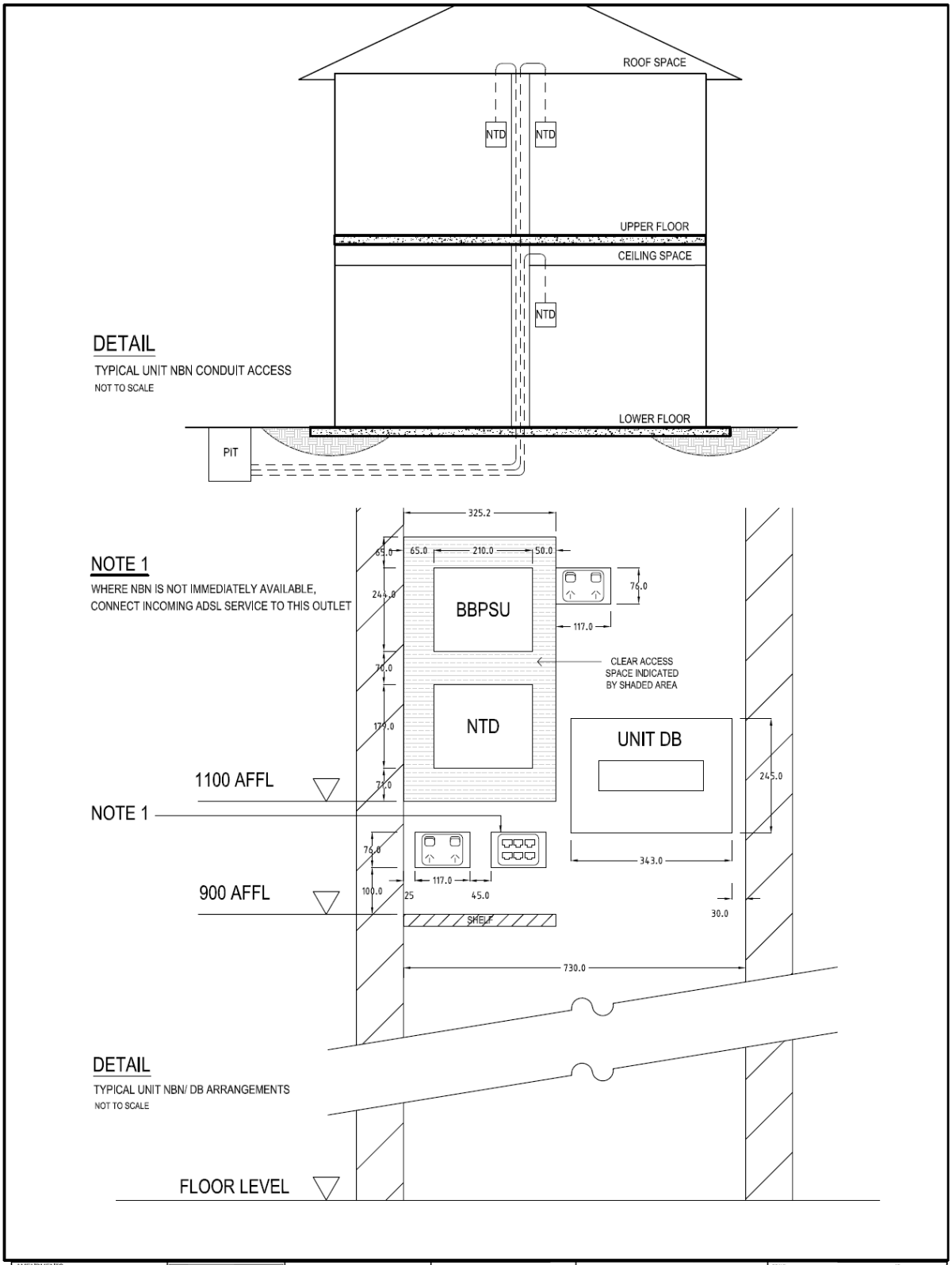
MICHAEL PRICE 20/10/2017
VINCE JENKINSON & MICHAEL PRICE 20/10/2017
VINCE JENKINSON 20/10/2017

SOCIAL HOUSING
TYPICAL TELECOMMUNICATIONS INSTALLATION REQUIREMENTS
SHEET 1 OF 2

CLIENT
DEPARTMENT OF HOUSING SERVICES

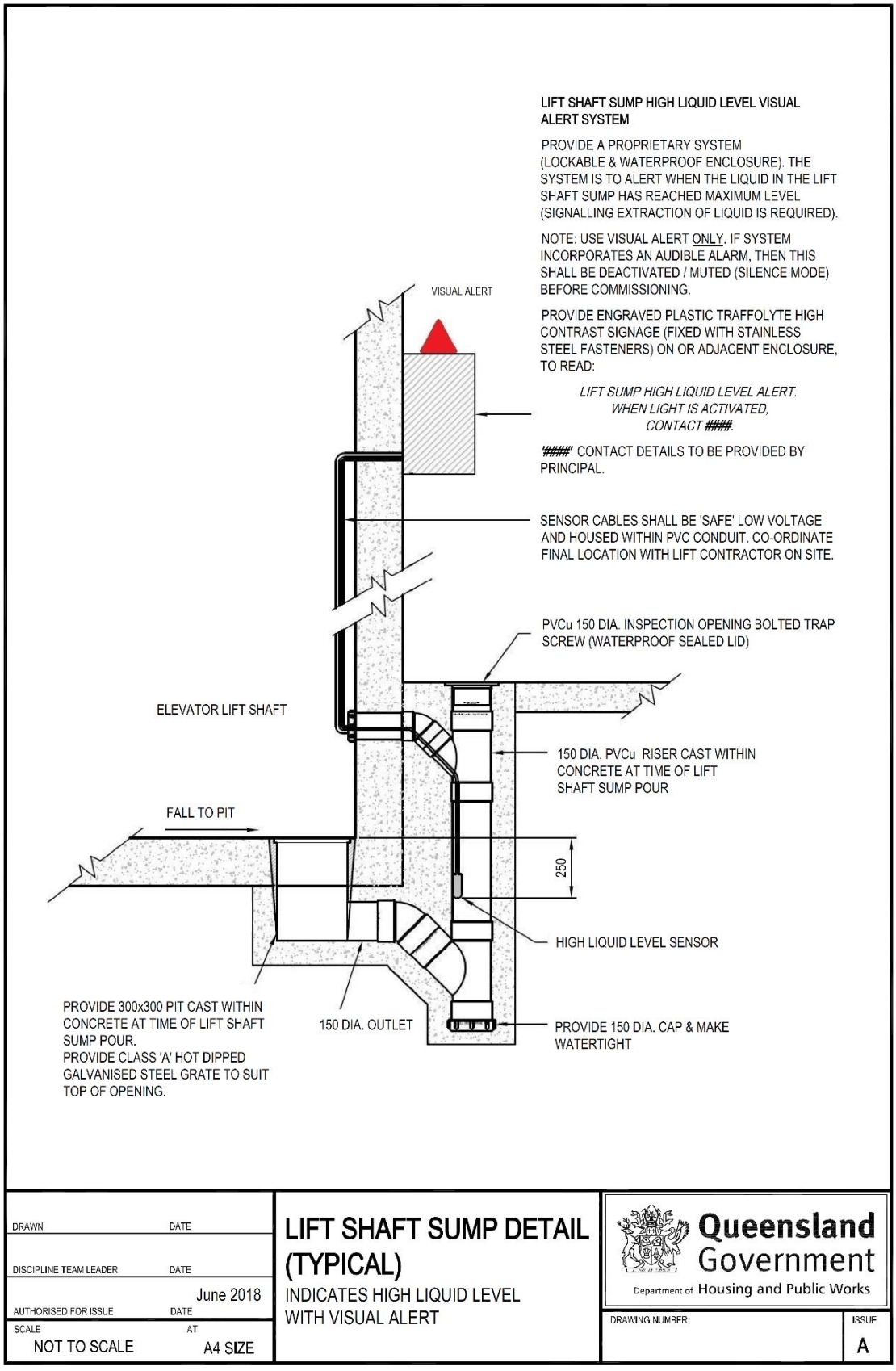
SCALE NTS
AT A4 SIZE
MASTER SITE NUMBER N/A
DRAWING NUMBER E6.01

2.2 TYPICAL DETAIL E6.02



3 SERVICES

3.1 LIFT SHAFT SUMP DETAIL (TYPICAL)



4 APPROVED SMOKE ALARM PRODUCTS AND SUPPLIERS

Building and Asset Services

Approved Smoke Alarm Products and Suppliers

Current as at 31 January 2019

BASINSALM

BAS has recently varied the contract for WOGSMKALM Supply of Smoke Alarms to include some additional Approved Smoke Alarms. The below products are the Approved Smoke Alarms that Contractors can purchase for Installation.
✓ - approved for supply
X – not approved for supply

BAS Approved Products	CNW	Go Electrical	Rexel Holdings	Haymans	L & H Group
Brooks EIB605TYCRF	✓	✓	✓	✓	✓
Brooks EIB166e	✓	✓	✓	✓	✓
Brooks EIB650iCRF	✓	✓	✓	✓	✓
Brooks EIB100MRF	✓	✓	✓	✓	✓
Brooks BAVISA240	✓	✓	✓	✓	✓
Brooks EIB171RF	✓	✓	✓	✓	✓
Brooks EIB170RF	✓	✓	✓	✓	✓
Clipsal 755RLPSMA4	✓	✓	✓	✓	✓
Clipsal 755LPSMA4	✓	✓	✓	X	✓
Clipsal 755RFB2	✓	✓	✓	✓	✓
Clipsal 755RB	✓	✓	✓	✓	✓
PSA LIF5800RL/2	✓	✓	X	✓	✓

*Please note Brooks product EIB605TYCRF is planned to be discontinued and replaced by **Brooks EIB650iCRF**. The EIB605TYCRF is made up of two components, the smoke alarm (EIB605TYC) and the RF module (EIB605MYTRF). Both these items are still available separately and can still be purchased from Brooks, they will come in two boxes instead of in a single kitted package. Alternatively, you can use the EIB650iCRF if you wish to buy a kitted item product. Should you have any questions in relation to this please contact Justin Hogg from Brooks at justin.hogg@brooks.com.au.*

Department of Housing and Public Works

Queensland Government

APPENDIX 2: VERSION CONTROL

38 VERSION CONTROL

VERSION CONTROL			
Date	**Specification Section / Schedule**	**Notable Updates**	
Apr '20	315 Metal fixtures Clause 4.9 SECURITY MESH AT PARTY WALL	**Deleted**	Requirement deleted: Where a clear roof space is created between adjoining units due to fire rated ceilings in lieu of full height fire rated dividing walls, and more than one access hatch to the roof space is provided, then install F62 reinforcing mesh in roof space over wall between adjoining units and continuous across centre of stairwell as appropriate, to separate each unit roof space from the other. Fix between truss chord and 75 x 25mm battens nailed to side of truss chord at 600mm centres.
Oct '20	330 Plumbing and drainage Clause 8 TAPWARE	**Revised**	LAUNDRY TUB SPOUT, LAUNDRY TUB WALL MIXER, LAUNDRY TUB SET and WASHING MACHINE TAPS clarification of location and heights.
Mar '21	360 Electrical and mechanical services Clause 5.6 SOCKET OUTLETS (SOS)	**Revised**	**Mounting heights** Unless otherwise specified in the Schedule, mounting heights are to be as follows: In <u>all levels of accommodation</u>: 300mm above floor and not less than 150mm away from internal corners, adjacent to nominated bed-head position
Mar '21	330 Plumbing and drainage Clause 8 TAPWARE REQUIREMENTS	**Revised**	**<u>Gold</u> and Platinum Level accommodation:** SHOWER grab rail and handset or equal 4 Star WELS rated. As per AS 1428.1. Where required for compliance, restrict hose range with a 'shower hose retainer'. Refer to Spec Part A for requirements.
Mar '21	360 Electrical and mechanical services Clause 28.10 APPLIANCES	**Revised**	Gold & Platinum Level accommodation Ovens - provide wall oven with side hinged door. Mid-shelf of oven to be level with benchtop.
Mar '21	220 Hardware Clause 3.13 SUNDRY HARDWARE FIXTURES	**Revised**	Department of Housing requirement: SHDG change. Toilet roll holders. Gold and Platinum Level accommodation: Description: Semi-recessed Mounted Chrome.
Jun '21	220 Hardware Clause 3.13 SUNDRY HARDWARE FIXTURES	**Revised**	<u>Gold</u> & Platinum Level requirements Provide proprietary grab rail to double up as bathroom towel rail in Gold and Platinum level dwellings.
Nov '21	Throughout	**Revised**	Department name and email addresses updated due to MOG
Nov '22	Section 315 Metal fixtures Clause 4.9 SECURITY MESH AT PARTY WALL	**Deleted**	Department of Housing requirement removed: Corner carousel (Lazy Susan)
Nov '22	Section 360 Electrical & mechanical services Clause 5.4 SWITCHES	**Deleted**	Department of Housing requirement removed: Isolator switch to refrigerator not required.
Nov '22	Section *220 Hardware* Clause *3.13 SUNDRY HARDWARE FIXTURES*	**Deleted**	Department of Housing requirement removed: Semi-recessed toilet roll holder to Gold level bathrooms.
Nov '22	Section	**New**	Department of Housing requirement added:

	110 Concrete – 6 concrete finishes Clause 7.4 LOCATIONS / FINISHES		Surfaces under concrete balconies suspended slabs: Off-form, finished with proprietary textured paint system finishes.
Feb '23	Section 370 Fences and External Walls Clause 1 GENERAL	**New**	Department of Housing requirement added: Refer to Standard Fence Detail LD402. Regions of "Southern Queensland" substitute pine with treated hardwood. * The regions of *'Southern Queensland'* defined as climate zone 5 and the part of climate zone 2 from Fraser Coast and south. Refer BCA Vol 2. Fig. 1.1.4 for a map of Climate Zones. *'Regional Queensland'* is the balance of the State. https://www.abcb.gov.au/sites/default/files/resources/2022/Climate-zone-map-qld.pdf
May '23	Section 330 Plumbing and drainage Clause 8 TAPWARE REQUIREMENTS	**New**	PS-1 Department of Housing requirement added: Gold and Platinum Level accommodation: Handheld shower kit with inverted T-shaped grab rail as described, configured, and fixed in accordance with AS1428.1.
May '23	Section 330 Plumbing and drainage Clause 8 TAPWARE REQUIREMENTS	**New**	PS-2 Department of Housing requirement added: Hose cocks. Standard T handle with ½ turn tap and ceramic disc OR Standard Lever handle with ¼ turn tap and ball joint.
May '23	Section 220 Hardware Clause 3.12 DOOR CONTROLLERS	**New**	PS-3 Department of Housing requirement added: Gold and Platinum Level accommodation: Provide AS1428.1 compliant low opening pressure, CAM action door closers to fire doors with backcheck and delayed closing, suitable for people with a physical disability.
May '23	220 Hardware Clause 3.13 SUNDRY HARDWARE FIXTURES	**New**	PS-4 Department of Housing requirement added: Gold and Platinum Level accommodation: Provide grab rails to side wall nearest to the WC pan, as described and fixed in accordance with AS 1428.1. Refer Figure 42. (i) Option A. Note: Where spatially unachievable the alternative system (ii) Option B of a 90-degree arm may be considered.
May '23	220 Hardware Clause 3.13 SUNDRY HARDWARE FIXTURES	**Revised**	PS-5 Department of Housing requirement revised: All accommodation: Provide proprietary grab rail to double up as bathroom towel rail for all dwellings.
May '23	Section 360 Electrical & mechanical services – Clause 7.1 AUTOMATIC DOOR OPENER	**Revised**	PS-10 Department of Housing Requirement revised: PROVISION FOR FUTURE INSTALLATION Gold and Platinum Level accommodation: Provide cabling conduit, switching patch and single SO to facilitate future installation of automatic door operator. SO mounted above hinge side. Location: - All self-closing door situations and; - sliding glass doors required for noise attenuation. Mount above sliding panel
May '23	Section 300 Carpet Clause 4.2 Laying Carpets	**Revised**	PS-13 Department of Housing requirement revised: Flooring types revised. Carpet generally not to be provided on projects unless identified in the Project Brief and/or project specific design requirements.

May '23	Section 220 Hardware Clause 3.13 SUNDRY HARDWARE FIXTURES	**Revised**	PS-14 Department of Housing requirement revised: Gold and Platinum Level accommodation: Provide semi-recessed toilet roll holder and locate in accordance with AS 1428.1.
Oct '23	Section 101 Preliminaries Clause 3.4 MATERIALS, LABOUR, AND CONSTRUCTIONAL PLANT	**Deleted**	Department Project Signboard not required unless otherwise advised.
Jan '24	Throughout	**Revised**	Department name updated due to MOG
Jan '24	Section 330 Plumbing & drainage Clause 8 TAPWARE REQUIREMENTS	**Revised**	*Washing machine taps* *All accommodation:* Locate within laundry tub cabinet.
Jan '24	Section 270 Tiling Clause 48 FINISHES	**Deleted**	*Shower tiling* Shower floor area to provide (30% minimum luminance contrast deleted and no longer a requirement.
Jan '24	Section 320 Timber fixtures Clause 2.2 TIMBER JOINERY REQUIREMENTS	**Revised**	*Microwave shelf* Changes to height requirements of microwave shelf. In particular differing heights according to level of occupancy. (i.e. Silver, Gold, and Platinum)
May '24	Section 360 Electrical & mechanical services Clause 10 EVAPORATIVE COOLING UNITS	**Revised**	*Roof mounted evaporative coolers* Dwellings within NCC Climate Zone 3 to be provided with evaporative coolers. Units to be ground, or wall mounted only.

LCJ Engineers Pty Ltd
Consulting Engineers
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601 Flinders Street Townsville QLD 4810
PO Box 1498 Aitkenvale QLD 4814
Tel: (07) 4721 5800
townsville@lcjengineers.com.au
www.lcjengineers.com.au

DPWA166/AC/DN

2 February 2025

Department of Housing, Local Government,
Planning and Public Works
Level 6 AM60
42-60 Albert Street
BRISBANE QLD 4000

ATTENTION: Mr John Lawrence
Senior Civil Engineer
QBuild Technical Services

Dear John

PN 93378
STORMWATER MANAGEMENT PLAN
PROPOSED QHIGI HOUSING CONSTRUCTION PROGRAM
8 MILES AVENUE AND 1265 RIVERWAY DRIVE, KELSO
LOT 2 ON RP741376 AND LOT 1 ON RP741376

LCJ Engineers (LCJ) has been commissioned to provide a hydraulic investigation to identify stormwater drainage issues for the above proposed development.

The site is located on two (2) properties, 8 Miles Avenue (Lot 2 on RP741376) and 1265 Riverway Drive (Lot 1 on RP741376), Kelso which are currently residential properties with relatively flat grade with a combined total area of approximately 1618m^2. The proposed development consists of social housing of two (2) separate buildings, with nine (9) 1-bed and four (4) 2-bed units. There is an existing sewer line running north-south at the rear of 1265 Riverway Drive which requires a 3.0m clearance / easement.

The Department of Housing, Local Government, Planning and Public Works (QBuild) has provided the schematic design drawings listed in Table 1 and attached to this report. A contour and detail survey was conducted by Statewide Survey Group (plan no. 10427-300 rev A) on 8 April 2023 and is attached to this report.

The site is bordered by Miles Avenue to the west, Riverway Drive to the east, and residential properties to the north and south. Miles Avenue is a local (Council) street with kerb and channel located on both sides of the road, and existing underground stormwater culverts towards the northern and southern end of the block. Riverway Drive is a State-Controlled road (Queensland DTMR) that serves as the main road for the Upper Ross community.

In accordance with Townsville City Council (TCC) City Plan, the site and surrounding area is identified within Low-Density Residential zone, refer sketch **SK01**.

FOR INFORMATION ONLY

Table 1 – Architectural drawings

Drawing number	Issue	Title
93378/SD/A00.01	B	Cover Sheet
93378/SD/A00.02	B	Planning Diagrams
93378/SD/A00.03	B	Existing Site
93378/SD/A01.01	B	Demolition Plan
93378/SD/A02.01	B	External Works Plan – Sheet 1
93378/SD/A02.02	B	External Works Plan – Sheet 2
93378/SD/A02.03	B	External Works Plan – Sheet 3
93378/SD/A02.04	B	First Floor Plan
93378/SD/A02.05	B	Unit Plans – Sheet 1
93378/SD/A02.06	B	Unit Plans – Sheet 2
93378/SD/A02.07	B	Unit Plans – Sheet 3
93378/SD/A02.08	B	Unit Plans – Sheet 4
93378/SD/A02.09	B	Unit Plans – Sheet 5
93378/SD/A02.10	B	Unit Plans – Sheet 6
93378/SD/A03.01	B	Roof Plan
93378/SD/A04.01	B	Elevations – Sheet 1
93378/SD/A04.02	B	Elevations – Sheet 2
93378/SD/A05.01	B	Sections
93378/SD/A06.01	B	3D Views
93378/SD/A06.02	B	ESD Strategy
93378/SD/A07.01	B	Window and Sliding Door Schedule
93378/PD/A08.01	B	Fire Hydrant Diagram

LAWFUL POINT OF DISCHARGE

The site is bordered by Miles Avenue to the west, Riverway Drive to the east, and residential properties to the north and south. Thus, the legal point of discharge for this development is to the west and east.

It is to be noted that generally, DTMR preference is to have minimal discharge onto their State-Controlled road. Therefore, the proposed development is to have the majority of the site runoff to discharge onto Miles Avenue.

HYDRAULIC ASSESSMENT

TCC Flood Mapping Service and TownsvilleMAPS have been utilised to determine the 1% Annual Exceedance Probability (AEP) extent for this site. The attached 1% AEP flood extent map (sketch **SK02**) shows that within the development site, there is a single grid that shows an area of flooding. However, this flood location is isolated and is approximately located to the rear of the house on 8 Miles Avenue. Cross referencing this location with the survey, it appears that there might be an existing overland “drainage pinch-point” to the north of the existing house which could restrict the free drainage flow from the rear of the property to Miles Avenue and create an isolated water ponding. This area therefore is not considered to have any significant contribution to the flood area within Miles Avenue.

FOR INFORMATION ONLY

The same area of the site is also identified as a “Medium Hazard Area” for flooding, refer sketch **SK03**. However, as mentioned above, this single isolated grid area is not considered to have any significant impact on the greater flood area.

Furthermore, there are numerous properties within the vicinity that are also showing similar characteristics of isolated “flood areas” and identified as “Medium Hazard Area” which are not connected to Miles Avenue.

The TCC Flood Mapping Service has been used to determine that the 1% AEP flood level of the site is RL 23.20m (at Miles Avenue fronting the site). It is to be noted that the 1% AEP flood level of the site is obtained from Miles Avenue, and not from the single grid of flood area within the subject site. To comply with the Acceptable Outcome AO1.2 of the TCC Flood Hazard Overlay Code, a freeboard of 300mm above the 1% AEP (i.e. the defined flood event) will be required, as such the minimum habitable floor level is to be 23.50m.

The proposed form of construction for the units is slab on ground with FFLs of 23.68m for the building on 8 Miles Avenue and 24.00m for the building on 1265 Riverway Drive.

The proposed finish levels are designed such that majority of the overland flows will discharge towards Miles Avenue. The concrete access driveway will have an integrated “V” invert to convey stormwater towards Miles Avenue.
The stormwater runoff from the building roof is to be conveyed via downpipes. It is expected that for the downpipes located on the southern side of the buildings, these downpipes will discharge onto the concrete driveway. The northern side downpipes are expected to be conveyed via underground pipes to discharge onto Miles Avenue kerb. It is to be noted that the expected roof downpipes will require an outlet pipe size of DN150, and that TCC Standard Drawing SD-085 only allows for DN90 or DN100 uPVC pipe. The limitation of pipe size for kerb adaptor is due to the dimensions of kerbing, where the top of kerb is typically 150mm higher than the invert of kerb. Thus, it is not possible to have larger pipe than DN100, otherwise it will have zero cover just behind the kerb. A grated pit within the boundary where the DN150 will change to the DN90 or DN100 is recommended to be installed to provide overflow relief.

An alternative to the grated pit is to discharge the downpipes onto the ground and ensure earthworks are graded to discharge onto Miles Avenue. The earthworks will be required to ensure that runoff will not discharge onto the neighbouring properties.

STORMWATER MANAGEMENT PLAN

The proposed development may be classified as a ‘major’ development according to the criteria set out in SC6.4.2.2 of TCC City Plan. The proposed development falls only within one (1) of the seven (7) criteria set in SC6.4.2.2(1), i.e. point (b) – “*a single or multi-storey mixed/high density dwelling unit complex of more than six dwellings”*, and thus not “consists of a combination of some or all” of the criteria. However, it is expected that the development will have site filling of more than 100m^3 (but less than 2,500m^3), which Council could use to determine the development being a ‘major’ development.

The combined total of roof areas is calculated to be approximately 865m^2. This equates to a site cover of 53.5%, which is less than the maximum specified in TCC City Plan Table 6.2.1.3 PO22.

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The combined total of impervious areas is calculated to be approximately 1245m^2. This equates to a total fraction of impervious of 0.77, which is more than Council's maximum allowance of 0.65 for "low density residential" as outlined in TCC City Plan Table SC6.4.9.2.

The Council's allowance fraction of impervious of 0.65 has been adopted as the base for determining pre-development stormwater flows. The pre-development flows are summarised in Table 2.

The stormwater drainage flows were calculated using the rational method for the purposes of determining onsite detention. The time of concentration was determined by recommended roof drainage system travel times (5 minutes).

$Q_y = C_y.{}^tI_y.A/360$ *(QUDM - Equation 4.2)*

Where:

Q_y	=	Peak flow rate (m^3/s) for annual exceedance probability (AEP) of 1 in '*y*' years
y	=	Average recurrence Interval (ARI) in years
C_y	=	Coefficient of discharge (dimensionless) for AEP of 1 in '*y*' years
F_y	=	Frequency Factor – As per QUDM Table 4.5.2
C_{10}	=	10-year discharge coefficient – As per QUDM Table 4.5.3
${}^1I_{10}$	=	1-hour rainfall intensity for the 10-year ARI (10% AEP)
	=	71.8 mm/hr for Kelso
A	=	Area of catchment (ha)
	=	0.162
${}^tI_y$	=	Average rainfall intensity (mm/hr) for a design duration of 't' hours/minutes and an AEP of 1 in 'y' years
t	=	The nominal design storm defined by the time of concentration
	=	5 minutes
f_i	=	Fraction impervious

Table 2 – Pre-developed flows

Hydrology event	Pre-developed case *Zoning allowance scenario, i.e. f_i = 0.65, t_c = 5 mins, C_{10} = 0.83*		
	C_y	${}^tI_y$ (mm/hr)	Q (L/s)
63% AEP (1-year ARI)	0.66	107	31.85
39% AEP (2-year ARI)	0.71	122	38.64
18% AEP (5-year ARI)	0.79	168	59.41
10% AEP (10-year ARI)	0.83	197	73.58
5% AEP (20-year ARI)	0.87	225	88.19
2% AEP (50-year ARI)	0.95	261	111.80
1% AEP (100-year ARI)	0.99	287	128.31

The breakdown of the developed site area adopted in our stormwater calculations is shown in Table 3. The post-development flows are summarised in Table 4.

Table 3 – Post-development Site characteristics

Area type	Area (m^2)
Roof	865
Driveway and footpath (beyond roof)	380
Total	1245
Total lot area	1618
Fraction Impervious (f_i)	0.77

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Table 4 – Post-developed flows

Hydrology event	Post-developed case f_i = 0.77, t_c = 5 mins, C_{10} = 0.85		
	C_y	^tI_y (mm/hr)	Q (L/s)
63% AEP (1-year ARI)	0.68	107	32.77
39% AEP (2-year ARI)	0.73	122	39.76
18% AEP (5-year ARI)	0.81	168	61.13
10% AEP (10-year ARI)	0.85	197	75.71
5% AEP (20-year ARI)	0.90	225	90.74
2% AEP (50-year ARI)	0.98	261	115.04
1% AEP (100-year ARI)	1.00	287	128.83

'Simplistic' guidance on initial sizing of detention basins is not provided in QUDM 2016 but is provided in Section 5.05.1 of QUDM 2007. The formulae to determine the initial basin sizing are as follows:

V_s/V_i	=	r(1+2r)/3	*Culp – 1948*	*Equation 5.01*
V_s/V_i	=	r	*Boyd – 1989*	*Equation 5.02*
V_s/V_i	=	r(3+5r)/8	*Carroll – 1990*	*Equation 5.01*
V_s/V_i	=	r(2+r)/3	*Basha – 1994*	*Equation 5.01*

Where:

V_s	=	Initial Basin Sizing
r	=	Reduction Ratio
	=	$(Q_i-Q_o)/Q_i$
Q_i	=	Post development flow
Q_o	=	Predevelopment flow
V_i	=	Initial estimate of the inflow volume
	=	$4t_cQ_i/3$ – if rational method used to determine Q_i

QUDM 2007 states the following in relation to the above formulae:

The above procedures may give widely different answers and thus should be used with care. Typically, Basha's equation produces a result closest to an average of the four (4) methods. A comparison of the pre and post development stormwater flows based on the Basha Equation is provided in Table 5.

Table 5 –Pre vs post-development stormwater flows.

Hydrology event	Pre-development Flow, Q_o (L/sec)	Post-development Flow, Q_i (L/sec)	Reduction Ratio (r)	V_i (m^3)	V_s (m^3)
63% AEP (1-year ARI)	31.85	32.77	0.0281	13.11	0.4
39% AEP (2-year ARI)	38.64	39.76	0.0281	15.90	0.4
18% AEP (5-year ARI)	59.41	61.13	0.0281	24.45	0.7
10% AEP (10-year ARI)	73.58	75.71	0.0281	30.28	0.9
5% AEP (20-year ARI)	88.19	90.74	0.0281	36.30	1.0
2% AEP (50-year ARI)	111.80	115.04	0.0281	43.01	1.3
1% AEP (100-year ARI)	128.31	128.83	0.0040	51.53	0.2

The proposed development therefore will increase the post-development storm flows. Using initial sizing methods (Basha Equation) the required additional flood storage for the increase in impervious area is 1300L for a 2% AEP event. The required flood storage can be achieved by installing two (2) above ground rainwater tanks, one (1) for each building with a minimum volume of 650L. The rainwater tanks will be used to detain the excess discharge from the proposed development. To be effective as stormwater detention, the storage tank

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must fully discharge over a period of around 12 to 24 hours. To achieve the necessary decant rate for the detention tank, the tank is required to be fitted with a 10mm diameter outlet orifice. Refer sketch **SK04**.

STORMWATER QUALITY

The total area of the subject site is 1,618m^2. This is less than the area specified in the TCC City Plan SC6.4.8 of 2,500m^2 for the stormwater quality management. Therefore, in accordance with the TCC City Plan, the proposed development is not anticipated to trigger the stormwater quality management.

The proposed development has been assessed using criteria in Schedule 6.7.3 'Application requirement' from TCC City Plan in Table 6.

Table 6 - Flood hazard assessment criteria

Performance Outcome	Assessment Response
PO1 – Development in medium and high hazard areas is designed and located to minimise susceptibility to and potential impacts of flooding.	Proposed building footprint is located within an isolated area of a medium hazard area. However, the minimum floor level will still be 300mm above the 1% AEP flood level on Miles Avenue.
PO2 – Development in high hazard areas does not significantly impede the flow of flood waters through the site or worsen flood flows external to site.	N/A
PO3 – Development does not intensify use in high hazard areas, in order to avoid risks to people and property.	N/A
PO4 – Siting and layout of development maintains the safety of people and property in medium hazard areas.	The existing medium risk area is due to an isolated flood area and does not pose a risk to people and property with the development layout.
PO5 – Signage is provided within high and medium flood hazard areas to alert residents and visitors to the flood hazard.	N/A
PO6 – Development within high and medium flood hazard areas ensures any changes to depth, duration, and velocity of flood waters are contained within the site.	Proposed development is located within an isolated area of a medium hazard area. Onsite storage detention to accommodate the increase in the post-development flows will be required as noted in this report. Stormwater runoff will be discharged onto Miles Avenue.
PO7 – Development within high and medium flood hazard does not directly, indirectly or cumulatively worsen flood characteristics outside the development site, having regard to: a) Increased scour and erosion; or b) Loss of flood storage; or c) Loss or changes to flow paths; or d) Flow acceleration or retardation; or e) Reduction in flood warning times.	The existing medium risk area is due to an isolated flood area and does not pose a risk to people and other properties.
PO8 – Facilities with a role in emergency management and vulnerable community services are able to function effectively during and immediately after flood events.	N/A

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CONCLUSION

Within the proposed development area, there is an existing isolated area of flooding that is identified as a Medium Flood Hazard area. This appears to be due to an existing low spot at the rear of an existing house. There are numerous properties within the vicinity that are also showing similar characteristics of isolated “flood areas” and identified as “Medium Hazard Area” which are not connected to Miles Avenue.

This area therefore, is not considered to have any significant contribution to the flood area within Miles Avenue.

The proposed building minimum floor level will need to be set at 300mm above the 1% AEP flood level on Miles Avenue, i.e. RL23.50m.

The total fraction of impervious for the proposed development is calculated to be 0.77, which is higher than the Council’s maximum allowance of 0.65 for “low density residential”. Therefore, the increase in post-development stormwater discharge will require a detention measure. Based on our calculations, a minimum of two (2) 650L rainwater tanks with low flow outlet pipe will be sufficient to ensure post-development flows do not exceed the pre-development scenario.

With the implementation of the above recommendations, the developed site will have a minimal downstream effect on the flood storage and post-development stormwater discharge.

The above recommendations have been incorporated into the SD phase design as reflected in the attached Architectural drawings.

If we can be of further assistance, please advise Daniel Hansen of this office at your earliest convenience.

Yours faithfully,

DJ HANSEN
DIRECTOR
BE (Hons), MIE Aust, CP Eng
RPEQ No. 15948

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LCJ ENGINEERS
ABN 54 131 516 446

PROJECT: 8 Miles Ave & 1265 Riverway
JOB No: DPWA166
BY: AC
DATE: 05/07/24
PAGE: SK01

DPWA166

Zoning Map

Legend

EXT_CORE

CORE - Properties
- Properties

CORE - Road Corridor Centreline
- Main Road
- Trafficable Road

CORE - Suburbs
- Suburbs

EXT_CityPlanningScheme_Current

Precincts Labels

Zone Precinct Boundary

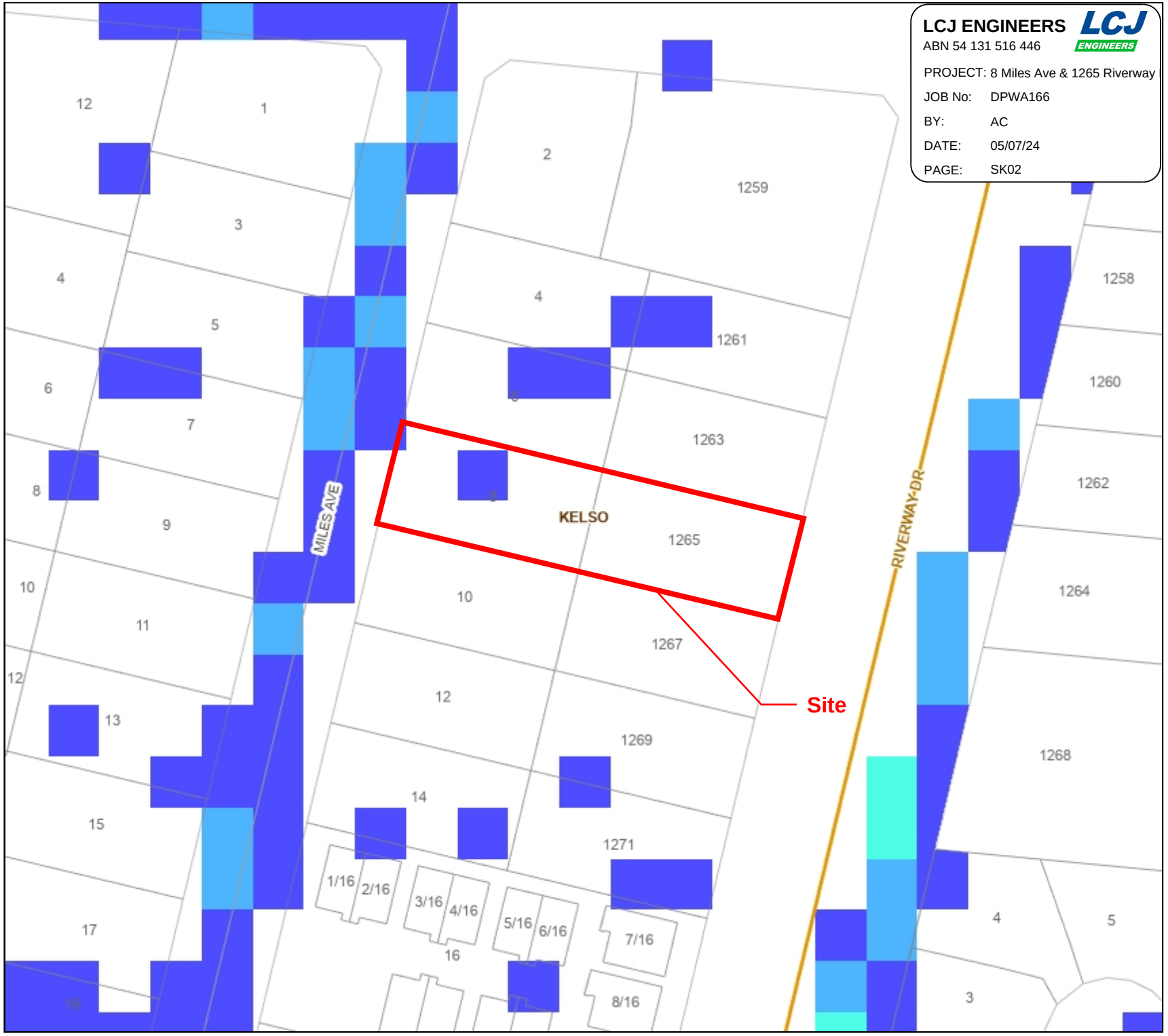
Zoning
- Low density residential
- District centre
- Open space

0 35 70
m

Scale 1: 3557

DISCLAIMER
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City of Townsville



DPWA166 - Flood Map

LCJ ENGINEERS
ABN 54 131 516 446

PROJECT: 8 Miles Ave & 1265 Riverway
JOB No: DPWA166
BY: AC
DATE: 05/07/24
PAGE: SK02

Legend

Properties
Suburbs

FLOOD STUDY AREAS
November 2014 to Present

WATER HEIGHT (1:250 - 1:5000)
2% AEP Height
1% AEP Height

1% AEP & 2% AEP DEPTH (1:250 - 1:5,000)
Water Depth: 0.01 - 0.3m
Water Depth: 0.3 - 0.5m
Water Depth: 0.5 - 0.75m
Water Depth: 0.75 - 1.0m
Water Depth: 1.0 - 1.5m
Water Depth: 1.5 - 2.0m
Water Depth: 2.0 - 3.0m
Water Depth: 3.0 - 25.0m

0 12.7 25.40
Meters

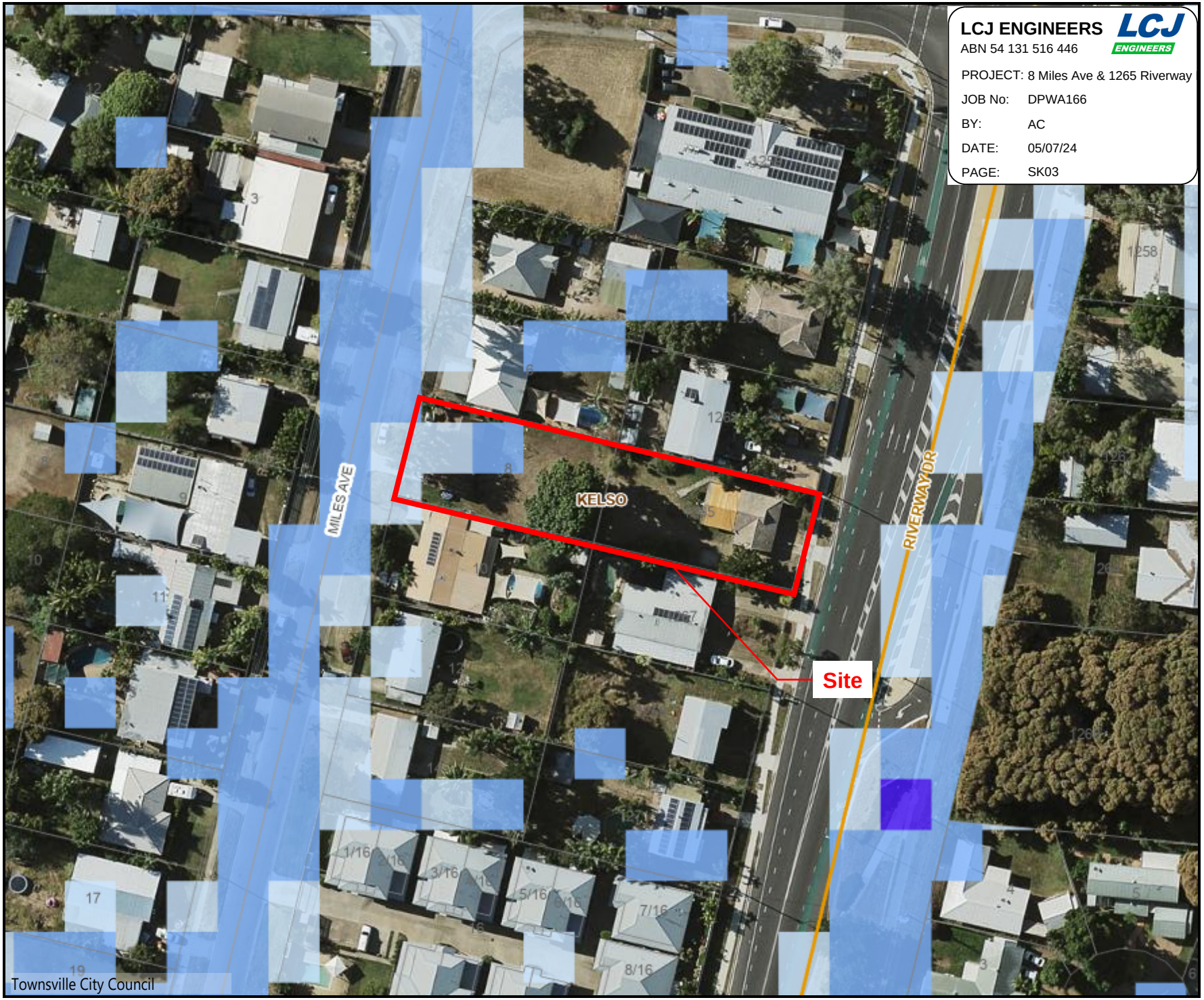
Date: 17/6/2024 10:43 AM

Scale 1: 1,000

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DISCLAIMER: Visible Scale - 1: 250 - 1 :5,000. The flooding contained in this map does not in itself indicate whether any particular property has or has not been affected by floods. The flooding information depicted shows inundation resulting from rainfall of river flows resulting from rainfall and does not include inundation due to Storm Tide. The council considers that the information presented in the map is the best available at the time of preparation. However the modelling results contained in this map are based upon projections, assumptions and analys is about circumstances that may not eventuate, or may eventuate in different combinations and with different outcomes. Because of that, the information in the map is not provided with the intention that persons will rely upon its accuracy or completeness for the purpose of making decisions with financial or legal implications. Neither the council nor its officers will be liable in contract, negligence or otherwise for the consequences of any deficiency, inaccuracy or error in the map or for the consequences of any person relying upon the map. The Flood Study Areas layer indicates the date of the flood study that has generated the flood map data. Infrastructure constructed since the completion of a flood study has the potential to alter flood levels and extents to those shown.

City of Townsville



LCJ ENGINEERS
ABN 54 131 516 446

PROJECT: 8 Miles Ave & 1265 Riverway
JOB No: DPWA166
BY: AC
DATE: 05/07/24
PAGE: SK03

DPWA166

Flood Hazard Map

Legend

EXT_CORE

CORE - Properties

Properties

CORE - Road Corridor Centreline

Main Road

Trafficable Road

CORE - Suburbs

Suburbs

EXT_CityPlanningScheme_Current

Flood hazard overlay (OM-06.1)

High hazard area

Medium hazard area

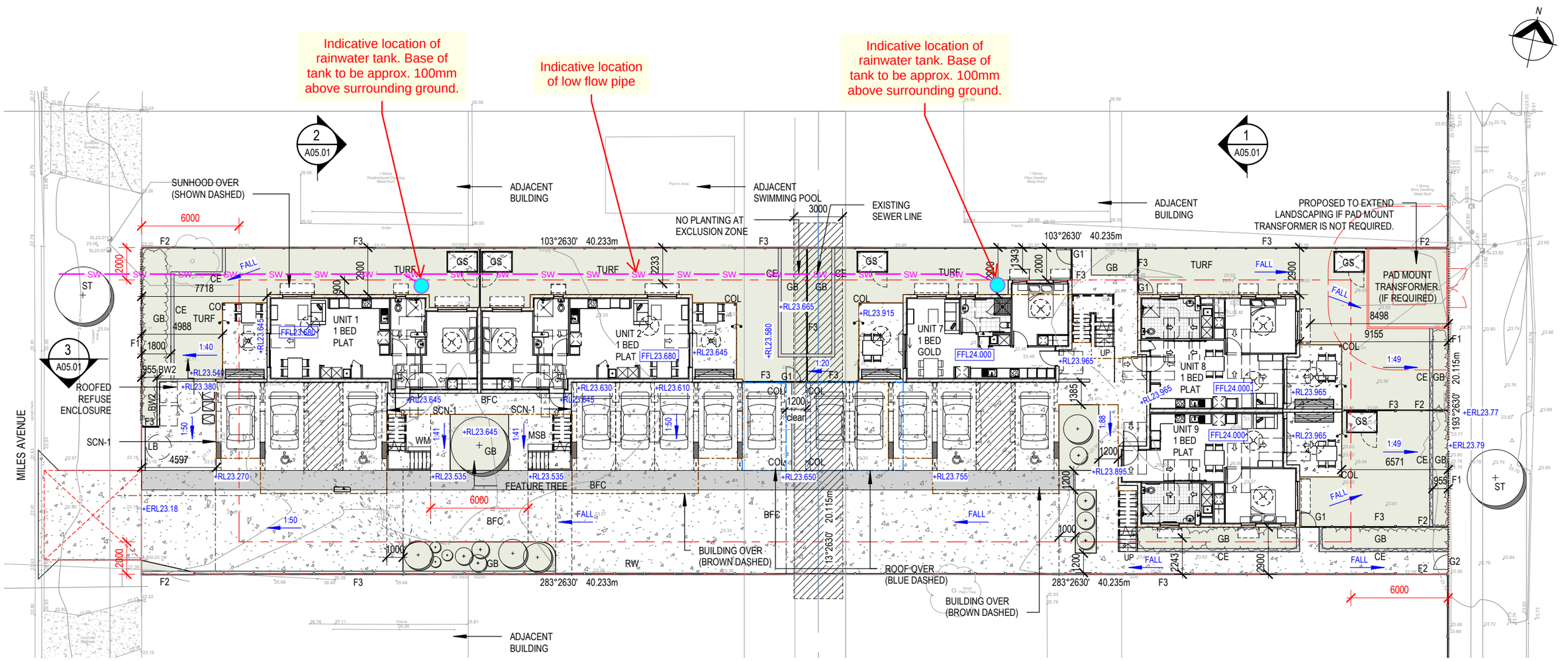
Low hazard area

0 10 20 m

Scale 1: 1000

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City of Townsville



External Works Plan

SCALE 1 : 250

LEGEND

PROPERTY BOUNDARY	ABS	ALUMINIUM BATTEN SCREEN	ST	PROPOSED STREET TREE
GB/TURF GARDEN BED/ TURFING	BOL	BOLLARD	WM	WATER METER
BFC CONCRETE DRIVEWAY (BFC)	BW2	140 BLOCKWORK WALL	WS	WHEEL STOP
BFC PAINTED COLOURED CONCRETE PATHWAY (BFC)	COL	COLUMN	F1	POOL TYPE FENCE, 1200 FENCE
CONCRETE EDGE (CE)	FI	FIELD INLET PIT	F2	TIMBER PALING FENCE RAKING (NO GAP)
	GB	GARDEN BED	F3	TIMBER PALING FENCE 1800H (NO GAP)
	G1	LOCKABLE 1800mm TIMBER PALING PRIVATE GATE	+RLXX.XX	PROPOSED SURFACE LEVEL
	G2	LOCKABLE GATE	+ERLXX.XX	EXISTING LEVEL
	GS	GARDEN SHED		ADJACENT SURFACES FLUSH
	LB	LETTER BOX		STEP
	MSB	MAIN SWITCHBOARD		
	RW	RETAINING WALL		

REQUIRED PLANNING SETBACKS MEASURED TO "OMP" SHOWN IN RED

PARTY WALLS & SLABS: VERIFY DETAIL TO ACHIEVE ACOUSTIC RATING TO COMPLY WITH NCC. ADJUST O/A BUILDING WIDTH & HEIGHT ACCORDINGLY.

LCJ ENGINEERS
ABN 54 131 516 446

PROJECT: 8 Miles Ave & 1265 Riverway
JOB No: DPWA166
BY: AC
DATE: 10/07/24
PAGE: SK04

PD-3 FOR REVIEW

DRAWING INDEX SYSTEM
FOR QBUILD USE ONLY

- ☐ CEILING PLANS
- ☐ CONSTRUCTION DETAILS
- ☐ ELEVATIONS
- ☒ EXTERNAL WORKS
- ☐ FITOUTS
- ☐ FLOOR PLANS
- ☐ FURNITURE & EQUIPMENT
- ☐ HYDRAULICS
- ☐ MASTER PLAN
- ☐ MISC DETAILS
- ☐ PLAY STRUCTURES
- ☐ ROOF PLANS
- ☐ SECTIONS
- ☐ SETOUT PLAN
- ☐ SITE PLAN
- ☐ STANDARDS / OTHER

AMENDMENTS

ISSUE	DATE	SUBJECT	AUTHO -RISED
1	22/04/2024	PD1 RESUBMISSION - FOR REVIEW	RB
B	21/05/2024	PD2 RESUBMISSION - FOR REVIEW	RB
A	25/06/2024	PD3 - FOR REVIEW	RB

Queensland Government
Department of Housing, Local Government, Planning and Public Works

ST	08/04/24
DRAWN	DATE
RB / AG	08/04/24
DISCIPLINE TEAM LEADER	DATE
AUTHORISED FOR ISSUE	DATE

QHIGI Housing Construction Program
8 MILES AVENUE & 1265 RIVERWAY DRIVE, KELSO
4X1 BED PLATINUM & 1X1 BED GOLD
4X2 BED GENERAL & 4X1 BED GENERAL
EXTERNAL WORKS PLAN - SHEET 1

SCALE	As indicated
AT	A3 SIZE
MASTER SITE NUMBER	58908
CLIENT REFERENCE NUMBER	23961
DRAWING NUMBER	93378/PD/A02.01
ISSUE	A
SHEET NO	5

SOCIAL HOUSING CONSTRUCTION PROGRAMME
8 Miles Avenue and 1265 Riverway Drive, KELSO QLD 4815 - SCHEMATIC DESIGN
13 DWELLINGS - 4x1 BED PLATINUM, 1x1 BED GOLD, 4x2 BED GENERAL, 4x1 BED GENERAL

QBUILD PROJECT NUMBER: 93378
8 MILES AVENUE & 1265 RIVERWAY DRIVE, KELSO

REAL PROPERTY DESCRIPTION

Lot 1 & 2 on RP741376
LOCAL AUTHORITY: TOWNSVILLE CITY COUNCIL (TCC)
PLANNING SCHEME: TOWNSVILLE CITY PLAN 2014 (V 2022/02)
SITE AREA: 1618m² (COMBINED)

DESIGNED TO - NCC 2022
- SHDG: TECHNICAL SUMMARY SHEETS - MARCH 2024
- Type C Construction

SHDG TSS NON-COMPLIANCES AS ACCEPTED BY SHDO:

1. BIKE PARKING NOT PROVIDED.
2. UNIT 1 & UNIT 2: CLERANCE BETWEEN LOUNGE AND DINING TABLE IS LESS THAN 1200.

STORMWATER MANAGEMENT:

1. THE CONTRACTOR SHALL REFER TO THE SITE-BASED STORMWATER MANAGEMENT REPORT PREPARED BY LCJ ENGINEERS, REFERENCE NUMBER: DPWA 166/AC/DN, FOR REFERENCE ONLY. STORMWATER MANAGEMENT SHALL BE DESIGNED TO A SITE-BASED STORMWATER MANAGEMENT PLAN PROVIDED BY THE CONTRACTORS CIVIL ENGINEER AND CONSTRUCT ACCORDINGLY.

ENERGY EFFICIENCY ASSESSMENT:

1. THE CONTRACTOR SHALL REFER TO THE SITE-BASED PRELIMINARY ENERGY EFFICIENCY ASSESSMENT PREPARED BY ACCELERATE SUSTAINABILITY ASSESSMENTS ,FOR REFERENCE ONLY.

ACOUSTIC REPORT:

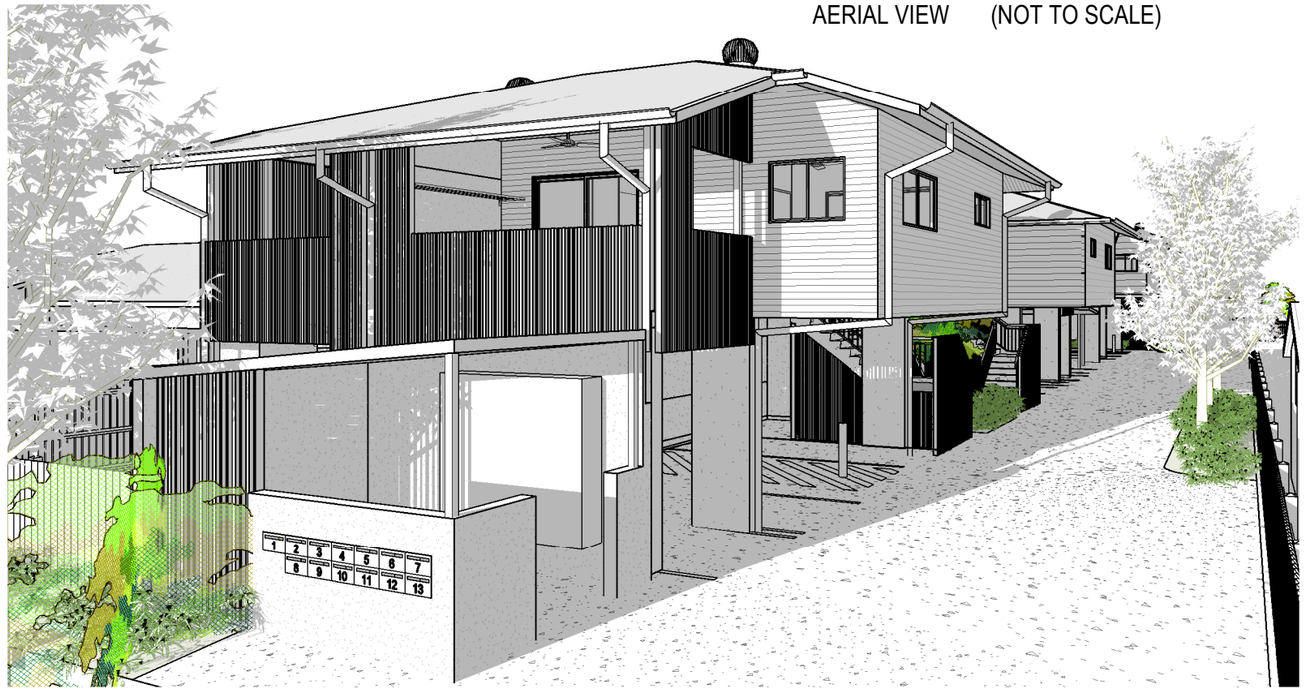
1. THE CONTRACTOR SHALL REFER TO THE SITE-BASED ACOUSTIC REPORT PREPARED BY WSP, FOR REFERENCE ONLY.

ARCHITECTURAL SCHEDULE

SHEET NO.	DRAWING NO.	DRAWING TITLE
1	A00.01	COVER SHEET
	I0427-300	CONTOUR SURVEY (FULL SITE)
	I0427-300	CONTOUR SURVEY (LOT 2 RP741376)
	I0427-300	CONTOUR SURVEY (LOT 1 RP741376)
2	A00.02	PLANNING DIAGRAMS
3	A00.03	EXISTING SITE
4	A01.01	DEMOLITION PLAN
5	A02.01	EXTERNAL WORKS PLAN - SHEET 1
6	A02.02	EXTERNAL WORKS PLAN - SHEET 2
7	A02.03	EXTERNAL WORKS PLAN - SHEET 3
8	A02.04	FIRST FLOOR PLAN
9	A02.05	UNIT PLANS - SHEET 1
10	A02.06	UNIT PLANS - SHEET 2
11	A02.07	UNIT PLANS - SHEET 3
12	A02.08	UNIT PLANS - SHEET 4
13	A02.09	UNIT PLANS - SHEET 5
14	A02.10	UNIT PLANS - SHEET 6
15	A03.01	ROOF PLAN
16	A04.01	ELEVATIONS - SHEET 1
17	A04.02	ELEVATIONS - SHEET 2
18	A05.01	SECTIONS
19	A06.01	3D VIEWS
20	A06.02	ESD STRATEGY
21	A07.01	WINDOW & SLIDING DOOR SCHEDULE
22	A08.01	FIRE HYDRANT DIAGRAM



AERIAL VIEW (NOT TO SCALE)



3D VIEW - ENTRANCE FROM MILES AVENUE (NOT TO SCALE)



STREET ELEVATION - RIVERWAY DRIVE (NOT TO SCALE)



STREET ELEVATION - MILES AVENUE (NOT TO SCALE)

SD-3

DRAWING INDEX SYSTEM
FOR QBUILD USE ONLY

- ☐ CEILING PLANS
- ☐ CONSTRUCTION DETAILS
- ☐ ELEVATIONS
- ☐ EXTERNAL WORKS
- ☐ FITOUTS
- ☐ FLOOR PLANS
- ☐ FURNITURE & EQUIPMENT
- ☐ HYDRAULICS
- ☐ MASTER PLAN
- ☐ MISC DETAILS
- ☐ PLAY STRUCTURES
- ☐ ROOF PLANS
- ☐ SECTIONS
- ☐ SETOUT PLAN
- ☐ SITE PLAN
- ☒ STANDARDS / OTHER

AMENDMENTS

ISSUE	DATE	SUBJECT	AUTHORISED
A	25/06/2024	PD3 - FOR REVIEW	RB
B	29/07/2024	PD3 - FOR REVIEW	AG
A	30/10/2024	SD1 - FOR REVIEW	AG
A	15/01/2025	SD2 - FOR REVIEW	AG
A	10/02/2025	SD3 - FOR REVIEW	AG
B	21/02/2025	SD3	AG

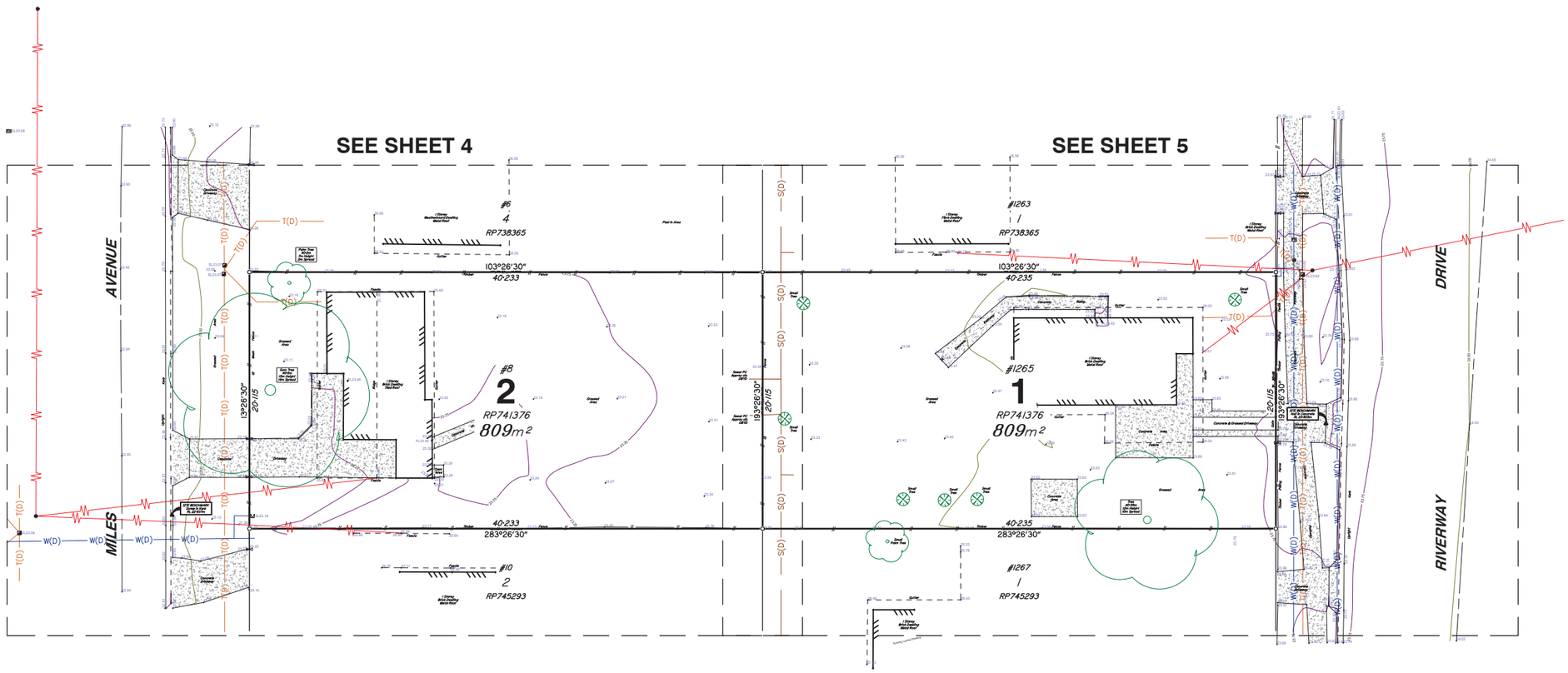
Queensland Government
Department of Housing and Public Works

ST	30/01/24	DRAWN DATE
RB / AG	30/01/24	DISCIPLINE TEAM LEADER DATE
		AUTHORISED FOR ISSUE DATE

Social Housing Construction Program
8 MILES AVENUE & 1265 RIVERWAY DRIVE, KELSO
4X1 BED PLATINUM & 1X1 BED GOLD
4X2 BED GENERAL & 4X1 BED GENERAL
COVER SHEET

SCALE	As indicated
AT	A3 SIZE
MASTER SITE NUMBER	58908
CLIENT REFERENCE NUMBER	23961
DRAWING NUMBER	93378/SD/A00.01
ISSUE	B
SHEET NO	1





LEGEND

- BOUNDARY CORNER
- SURVEY MARK
- TREE
- DEAD TREE
- SHRUB OR SMALL BUSH
- TRAFFIC SIGNALS PIT
- TRAFFIC LIGHTS
- TELECOMMS PIT
- UNKNOWN MANHOLE
- SEWER MANHOLE
- SEPTIC TANK
- FIELD INLET
- INSPECTION OPENING
- ELECTRICITY MANHOLE
- ELECTRICITY BOX
- ELECTRICITY PIT
- ELECTRICITY POLE
- ELECTRICITY STAY POST
- TELECOM POLE
- LIGHT POLE
- STORMWATER MANHOLE
- GULLY TRAP
- SW CULVERT
- WATER METER
- FIRE HYDRANT
- SLUICE VALVE
- VALVE
- WATER TAP
- RAIN WATER OUTLET
- STREET SIGN
- GAS METER
- DISABLED ZONE
- BOLLARD
- POST/COLUMN
- HILLS HOIST
- CROWN OF ROAD
- CHANGE OF GRADE
- TOP OF BANKS
- TOE OF BANKS
- EAVE/GUTTER/RIDGE
- BUILDING
- GARDEN/VEGETATION
- FENCE/GATE
- D — DRAIN
- US — UNKNOWN SERVICE
- OVERHEAD ELECTRICITY
- T(OH) — OVERHEAD TELECOMMS
- T — TELECOMMS
- UG — UNDERGROUND ELECTRICITY
- S — SEWERAGE
- W — WATER
- SW — STORMWATER
- G — GAS
- 43.00 — MAJOR CONTOUR INTERVAL
- 42.25 — MINOR CONTOUR INTERVAL
- *(A) — SERVICE QUALITY LEVEL A
- *(B) — SERVICE QUALITY LEVEL B
- *(C) — SERVICE QUALITY LEVEL C
- *(D) — SERVICE QUALITY LEVEL D

Note:
MGA Coordinates derived from Network RTK GNSS observations only. Swing from RP741376 to MGA is: 5°26'30".

Note:
Underground service lines exist in site. We recommend client engages a pipe locator to confirm exact position/depth prior to detail design or excavation. Client is advised to check with council for any additional drainage records

Note:
An Identification survey is recommended to accurately determine site boundaries prior to any detailed design or construction.

Note:
The ground levels shown hereon are surface levels at time of survey and are not necessarily natural ground levels.

Quality Level D – Service lines are drafted via existing records, and are unable to be confirmed by survey data. Intended to indicate presence of service only.

Contour Interval : – 0·25m

Scale 1:200 Lengths are in Metres.

2 0 2 4 6 8 10 12 14 16 18 20 22 24 26 28

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Cadastral Surveyor Date 11/05/2023

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Queensland Government
Department of Communnities, Housing & Digital Economy

Associated Consultants
GHD

Project
Plan of Contour Detail Survey
Over Lots 1 & 2 on RP741376
8 Miles Avenue & 1265 Riverway Drive

KELSO
Townsville City Council

LEVEL DATUM	AHD	Co-ordinate System:	
ORIGIN	PSM no. 160964 RL 23·237m	MGA2020 Zone 56	
		SCALE	1:200 @ A1
Date	08/04/23		
Surveyed	BT	Magnet Drawing Ref (.mjo):	
Drawn	JTK	10427–300 JTK 04052023	
Checked	MS	Reduced	BT
SSG REF NO.	10427–23	REVISION A	SHEET 3 OF 6
PLAN NO.	10427–300		

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ABN 77 088 374 869
CONSULTING SURVEYORS AND TOWN PLANNERS
3/123 Link Road Victoria Point, QLD 4165
Email: info@statewidesurvey.com.au
Phone: 1300 362 094

LEGEND

- BOUNDARY CORNER
- SURVEY MARK
- TREE
- DEAD TREE
- SHRUB OR SMALL BUSH
- TRAFFIC SIGNALS PIT
- TRAFFIC LIGHTS
- TELECOMMS PIT
- UNKNOWN MANHOLE
- SEWER MANHOLE
- SEPTIC TANK
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- *(D) SERVICE QUALITY LEVEL D

N

MILES AVENUE

Concrete Driveway
Palm Tree ø0·2m 7m Height 2m Spread
1 Storey Weatherboard Dwelling Metal Roof
#6 4 RP738365
Pool in Area
#1263 / RP738365
Sewer PC Approx via DBYD
Gutter
Timber Paling Fence
103°26'30" 40·233
Fascia
Small Tree
Grassed Area
Gum Tree ø0·5m 15m Height 14m Spread
1 Storey Brick Dwelling Tiled Roof
Ridge
Gutter
#8 2 RP741376 809m²
Concrete Pathway
Conc Area
Driveway
Fence
Mesh Gl
Kerb
Upright
Area
Grassed
#1265 1 RP741376 809m²
SITE BENCHMARK Screw in Kerb RL 22·937m
SL23.07
SL23.09
SL23.18
283°26'30" 40·233
#10 2 RP745293
1 Storey Brick Dwelling Metal Roof
#1267 / RP745293

Back of Kerb, Invert of Kerb, Lip of Kerb, Bitumen
UPRIGHT KERB

Contour Interval :– 0·25m

Scale 1:80 Lengths are in Metres.

0·8 0·4 0 0·8 1·6 2·4 3·2 4·0 4·8 5·6 6·4 7·2 8·0 8·8 9·6 10·4 11·2

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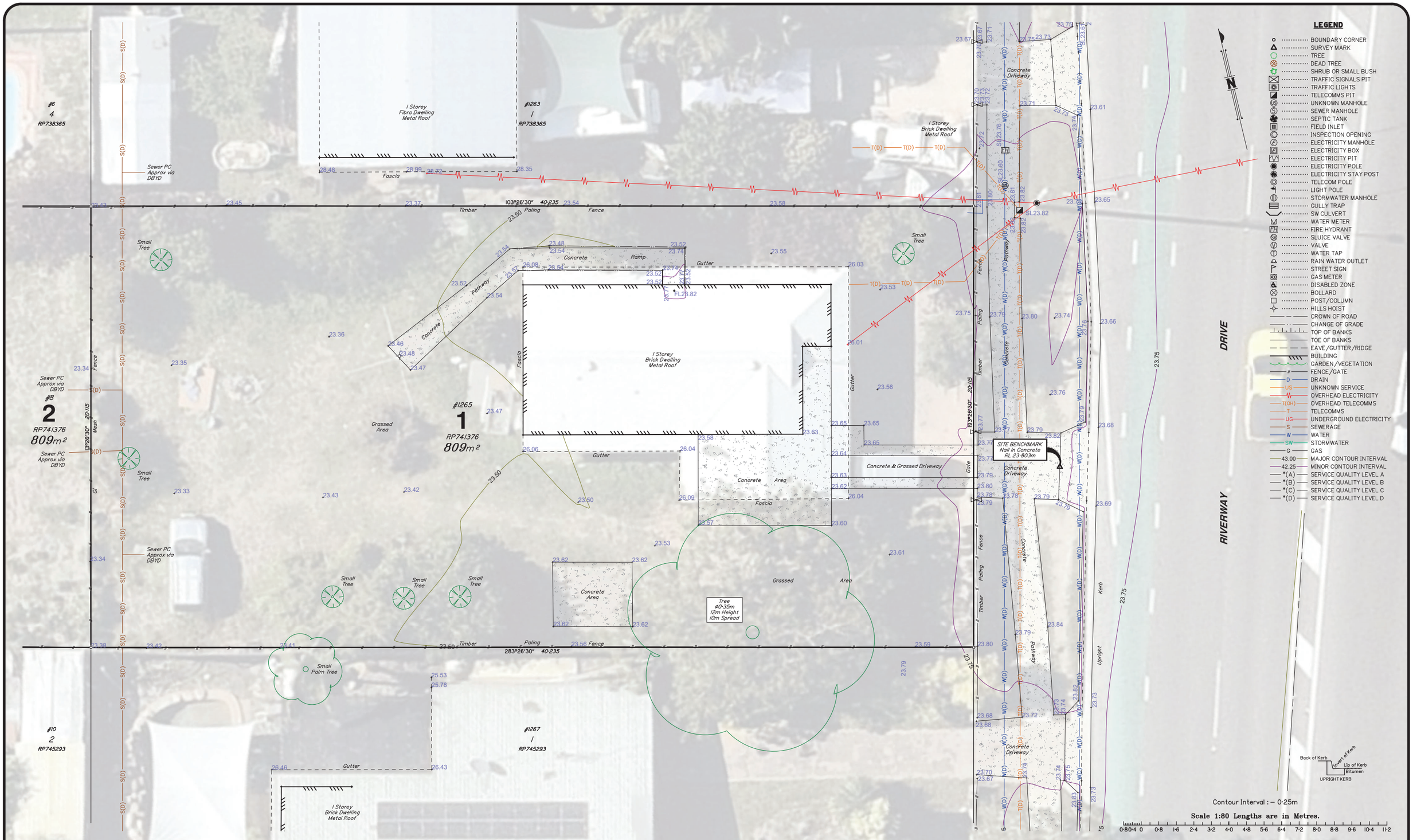
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LEGEND

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Back of Kerb, Invert of Kerb, Lip of Kerb, Bitumen
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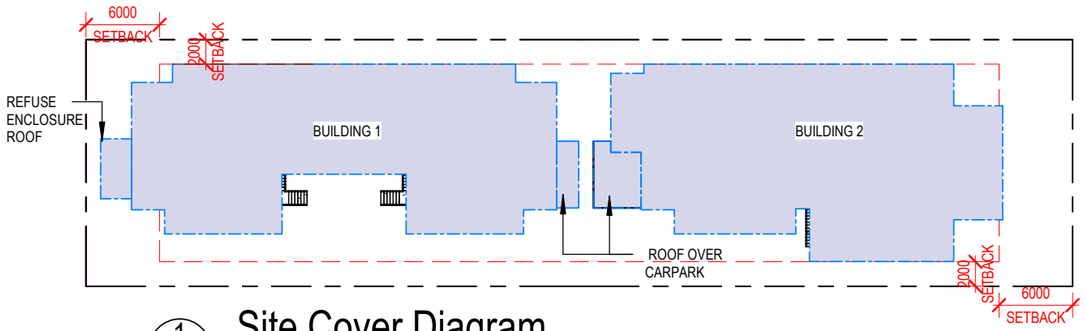
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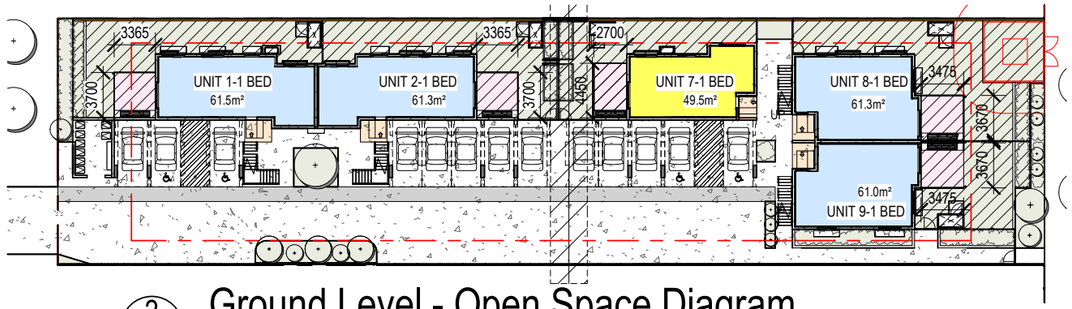
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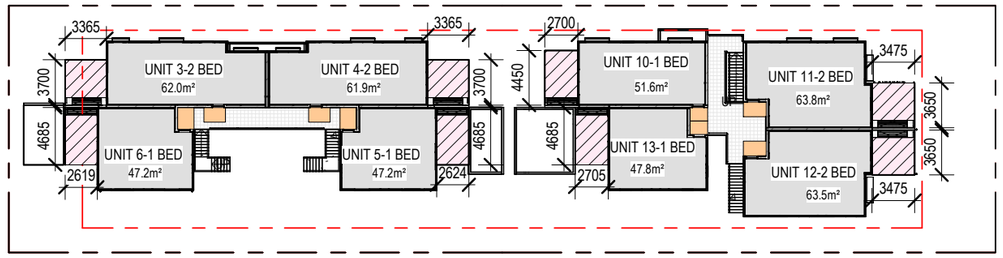
1 Site Cover Diagram

SCALE 1 : 500



2 Ground Level - Open Space Diagram

SCALE 1 : 500



3 Level 1 - Open Space Diagram

SCALE 1 : 500

TOWN PLANNING

ZONE : LOW DENSITY RESIDENTIAL ZONE

	REQUIREMENTS	PROVIDED	
MAX. BUILDING HEIGHT	8.5m (2 STOREYS)	8.1m (2 STOREYS)	not-comply
SITE COVER (TO OMP)	MAX. 65% of 1618m² (1051.7m²)	54.1% 875.9m²	comply
SETBACKS (TO OMP - SHOWN DASHED IN RED)			
FRONT (MILES AVENUE)	6.0m		not - comply
SIDE	2.0m		not - comply
REAR (RIVERWAY DRIVE)	6.0m		not - comply
LANDSCAPING	N/A		42.8m²
COMMUNUAL OPEN SPACE (COS)	N/A		N/A

PRIVATE OPEN SPACE (POS)	EACH DWELLING, HAS A PRIVATE AND FUNCTIONAL OUTDOOR LIVING AREA THAT HAS A MINIMUM DIMENSION OF NOT LESS THAN 2.4 METRES	
	DESIGNED TO SHDG 2024 V1	
REFUSE COLLECTION STRATEGY	SHDG REQUIREMENTS	
	GENERAL WASTE	RECYCLABLES
9X1 BEDROOM	80L/DWELLING/WEEK	40L/DWELLING/WEEK
4X2 BEDROOM	120L/DWELLING/WEEK	60L/DWELLING/WEEK
TOTAL	1200L	600L
BINS PROVIDED	5 x 240L (WHEELIE BIN)	3 x 240L (RECYCLE BIN)

THE SUBJECT SITE IS IMPACTED BY FLOODING.THE PROPOSED DEVELOPMENT WILL BE REQUIRED TO ACHIEVE A MINIMUM HABITABLE FLOOR LEVEL OF 23.68m.

SPACE	NO. BEDS	TYPE	FECA	UCA (patio)	GFA	PORCH	PRIVATE OPEN SPACE
UNIT 1	1	Platinum	61.5m²	10.4m²	80.9m²	4.1m²	95.1m²
UNIT 2	1	Platinum	61.3m²	10.4m²	80.9m²	4.1m²	91.8m²
UNIT 3	2	General	62.0m²	10.4m²	78.3m²	2.1m²	10.4m²
UNIT 4	2	General	61.9m²	10.4m²	78.1m²	2.1m²	10.4m²
UNIT 5	1	General	47.2m²	10.6m²	63.9m²	2.4m²	10.6m²
UNIT 6	1	General	47.2m²	10.6m²	63.9m²	2.4m²	10.6m²
UNIT 7	1	Gold	49.5m²	10.4m²	68.2m²	2.9m²	71.9m²
UNIT 8	1	Platinum	61.3m²	10.5m²	82.4m²	3.8m²	125.6m²
UNIT 9	1	Platinum	61.0m²	10.5m²	82.4m²	3.8m²	65.3m²
UNIT 10	1	General	51.6m²	10.4m²	66.8m²	1.6m²	10.4m²
UNIT 11	2	General	63.8m²	10.5m²	79.8m²	2.2m²	10.5m²
UNIT 12	2	General	63.5m²	10.5m²	79.8m²	2.2m²	10.5m²
UNIT 13	1	General	47.8m²	10.9m²	63.2m²	1.6m²	10.9m²
TOTAL	17	-	739.6m²	136.5m²	968.6m²	35.3m²	534.0m²

"Method of measurement"

FECA and UCA do not include external wall thickness

GFA = FECA + UCA + wall thickness

POS includes UCA (patio) to Units

SD-3

DRAWING INDEX SYSTEM
FOR QBUILD USE ONLY

- ☐ CEILING PLANS
- ☐ CONSTRUCTION DETAILS
- ☐ ELEVATIONS
- ☐ EXTERNAL WORKS
- ☐ FITOUTS
- ☐ FLOOR PLANS
- ☐ FURNITURE & EQUIPMENT
- ☐ HYDRAULICS
- ☐ MASTER PLAN
- ☐ MISC DETAILS
- ☐ PLAY STRUCTURES
- ☐ ROOF PLANS
- ☐ SECTIONS
- ☐ SETOUT PLAN
- ☐ SITE PLAN
- ☒ STANDARDS / OTHER

AMENDMENTS

ISSUE	DATE	SUBJECT	AUTHORISED
A	25/06/2024	PD3 - FOR REVIEW	RB
B	29/07/2024	PD3 - FOR REVIEW	AG
A	30/10/2024	SD1 - FOR REVIEW	AG
A	15/01/2025	SD2 - FOR REVIEW	AG
A	10/02/2025	SD3 - FOR REVIEW	AG
B	21/02/2025	SD3	AG

Queensland Government
Department of Housing and Public Works

ST 30/01/24
DRAWN DATE

RB / AG 30/01/24
DISCIPLINE TEAM LEADER DATE

AUTHORISED FOR ISSUE DATE

Social Housing Construction Program

8 MILES AVENUE & 1265 RIVERWAY DRIVE, KELSO

4X1 BED PLATINUM & 1X1 BED GOLD

4X2 BED GENERAL & 4X1 BED GENERAL

PLANNING DIAGRAMS

SCALE As indicated AT A3 SIZE

MASTER SITE NUMBER 58908

CLIENT REFERENCE NUMBER 23961

DRAWING NUMBER 93378/SD/A00.02

ISSUE B

SHEET NO 2



SIDE NEIGHBOUR DRIVEWAY AND HOUSE (VIEW FROM MILES AVENUE)



EXISTING GUM TREE AND MESH FENCE (VIEW FROM MILES AVENUE)



EXISTING DWELLING AND DRIVEWAY (VIEW FROM MILES AVENUE)



EXISTING TREE AND MESH FENCE (VIEW FROM RIVERWAY DRIVE)



SIDE BOUNDARY FENCE (VIEW TOWARDS FENCE ADJACENT TO 1267 RIVERWAY DRIVE, KELSO)



SIDE BOUNDARY FENCE (VIEW LOOKING NORTH TOWARDS EXISTING BRICK DWELLING)



EXISTING FOOTPATH AND BOUNDARY FENCE (VIEW FROM RIVERWAY DRIVE)



EXISTING CONCRETE FOOTPATH (VIEW FROM RIVERWAY DRIVE)

SD-3

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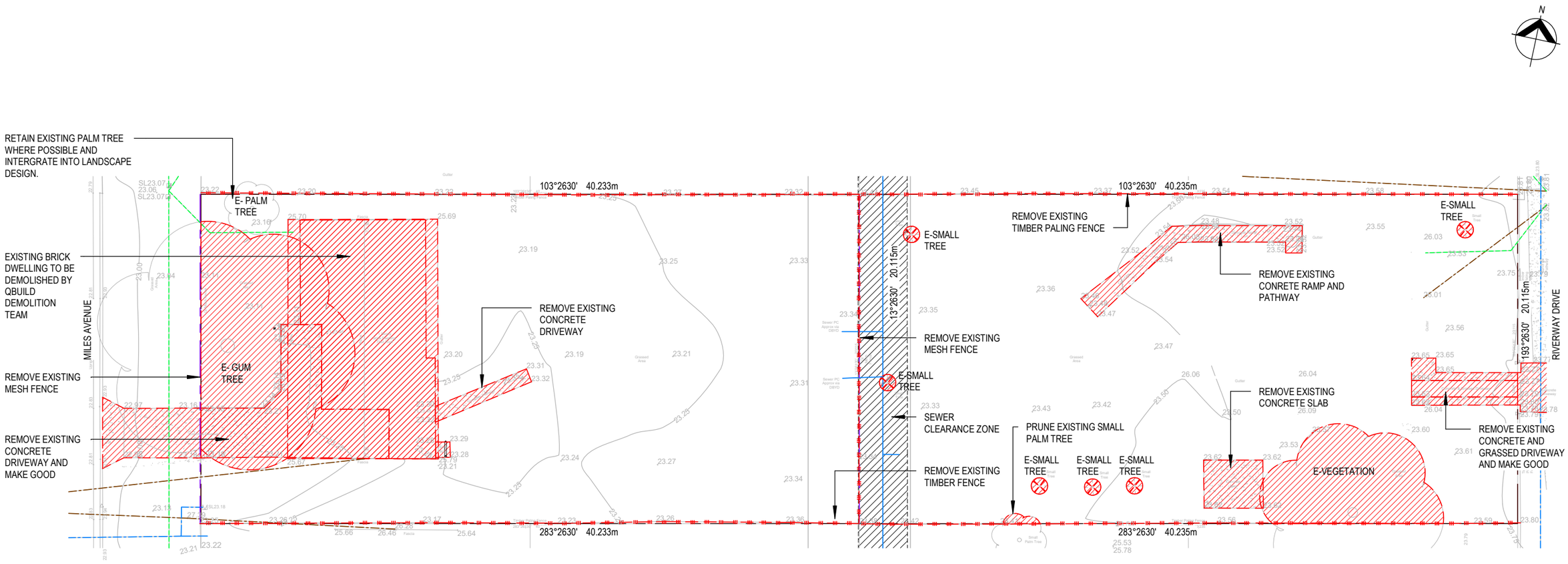
Queensland Government
Department of **Housing and Public Works**

ST — DRAWN — 22/04/24 DATE
RB / AG — DISCIPLINE TEAM LEADER — 22/04/24 DATE
AUTHORISED FOR ISSUE — DATE

Social Housing Construction Program

8 MILES AVENUE & 1265 RIVERWAY DRIVE, KELSO
4X1 BED PLATINUM & 1X1 BED GOLD
4X2 BED GENERAL & 4X1 BED GENERAL
EXISTING SITE

SCALE AT A3 SIZE
MASTER SITE NUMBER 58908
CLIENT REFERENCE NUMBER 23961
DRAWING NUMBER 93378/SD/A00.03
ISSUE B
SHEET NO 3



1 Demolition Plan

SCALE 1 : 250

LEGEND

- MESH FENCE
- WATER
- ELECTRICITY
- PROPERTY BOUNDARY
- TELSTRA
- TIMBER PALING FENCE
- REMOVE TREE / VEGETATION
- E- EXISTING

DEMOLITION AND SITE CLEARANCE NOTES

- INDICATIVE ONLY - CONTRACTOR/CONSULTANT TO VERIFY SITE CONDITIONS SHOWN ON THIS DRAWING WITH CONTOUR AND DETAIL SURVEY AND ACTUAL SITE CONDITIONS

- ALLOW FOR REMOVAL OF ALL VEGETATION, SHRUBS AND TREES UNLESS OTHERWISE DIRECTED BY SR. OTHERWISE TO BE RETAINED OR PRUNED, LOCATION OF TREES TO BE CONFIRMED ON SITE AT TIME OF CONSTRUCTION.

- TERMINATE AND CAP OFF EXISTING ELECTRICAL SERVICES TO THE SATISFACTION OF THE SUPPLYING AUTHORITIES.

- REMOVE SURPLUS GULLY / MANHOLES, GRATING AND TRENCHES.

- REINSTATE ALL DISTURBANCE TO ALL PROPERTIES AND AREAS, LIAISE WITH LOCAL AUTHORITY AND ADJACENT PROPERTY OWNERS AS NECESSARY, INCLUDING PREVENTATIVE MEASURES.

- REMOVE ANY REMAINING STRUCTURES ON SITE. CONTRACTOR TO ENSURE ANY REMAINING FOOTINGS AND OTHER DEBRIS ARE REMOVED FROM SITE PRIOR TO COMMENCEMENT OF NEW CONSTRUCTION WORK.

-ALLOW FOR REMOVAL OF ALL EXISTING FENCING ON SITE AND PROVIDE NEW FENCING AS SHOWN ON EXTERNAL WORKS PLAN

- REMOVE ALL DEMOLISHED MATERIALS AND DISPOSE OFF SITE (REFER MANAGEMENT OF FIRE ANTS IN SPECIFICATION)

- REINSTATE ANY KERBS, PATHS, CROSSOVERS TO STREET FRONTAGES TO SATISFY THE SUPPLYING AUTHORITIES.

SD-3

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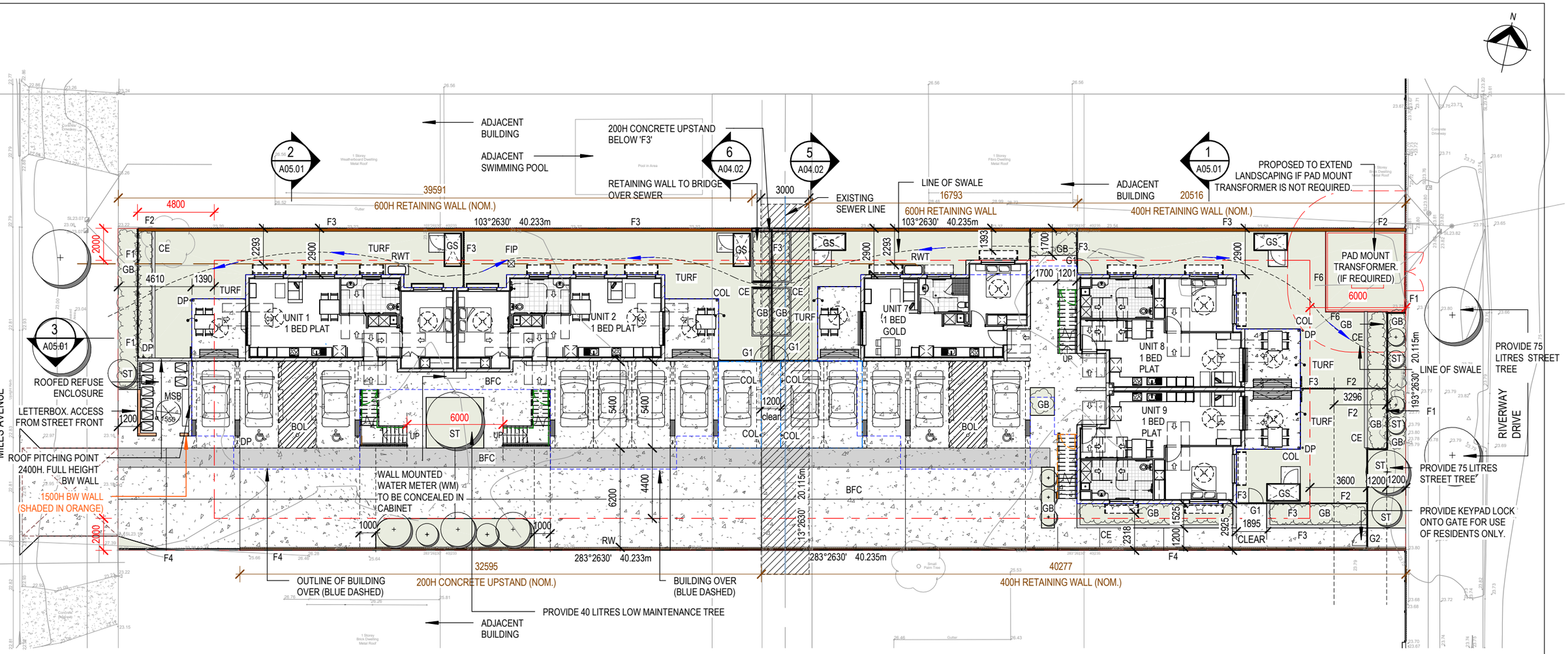
Queensland Government
Department of Housing and Public Works

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Social Housing Construction Program

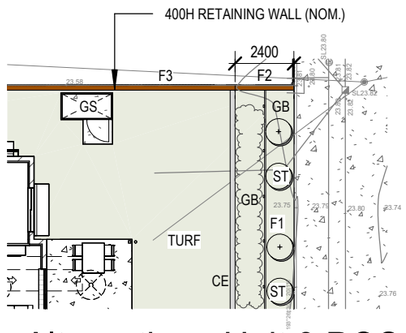
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4X1 BED PLATINUM & 1X1 BED GOLD
4X2 BED GENERAL & 4X1 BED GENERAL
DEMOLITION PLAN

SCALE	As indicated
AT	A3 SIZE
MASTER SITE NUMBER	58908
CLIENT REFERENCE NUMBER	23961
DRAWING NUMBER	93378/SD/A01.01
ISSUE	B
SHEET NO	4



1 — External Works Plan

SCALE 1 : 250



2 — Alternative - Unit 8 POS

SCALE 1 : 250 IF PAD MOUNT TRANSFORMER (PMT) NOT REQUIRED

LEGEND

PROPERTY BOUNDARY	ABS	ALUMINIUM BATTEN SCREEN	WM	WATER METER
GB/TURF GARDEN BED/ TURFING	BOL	BOLLARD	WS	WHEEL STOP
BFC CONCRETE DRIVEWAY (BFC)	BW2	140 BLOCKWORK WALL	F1	TIMBER PALING FENCE 1500H (NO GAP)
BFC PAINTED COLOURED CONCRETE PATHWAY (BFC)	COL	SHS POST	F2	TIMBER PALING FENCE RAKING (NO GAP)
CONCRETE EDGE (CE) TO GARDEN BED / TURF	DP	DOWNPIPE	F3	TIMBER PALING FENCE 1800H (NO GAP)
BROWN DASHED LINE INDICATIVE LOCATION OF LOW FLOW PIPE	FIP	FIELD INLET PIT	F4	TIMBER PALING ACOUSTIC FENCE 1800H (DOUBLE LAPPED)
STEP	GB	LOW SHRUBS GARDEN BED	F5	TIMBER PALING FENCE RAKING (DOUBLE LAPPED)
	G1	LOCKABLE 1800mm TIMBER PALING PRIVATE GATE	F6	ALUMINIUM FLAT TOP POOL TYPE FENCE 1200H
	G2	LOCKABLE GATE	+RLXX.XX	PROPOSED SURFACE LEVEL
	GS	GARDEN SHED	+ERLXX.XX	EXISTING LEVEL
	LB	LETTER BOX		ADJACENT SURFACES FLUSH
	MSB	MAIN SWITCHBOARD		
	RW	RETAINING WALL	GREEN DASHED LINE	SCREEN (SCN-1) TO UNDERSIDE OF STAIR
	RWT	650L RAINWATER TANK FITTED WITH A 10mm DIAMETER OUTLET ORIFICE, LOCATE RWT ON CONCRETE SLAB. RWT TO BE 100mm ABOVE GROUNDAND ON CONCRETE SLAB.	ORANGE DASHED LINE	SCREEN (SCN-1) FIXED TO STAIR STRINGER
	ST	45 LITRES LOW MAINTENANCE TREE		

NOTE:

1. WASTE BINS TO BE BROUGHT TO THE KERBS ON BIN COLLECTION DAY.
2. PROVIDE SCREEN TO UNDERSIDE OF STAIRS TO LIMIT STORAGE OF RUBBISH, AS PER SHDG COMMENT. EXTENT OF SCREEN UNDER STAIR SHOWN IN GREEN DASHED.
3. LIGHTING TO BE PROVIDED TO DRIVEWAY AND CARPARK. ALL LIGHTING TO HAVE BACKSHIELDS TO ENSURE NIL LIGHTSPILL TO NEIGHBOURING PROPERTY (SOUTH).
4. REQUIRED PLANNING SETBACKS MEASURED TO "OMP" SHOWN IN RED — — — —
5. PARTY WALLS & SLABS: VERIFY DETAIL TO ACHIEVE ACOUSTIC RATING TO COMPLY WITH NCC. ADJUST O/A BUILDING WIDTH & HEIGHT ACCORDINGLY.

SD-3

DRAWING INDEX SYSTEM
FOR QBUILD USE ONLY

- ☐ CEILING PLANS
- ☐ CONSTRUCTION DETAILS
- ☐ ELEVATIONS
- ☒ EXTERNAL WORKS
- ☐ FITOUTS
- ☐ FLOOR PLANS
- ☐ FURNITURE & EQUIPMENT
- ☐ HYDRAULICS
- ☐ MASTER PLAN
- ☐ MISC DETAILS
- ☐ PLAY STRUCTURES
- ☐ ROOF PLANS
- ☐ SECTIONS
- ☐ SETOUT PLAN
- ☐ SITE PLAN
- ☐ STANDARDS / OTHER

AMENDMENTS

ISSUE	DATE	SUBJECT	AUTHORISED
A	25/06/2024	PD3 - FOR REVIEW	RB
B	29/07/2024	PD3 - FOR REVIEW	AG
A	30/10/2024	SD1 - FOR REVIEW	AG
A	15/01/2025	SD2 - FOR REVIEW	AG
A	10/02/2025	SD3 - FOR REVIEW	AG
B	21/02/2025	SD3	AG

Queensland Government
Department of Housing and Public Works

ST 08/04/24
DRAWN DATE

RB / AG 08/04/24
DISCIPLINE TEAM LEADER DATE

AUTHORISED FOR ISSUE DATE

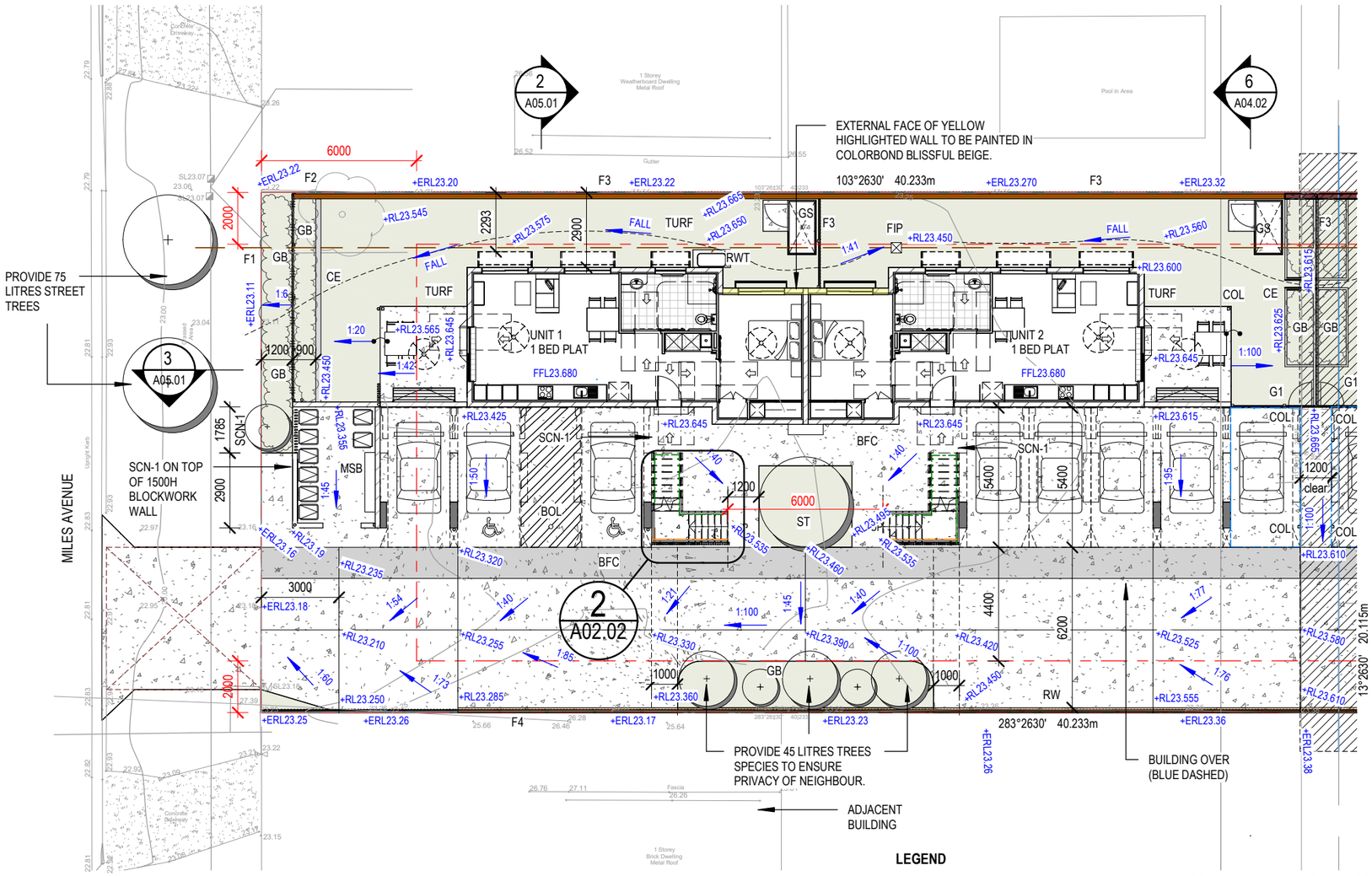
Social Housing Construction Program

8 MILES AVENUE & 1265 RIVERWAY DRIVE, KELSO
4X1 BED PLATINUM & 1X1 BED GOLD
4X2 BED GENERAL & 4X1 BED GENERAL
EXTERNAL WORKS PLAN - SHEET 1

SCALE	AT
As indicated	A3 SIZE

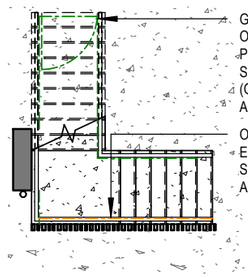
MASTER SITE NUMBER	CLIENT REFERENCE NUMBER
58908	23961

DRAWING NUMBER	ISSUE	SHEET NO
93378/SD/A02.01	B	5



1 External Works Plan_Part 1

SCALE 1 : 200



GREEN DASHED LINE INDICATES EXTENT OF SCREEN (SCN-1) UNDER STAIR. PROVIDE GATE FOR CLEANING. GATE SHOWN INDICATIVELY. (GATE & SCREEN EXTENT APPLICABLE TO ALL BUILDING 1 STAIRS)

ORANGE DASHED LINE INDICATES EXTENT OF SCREEN (SCN-1) FIXEED TO STAIR STRINGER. (SCREEN EXTENT APPLICABLE TO ALL BUILDING 1 STAIRS)

2 Building 1 Stair

SCALE 1 : 100

LEGEND

PROPERTY BOUNDARY	
GB/TURF	GARDEN BED/ TURFING
BFC	CONCRETE DRIVEWAY (BFC)
BFC	PAINTED COLOURED CONCRETE PATHWAY (BFC)
	CONCRETE EDGE (CE) TO GARDEN BED / TURF
BROWN DASHED LINE	INDICATIVE LOCATION OF LOW FLOW PIPE
	STEP

ABS	ALUMINIUM BATTEN SCREEN
BOL	BOLLARD
BW2	140 BLOCKWORK WALL
COL	SHS POST
DP	DOWNPIPE
FIP	FIELD INLET PIT
GB	LOW SHRUBS GARDEN BED
G1	LOCKABLE 1800mm TIMBER PALING PRIVATE GATE
G2	LOCKABLE GATE
GS	GARDEN SHED
LB	LETTER BOX
MSB	MAIN SWITCHBOARD
RW	RETAINING WALL
RWT	650L RAINWATER TANK FITTED WITH A 10mm DIAMETER OUTLET ORIFICE, LOCATE RWT ON CONCRETE SLAB. RWT TO BE 100mm ABOVE GROUNDAND ON CONCRETE SLAB.
ST	45 LITRES LOW MAINTENANCE TREE

WM	WATER METER
WS	WHEEL STOP
F1	TIMBER PALING FENCE 1500H (NO GAP)
F2	TIMBER PALING FENCE RAKING (NO GAP)
F3	TIMBER PALING FENCE 1800H (NO GAP)
F4	TIMBER PALING ACOUSTIC FENCE 1800H (DOUBLE LAPPED)
F5	TIMBER PALING FENCE RAKING (DOUBLE LAPPED)
F6	ALUMINIUM FLAT TOP POOL TYPE FENCE 1200H
+RLXX.XX	PROPOSED SURFACE LEVEL
+ERLXX.XX	EXISTING LEVEL
	ADJACENT SURFACES FLUSH
GREEN DASHED LINE	SCREEN (SCN-1) TO UNDERSIDE OF STAIR
ORANGE DASHED LINE	SCREEN (SCN-1) FIXED TO STAIR STRINGER

NOTE:

1. WASTE BINS TO BE BROUGHT TO THE KERBS ON BIN COLLECTION DAY.
2. PROVIDE SCREEN TO UNDERSIDE OF STAIRS TO LIMIT STORAGE OF RUBBISH, AS PER SHDG COMMENT. EXTENT OF SCREEN UNDER STAIR SHOWN IN GREEN DASHED.
3. LIGHTING TO BE PROVIDED TO DRIVEWAY AND CARPARK. ALL LIGHTING TO HAVE BACKSHIELDS TO ENSURE NIL LIGHTSPILL TO NEIGHBOURING PROPERTY (SOUTH).
4. REQUIRED PLANNING SETBACKS MEASURED TO "OMP" SHOWN IN RED
5.PARTY WALLS & SLABS: VERIFY DETAIL TO ACHIEVE ACOUSTIC RATING TO COMPLY WITH NCC. ADJUST O/A BUILDING WIDTH & HEIGHT ACCORDINGLY.

SD-3

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- ☐ STANDARDS / OTHER

AMENDMENTS

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A	15/01/2025	SD2 - FOR REVIEW	AG
A	10/02/2025	SD3 - FOR REVIEW	AG
B	21/02/2025	SD3	AG

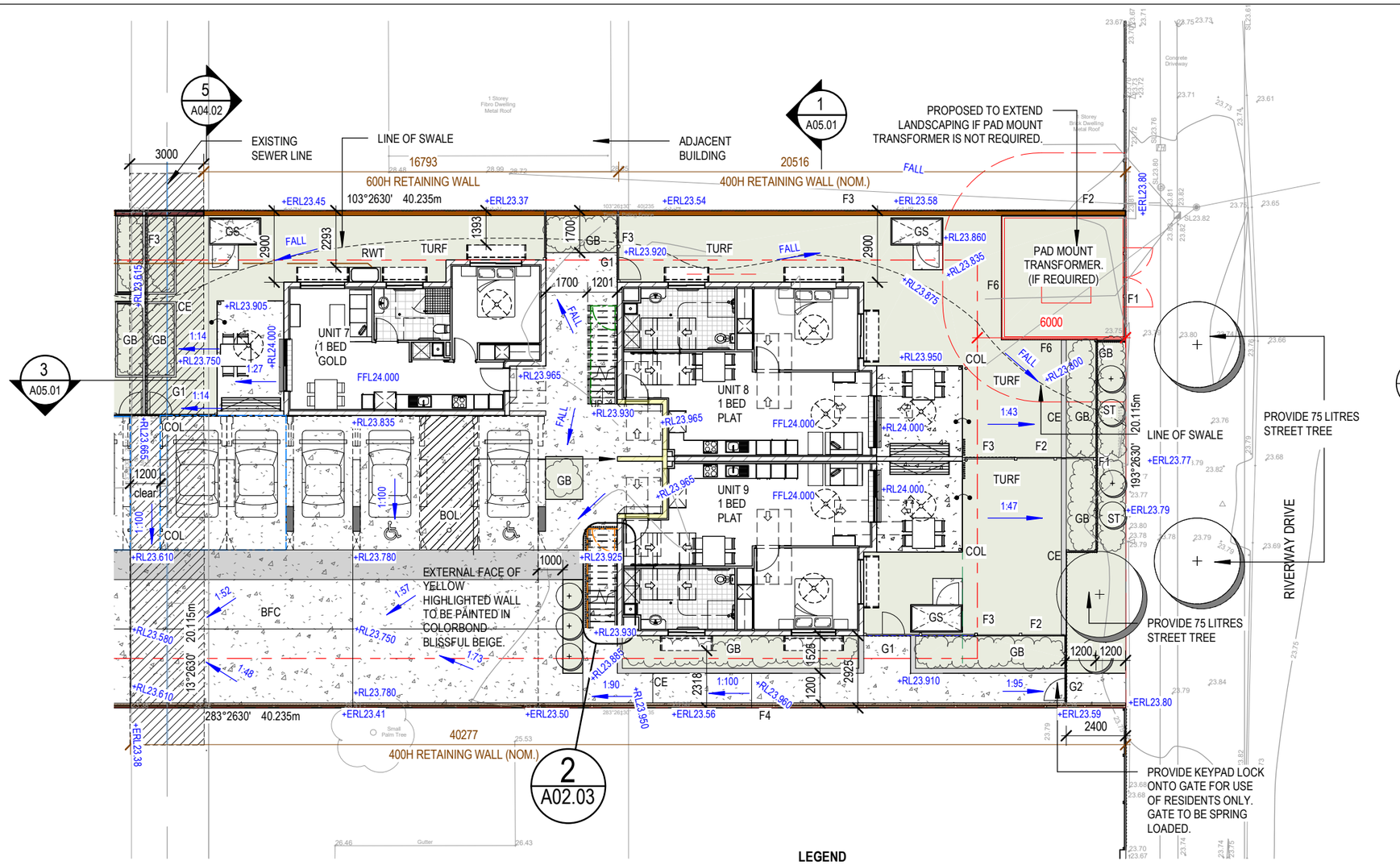
Queensland Government
Department of Housing and Public Works

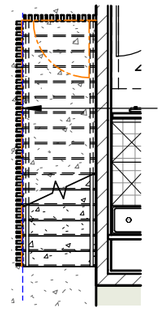
ST	25/06/24	
DRAWN	DATE	
RB / AG	25/06/24	
DISCIPLINE TEAM LEADER	DATE	
AUTHORISED FOR ISSUE	DATE	

Social Housing Construction Program

8 MILES AVENUE & 1265 RIVERWAY DRIVE, KELSO
4X1 BED PLATINUM & 1X1 BED GOLD
4X2 BED GENERAL & 4X1 BED GENERAL
EXTERNAL WORKS PLAN - SHEET 2

SCALE	As indicated
AT	A3 SIZE
MASTER SITE NUMBER	58908
CLIENT REFERENCE NUMBER	23961
DRAWING NUMBER	93378/SD/A02.02
ISSUE	B
SHEET NO	6





ORANGE DASHED LINE INDICATES EXTENT OF SCREEN (SCN-1) FIXED TO STAIR STRINGER. PROVIDE GATE FOR CLEANING. GATE SHOWN INDICATIVELY.

2 Building 2 Stair

SCALE 1 : 100

1 External Works Plan_Part 2

SCALE 1 : 200

LEGEND

- PROPERTY BOUNDARY
- GB/TURF — GARDEN BED/ TURFING
- BFC — CONCRETE DRIVEWAY (BFC)
- BFC — PAINTED COLOURED CONCRETE PATHWAY (BFC)
- CONCRETE EDGE (CE) TO GARDEN BED / TURF
- BROWN DASHED LINE — INDICATIVE LOCATION OF LOW FLOW PIPE
- STEP

ABS	ALUMINIUM BATTEN SCREEN
BOL	BOLLARD
BW2	140 BLOCKWORK WALL
COL	SHS POST
DP	DOWNPIPE
FIP	FIELD INLET PIT
GB	LOW SHRUBS GARDEN BED
G1	LOCKABLE 1800mm TIMBER PALING PRIVATE GATE
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LB	LETTER BOX
MSB	MAIN SWITCHBOARD
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ST	45 LITRES LOW MAINTENANCE TREE
WM	WATER METER
WS	WHEEL STOP
F1	TIMBER PALING FENCE 1500H (NO GAP)
F2	TIMBER PALING FENCE RAKING (NO GAP)
F3	TIMBER PALING FENCE 1800H (NO GAP)
F4	TIMBER PALING ACOUSTIC FENCE 1800H (DOUBLE LAPPED)
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F6	ALUMINIUM FLAT TOP POOL TYPE FENCE 1200H
+RLXX.XX	PROPOSED SURFACE LEVEL
+ERLXX.XX	EXISTING LEVEL

- ADJACENT SURFACES FLUSH
- GREEN DASHED LINE — SCREEN (SCN-1) TO UNDERSIDE OF STAIR
- ORANGE DASHED LINE — SCREEN (SCN-1) FIXED TO STAIR STRINGER

NOTE:

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SD-3

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- ☐ STANDARDS / OTHER

AMENDMENTS

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A	15/01/2025	SD2 - FOR REVIEW	AG
A	10/02/2025	SD3 - FOR REVIEW	AG
B	21/02/2025	SD3	AG

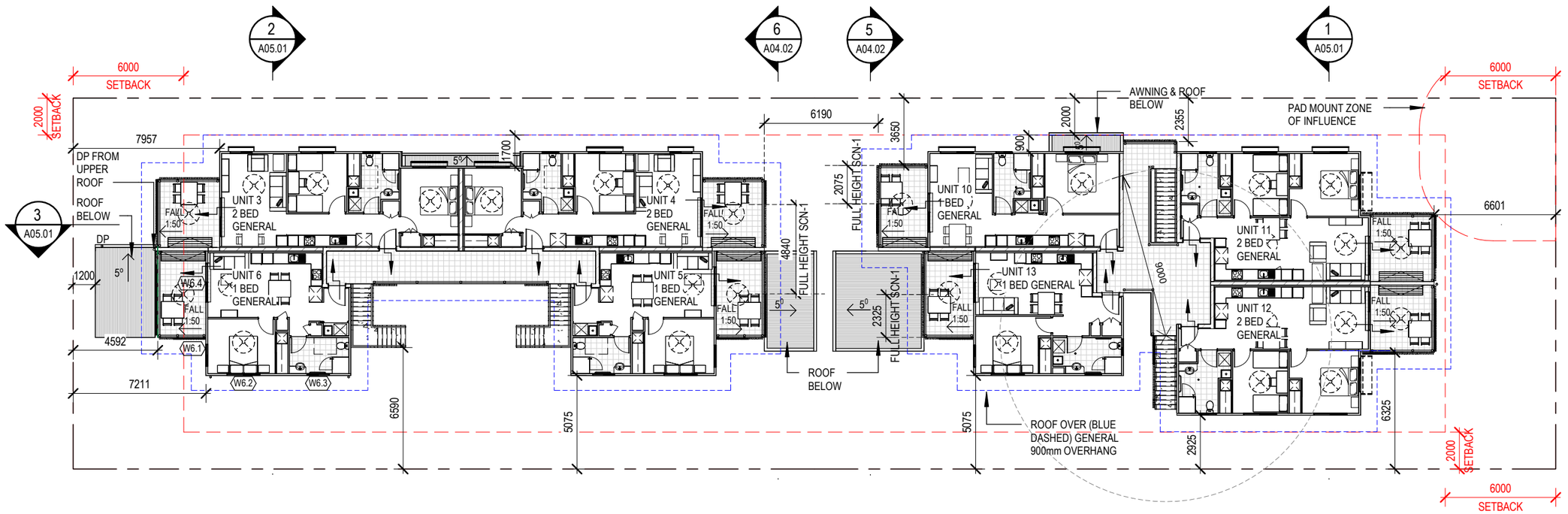
Queensland Government
Department of Housing and Public Works

ST	08/04/24
DRAWN	DATE
RB / AG	08/04/24
DISCIPLINE TEAM LEADER	DATE
AUTHORISED FOR ISSUE	DATE

Social Housing Construction Program

8 MILES AVENUE & 1265 RIVERWAY DRIVE, KELSO
4X1 BED PLATINUM & 1X1 BED GOLD
4X2 BED GENERAL & 4X1 BED GENERAL
EXTERNAL WORKS PLAN - SHEET 3

SCALE	AT		
As indicated	A3 SIZE		
MASTER SITE NUMBER	CLIENT REFERENCE NUMBER		
58908	23961		
DRAWING NUMBER	ISSUE	SHEET NO	
93378/SD/A02.03	B	7	



1 First Floor Plan

SCALE 1 : 250

SD-3

DRAWING INDEX SYSTEM
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- ☐ SECTIONS
- ☐ SETOUT PLAN
- ☐ SITE PLAN
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A	15/01/2025	SD2 - FOR REVIEW	AG
A	10/02/2025	SD3 - FOR REVIEW	AG
B	21/02/2025	SD3	AG

Queensland Government
Department of **Housing and Public Works**

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RB / AG	08/04/24
DISCIPLINE TEAM LEADER	DATE
AUTHORISED FOR ISSUE	DATE

Social Housing Construction Program

8 MILES AVENUE & 1265 RIVERWAY DRIVE, KELSO
4X1 BED PLATINUM & 1X1 BED GOLD
4X2 BED GENERAL & 4X1 BED GENERAL
FIRST FLOOR PLAN

SCALE	AT
1 : 250	A3 SIZE
MASTER SITE NUMBER	CLIENT REFERENCE NUMBER
58908	23961
DRAWING NUMBER	ISSUE / SHEET NO
93378/SD/A02.04	B / 8

LEGEND

BFC	BROOM FINISH CONCRETE	COL	COLUMN	GS	GARDEN SHED	NBN/DB	'NBN AND DISTRIBUTION B'WITH SPACE TO FIT	S	SINK	TD	THRESHOLD DRAIN	WC	TOILET SUITE WITH CISTERN
BR	BROOM CUPBOARD	DP	METAL DOWN PIPE	HP	HOT PLATES		ROUTER DEVICE IN PROPRIETARY CABINET	SC	PRIVACY SCREEN - TO WINDOW	TRP	1:8 CONCRETE THRESHOLD	WM	WASHING MACHINE
CF	CEILING FAN	DR	DRYER	HWU	INSTANTANEOUS HOT WATER UNIT		RECESSED IN FRAMED WALL	SCN	VERTICAL ALUM. BATTEN		RAMP; HEIGHT: 35MM;	WO	WALL OVEN
CL	SLIMLINE CLOTHESLINE	FW	FLOOR WASTE	LN	LINEN CUPBOARD	O/C	OVERHEAD CUPBOARD	SCREEN			LENGTH: TO SPAN ACROSS DOOR		
	(Aus. Made Eco 240 or equal & approved)	G2	VERTICAL ALUM. BATTEN GALT	LT	LAUNDRY TUB	PAN	PANTRY	SD	SECURITY SCREEN DOOR		OPENING		1500x1500 CLEAR ZONE
CT	CERAMIC TILES	GR	GRAB RAIL (TO AS1428.1)	MW	MICROWAVE - 1100mm AFFL	REF	REFRIGERATOR	SH	SUN HOOD - TO WINDOW	TR	TOWEL RAIL		2400x2400 CLEAR ZONE
						RH	RANGE HOOD (DUCTED EXTERNALLY)	SHL	SHELF	V	VINYL		1200x1200 CLEAR ZONE
								SHR	SHOWER	VB	VANITY BASIN (SEMI RECESSED)		900x900 CLEAR ZONE
								STD	STRIP DRAIN	W	WINDOW		1000x1000 CLEAR ZONE
											STEP		1540x2070 CLEAR ZONE
											BATHROOM FALL		1600x1400 CLEAR ZONE
													2250 DIA. TURNING CIRCLE

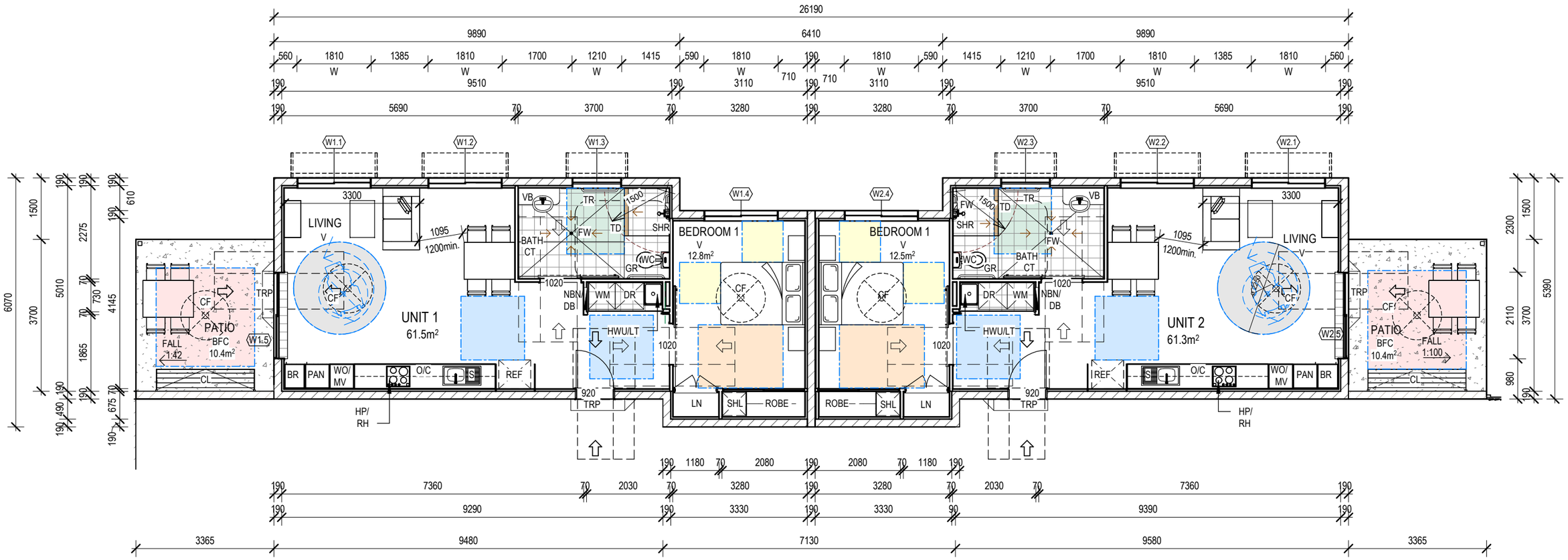
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NOTES

FLOOR SLAB SETDOWNS:
BATHROOM , WC & LAUNDRY - min. 50mm

PROVIDE WATERPROOFING TO ALL WET ZONES IN ACCORDANCE WITH NCC.

NOTE: PLATINUM UNIT SHOWER OUTLET LOCATION IS DEEMED TO BE COMPLIANT WITH NCC VOL 3 TO PREVENT SHOWER HEAD TOUCHING WC RIM – WHEN LOCATED 100MM FROM WALL CORNER 1200MM AFFL. ALTERNATIVELY, IF THE OUTLET LOCATION CANNOT ACHIEVE THIS PREVENTION THEN PROVIDE A PROPRIETARY HOSE RESTRICTOR BRACKET. (REFER QBUILD TYPICAL CONSTRUCTION DETAILS FOR BATHROOMS).



1 Unit 1 & 2 - Platinum Level

SCALE 1 : 100

SD-3

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A	10/02/2025	SD3 - FOR REVIEW	AG
B	21/02/2025	SD3	AG

Queensland Government
Department of **Housing and Public Works**

ST	22/04/24
DRAWN	DATE
RB / AG	22/04/24
DISCIPLINE TEAM LEADER	DATE
AUTHORISED FOR ISSUE	DATE

Social Housing Construction Program

8 MILES AVENUE & 1265 RIVERWAY DRIVE, KELSO
4X1 BED PLATINUM & 1X1 BED GOLD
4X2 BED GENERAL & 4X1 BED GENERAL
UNIT PLANS - SHEET 1

SCALE	AT
1 : 100	A3 SIZE

MASTER SITE NUMBER	CLIENT REFERENCE NUMBER
58908	23961

DRAWING NUMBER	ISSUE	SHEET NO
93378/SD/A02.05	B	9

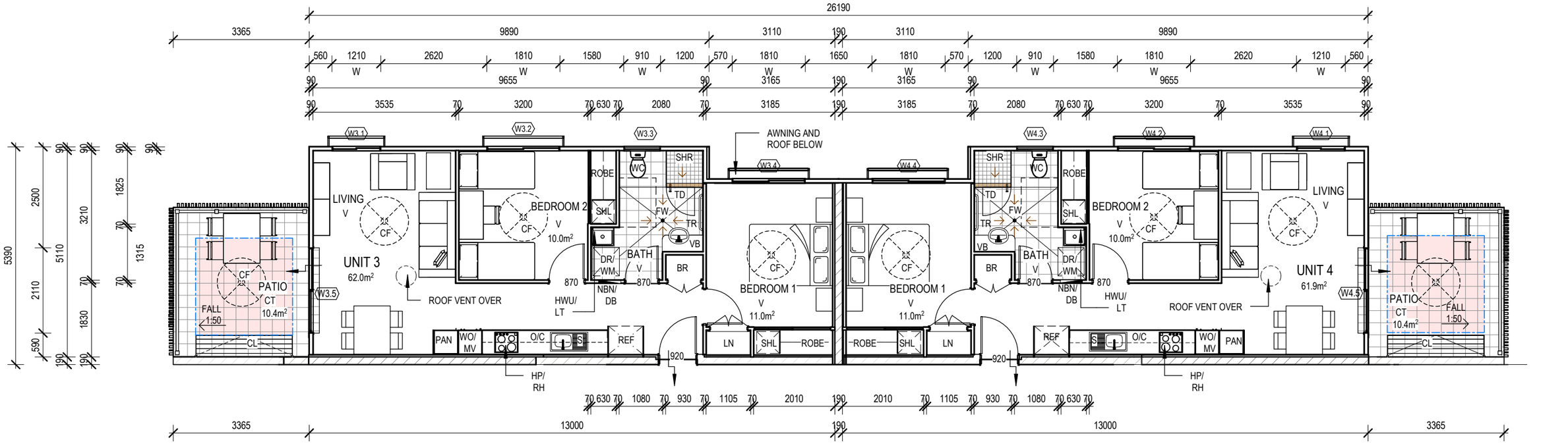
LEGEND

BFC	BROOM FINISH CONCRETE	COL	COLUMN	GS	GARDEN SHED	NBN/DB	'NBN AND DISTRIBUTION B'WITH SPACE TO FIT ROUTER DEVICE IN PROPRIETARY CABINET RECESSED IN FRAMED WALL	S	SINK	TD	THRESHOLD DRAIN	WC	TOILET SUITE WITH CISTERN
BR	BROOM CUPBOARD	DP	METAL DOWN PIPE	HP	HOT PLATES			SC	PRIVACY SCREEN - TO WINDOW	TRP	1:8 CONCRETE THRESHOLD RAMP; HEIGHT: 35MM; LENGTH: TO SPAN ACROSS DOOR OPENING	WM	WASHING MACHINE
CF	CEILING FAN	DR	DRYER	HWU	INSTANTANEOUS HOT WATER UNIT			SCN	VERTICAL ALUM. BATTEN SCREEN			WO	WALL OVEN
CL	SLIMLINE CLOTHESLINE (Aus. Made Eco 240 or equal & approved)	FW	FLOOR WASTE	LN	LINEN CUPBOARD	O/C	OVERHEAD CUPBOARD	SD	SECURITY SCREEN DOOR				1500x1500 CLEAR ZONE / 2400x2400 CLEAR ZONE
		G2	VERTICAL ALUM. BATTEN GALT.		LAUNDRY TUB	PAN	PANTRY	SH	SUN HOOD - TO WINDOW	TR	TOWEL RAIL		
CT	CERAMIC TILES	GR	GRAB RAIL (TO AS1428.1)	MW	MICROWAVE - 1100mm AFFL	REF	REFRIGERATOR	SHL	SHELF	V	VINYL		1200x1200 CLEAR ZONE
						RH	RANGE HOOD (DUCTED EXTERNALLY)	SHR	SHOWER	VB	VANITY BASIN (SEMI RECESSED)		900x900 CLEAR ZONE
								STD	STRIP DRAIN	W	WINDOW		1000x1000 CLEAR ZONE
											STEP		1540x2070 CLEAR ZONE
											BATHROOM FALL		1600x1400 CLEAR ZONE
													2250 DIA. TURNING CIRCLE

NOTES

FLOOR SLAB SETDOWNS:
BATHROOM , WC & LAUNDRY - min. 50mm

PROVIDE WATERPROOFING TO ALL WET ZONES IN ACCORDANCE WITH NCC.



1 Unit 3 & 4 - General Level

SCALE 1 : 100

SD-3

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A	15/01/2025	SD2 - FOR REVIEW	AG
A	10/02/2025	SD3 - FOR REVIEW	AG
B	21/02/2025	SD3	AG

Queensland Government
Department of Housing and Public Works

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DRAWN	DATE
RB / AG	22/04/24
DISCIPLINE TEAM LEADER	DATE
AUTHORISED FOR ISSUE	DATE

Social Housing Construction Program

8 MILES AVENUE & 1265 RIVERWAY DRIVE, KELSO
4X1 BED PLATINUM & 1X1 BED GOLD
4X2 BED GENERAL & 4X1 BED GENERAL
UNIT PLANS - SHEET 2

SCALE	1 : 100
AT	A3 SIZE
MASTER SITE NUMBER	58908
CLIENT REFERENCE NUMBER	23961
DRAWING NUMBER	93378/SD/A02.06
ISSUE	B
SHEET NO	10

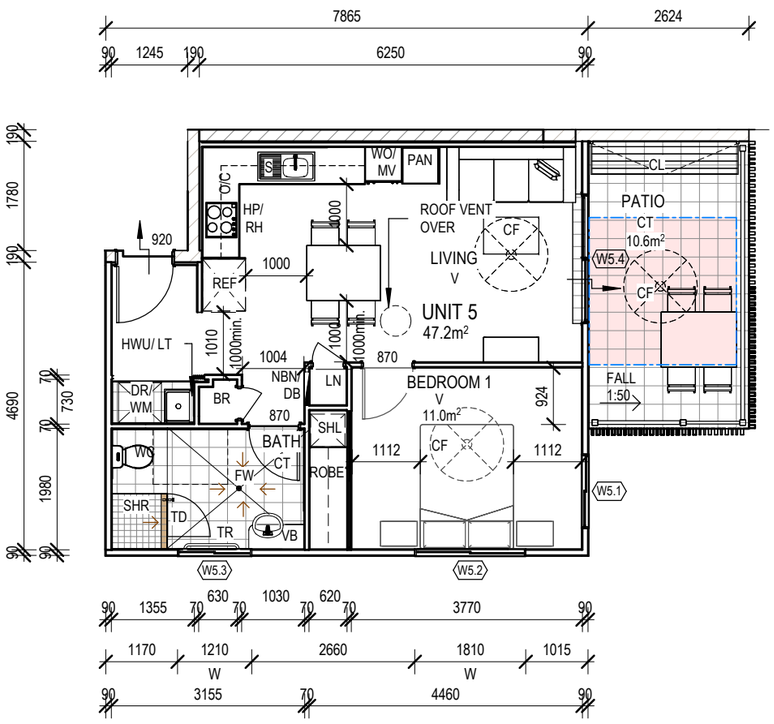
LEGEND

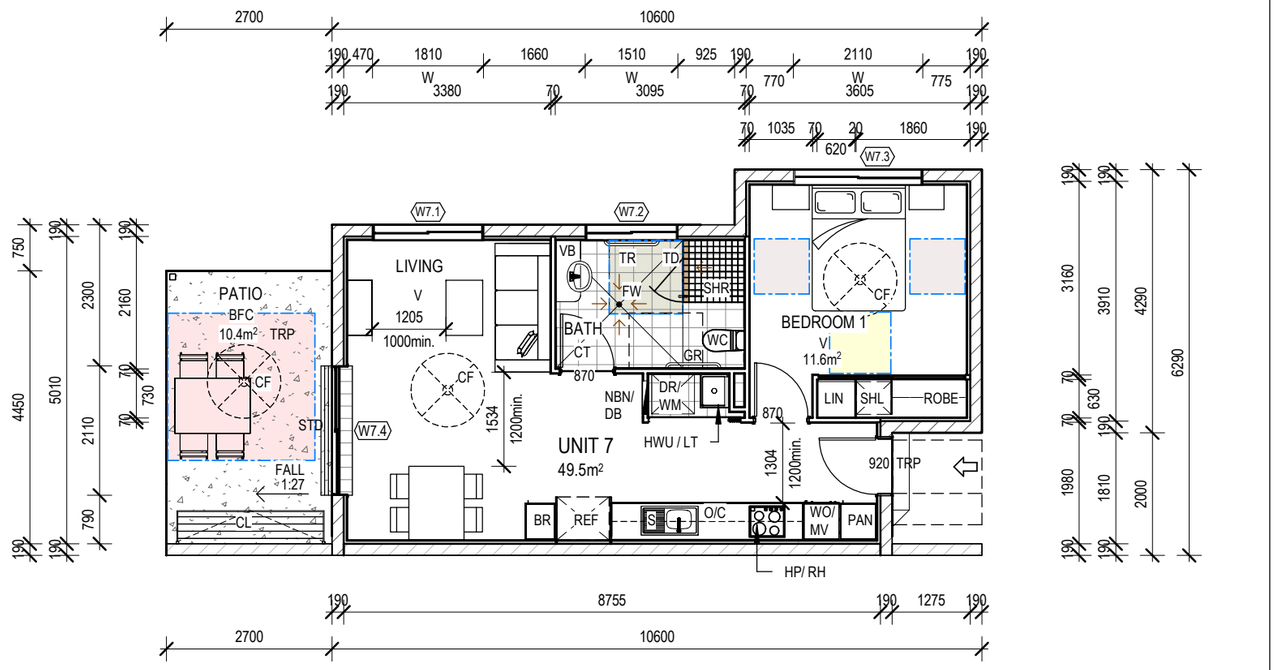
BFC	BROOM FINISH CONCRETE	COL	COLUMN	GS	GARDEN SHED	NBN/DB	'NBN AND DISTRIBUTION B'WITH SPACE TO FIT ROUTER DEVICE IN PROPRIETARY CABINET	S	SINK	TD	THRESHOLD DRAIN	WC	TOILET SUITE WITH CISTERN
BR	BROOM CUPBOARD	DP	METAL DOWN PIPE	HP	HOT PLATES		RECESSED IN FRAMED WALL	SC	PRIVACY SCREEN - TO WINDOW	TRP	1:8 CONCRETE THRESHOLD RAMP; HEIGHT: 35MM; LENGTH: TO SPAN ACROSS DOOR OPENING	WM	WASHING MACHINE
CF	CEILING FAN	DR	DRYER	HWU	INSTANTANEOUS HOT WATER UNIT	O/C	OVERHEAD CUPBOARD	SCN	VERTICAL ALUM. BATTEN SCREEN			WO	WALL OVEN
CL	SLIMLINE CLOTHESLINE (Aus. Made Eco 240 or equal & approved)	FW	FLOOR WASTE	LN	LINEN CUPBOARD	PAN	PANTRY	SD	SECURITY SCREEN DOOR				1500x1500 CLEAR ZONE / 2400x2400 CLEAR ZONE
CT	CERAMIC TILES	G2	VERTICAL ALUM. BATTEN GALT.	LT	LAUNDRY TUB	REF	REFRIGERATOR	SH	SUN HOOD - TO WINDOW	TR	TOWEL RAIL		
		GR	GRAB RAIL (TO AS1428.1)	MW	MICROWAVE - 1100mm AFFL	RH	RANGE HOOD (DUCTED EXTERNALLY)	SHL	SHELF	V	VINYL		1200x1200 CLEAR ZONE
								SHR	SHOWER	VB	VANITY BASIN (SEMI RECESSED)		900x900 CLEAR ZONE
								STD	STRIP DRAIN	W	WINDOW		1000x1000 CLEAR ZONE
											STEP		1540x2070 CLEAR ZONE
											BATHROOM FALL		1600x1400 CLEAR ZONE
													2250 DIA. TURNING CIRCLE

NOTES

FLOOR SLAB SETDOWNS:
BATHROOM , WC & LAUNDRY - min. 50mm

PROVIDE WATERPROOFING TO ALL WET ZONES IN ACCORDANCE WITH NCC.





1 Unit 5 - General Level

SCALE 1 : 100

Unit 6 (Mirrored), Refer A02.04 For Unit 6 Windows Numbers

2 Unit 7 - Gold Level

SCALE 1 : 100

SD-3

DRAWING INDEX SYSTEM
FOR QBUILD USE ONLY

- ☐ CEILING PLANS
- ☐ CONSTRUCTION DETAILS
- ☐ ELEVATIONS
- ☐ EXTERNAL WORKS
- ☐ FITOUTS
- ☒ FLOOR PLANS
- ☐ FURNITURE & EQUIPMENT
- ☐ HYDRAULICS
- ☐ MASTER PLAN
- ☐ MISC DETAILS
- ☐ PLAY STRUCTURES
- ☐ ROOF PLANS
- ☐ SECTIONS
- ☐ SETOUT PLAN
- ☐ SITE PLAN
- ☐ STANDARDS / OTHER

AMENDMENTS

ISSUE	DATE	SUBJECT	AUTHO -RISED
B	29/07/2024	PD3 - FOR REVIEW	AG
A	30/10/2024	SD1 - FOR REVIEW	AG
A	15/01/2025	SD2 - FOR REVIEW	AG
B	10/02/2025	SD3 - FOR REVIEW	AG
A	10/02/2025	SD3 - FOR REVIEW	AG
B	21/02/2025	SD3	AG

Queensland Government
Department of **Housing and Public Works**

ST	25/06/24	
DRAWN	DATE	
RB / AG	25/06/24	
DISCIPLINE TEAM LEADER	DATE	
AUTHORISED FOR ISSUE	DATE	

Social Housing Construction Program

8 MILES AVENUE & 1265 RIVERWAY DRIVE, KELSO
4X1 BED PLATINUM & 1X1 BED GOLD
4X2 BED GENERAL & 4X1 BED GENERAL
UNIT PLANS - SHEET 3

SCALE	AT
1 : 100	A3 SIZE

MASTER SITE NUMBER	CLIENT REFERENCE NUMBER
58908	23961

DRAWING NUMBER	ISSUE	SHEET NO
93378/SD/A02.07	B	11

LEGEND

BFC	BROOM FINISH CONCRETE	COL	COLUMN	GS	GARDEN SHED	NBN/DB	'NBN AND DISTRIBUTION B'WITH SPACE TO FIT	S	SINK	TD	THRESHOLD DRAIN	WC	TOILET SUITE WITH CISTERN
BR	BROOM CUPBOARD	DP	METAL DOWN PIPE	HP	HOT PLATES		ROUTER DEVICE IN PROPRIETARY CABINET	SC	PRIVACY SCREEN - TO WINDOW	TRP	1:8 CONCRETE THRESHOLD	WM	WASHING MACHINE
CF	CEILING FAN	DR	DRYER	HWU	INSTANTANEOUS HOT WATER UNIT		RECESSED IN FRAMED WALL	SCN	VERTICAL ALUM. BATTEN		RAMP; HEIGHT: 35MM;	WO	WALL OVEN
CL	SLIMLINE CLOTHESLINE	FW	FLOOR WASTE	LN	LINEN CUPBOARD	O/C	OVERHEAD CUPBOARD		SCREEN		LENGTH: TO SPAN ACROSS DOOR		
	(Aus. Made Eco 240 or equal & approved)	G2	VERTICAL ALUM. BATTEN GALT.		LAUNDRY TUB	PAN	PANTRY	SD	SECURITY SCREEN DOOR		OPENING		1500x1500 CLEAR ZONE
CT	CERAMIC TILES	GR	GRAB RAIL (TO AS1428.1)	MW	MICROWAVE - 1100mm AFFL	REF	REFRIGERATOR	SH	SUN HOOD - TO WINDOW	TR	TOWEL RAIL		2400x2400 CLEAR ZONE
						RH	RANGE HOOD (DUCTED EXTERNALLY)	SHL	SHELF	V	VINYL		1200x1200 CLEAR ZONE
								SHR	SHOWER	VB	VANITY BASIN (SEMI RECESSED)		900x900 CLEAR ZONE
								STD	STRIP DRAIN				1000x1000 CLEAR ZONE
										W	WINDOW		1540x2070 CLEAR ZONE
											STEP		1600x1400 CLEAR ZONE
											BATHROOM FALL		2250 DIA. TURNING CIRCLE

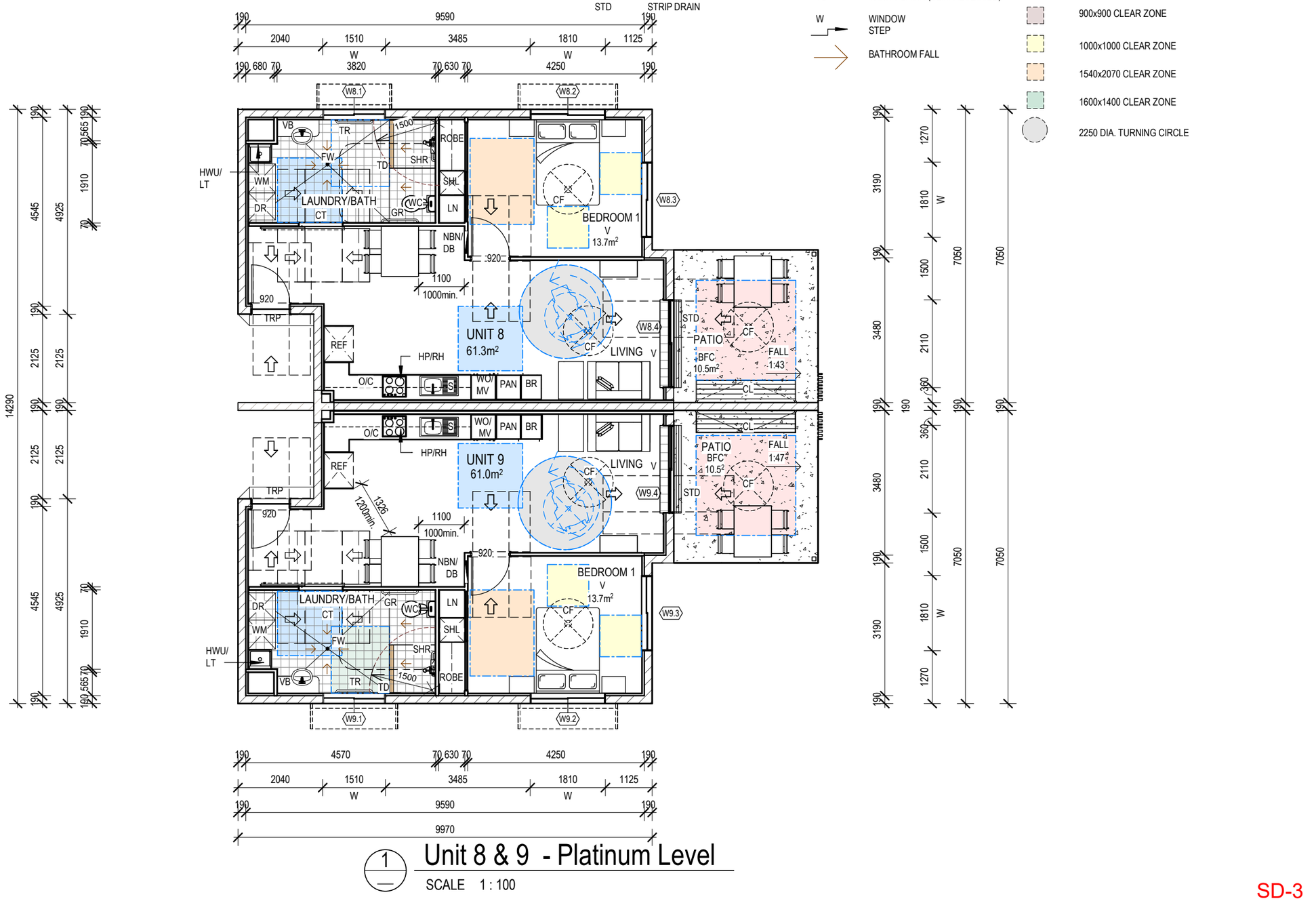
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NOTES

FLOOR SLAB SETDOWNS:
BATHROOM , WC & LAUNDRY - min. 50mm

PROVIDE WATERPROOFING TO ALL WET ZONES IN ACCORDANCE WITH NCC.

NOTE: PLATINUM UNIT SHOWER OUTLET LOCATION IS DEEMED TO BE COMPLIANT WITH NCC VOL 3 TO PREVENT SHOWER HEAD TOUCHING WC RIM – WHEN LOCATED 100MM FROM WALL CORNER 1200MM AFFL. ALTERNATIVELY, IF THE OUTLET LOCATION CANNOT ACHIEVE THIS PREVENTION THEN PROVIDE A PROPRIETARY HOSE RESTRICTOR BRACKET. (REFER QBUILD TYPICAL CONSTRUCTION DETAILS FOR BATHROOMS).



1 Unit 8 & 9 - Platinum Level

SCALE 1 : 100

SD-3

DRAWING INDEX SYSTEM
FOR QBUILD USE ONLY

- ☐ CEILING PLANS
- ☐ CONSTRUCTION DETAILS
- ☐ ELEVATIONS
- ☐ EXTERNAL WORKS
- ☐ FITOUTS
- ☒ FLOOR PLANS
- ☐ FURNITURE & EQUIPMENT
- ☐ HYDRAULICS
- ☐ MASTER PLAN
- ☐ MISC DETAILS
- ☐ PLAY STRUCTURES
- ☐ ROOF PLANS
- ☐ SECTIONS
- ☐ SETOUT PLAN
- ☐ SITE PLAN
- ☐ STANDARDS / OTHER

AMENDMENTS

ISSUE	DATE	SUBJECT	AUTHO -RISED
A	25/06/2024	PD3 - FOR REVIEW	RB
B	29/07/2024	PD3 - FOR REVIEW	AG
A	30/10/2024	SD1 - FOR REVIEW	AG
A	15/01/2025	SD2 - FOR REVIEW	AG
A	10/02/2025	SD3 - FOR REVIEW	AG
B	21/02/2025	SD3	AG

Queensland Government
Department of Housing and Public Works

ST	25/06/24	
DRAWN	DATE	
RB / AG	25/06/24	
DISCIPLINE TEAM LEADER	DATE	
AUTHORISED FOR ISSUE	DATE	

Social Housing Construction Program

8 MILES AVENUE & 1265 RIVERWAY DRIVE, KELSO
4X1 BED PLATINUM & 1X1 BED GOLD
4X2 BED GENERAL & 4X1 BED GENERAL
UNIT PLANS - SHEET 4

SCALE	1 : 100
AT	A3 SIZE
MASTER SITE NUMBER	58908
CLIENT REFERENCE NUMBER	23961
DRAWING NUMBER	93378/SD/A02.08
ISSUE	B
SHEET NO	12

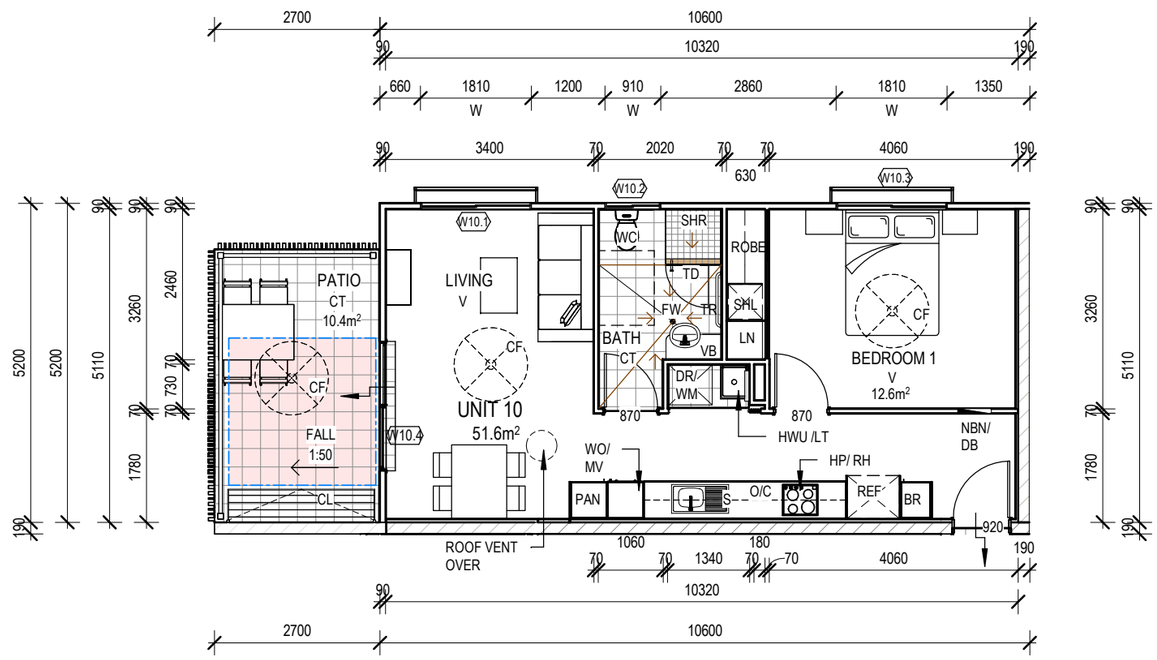
LEGEND

BFC	BROOM FINISH CONCRETE	COL	COLUMN	GS	GARDEN SHED	NBN/DB	'NBN AND DISTRIBUTION B'WITH SPACE TO FIT	S	SINK	TD	THRESHOLD DRAIN	WC	TOILET SUITE WITH CISTERN	N	
BR	BROOM CUPBOARD	DP	METAL DOWN PIPE	HP	HOT PLATES		ROUTER DEVICE IN PROPRIETARY CABINET	SC	PRIVACY SCREEN - TO WINDOW	TRP	1:8 CONCRETE THRESHOLD RAMP; HEIGHT: 35MM; LENGTH: TO SPAN ACROSS DOOR OPENING	WM	WASHING MACHINE		
CF	CEILING FAN	DR	DRYER	HWU	INSTANTANEOUS HOT WATER UNIT		RECESSED IN FRAMED WALL	SCN	VERTICAL ALUM. BATTEN SCREEN			WO	WALL OVEN		
CL	SLIMLINE CLOTHESLINE (Aus. Made Eco 240 or equal & approved)	FW	FLOOR WASTE	LN	LINEN CUPBOARD	O/C	OVERHEAD CUPBOARD	SD	SECURITY SCREEN DOOR	TR	TOWEL RAIL		1500x1500 CLEAR ZONE		2400x2400 CLEAR ZONE
		G2	VERTICAL ALUM. BATTEN GALT.	LT	LAUNDRY TUB	PAN	PANTRY	SH	SUN HOOD - TO WINDOW	V	VINYL		1200x1200 CLEAR ZONE		
CT	CERAMIC TILES	GR	GRAB RAIL (TO AS1428.1)	MW	MICROWAVE - 1100mm AFFL	REF	REFRIGERATOR	SHL	SHELF	VB	VANITY BASIN (SEMI RECESSED)		900x900 CLEAR ZONE		
						RH	RANGE HOOD (DUCTED EXTERNALLY)	SHR	SHOWER	W	WINDOW		1000x1000 CLEAR ZONE		
								STD	STRIP DRAIN		STEP		1540x2070 CLEAR ZONE		
											BATHROOM FALL		1600x1400 CLEAR ZONE		
													2250 DIA. TURNING CIRCLE		

NOTES

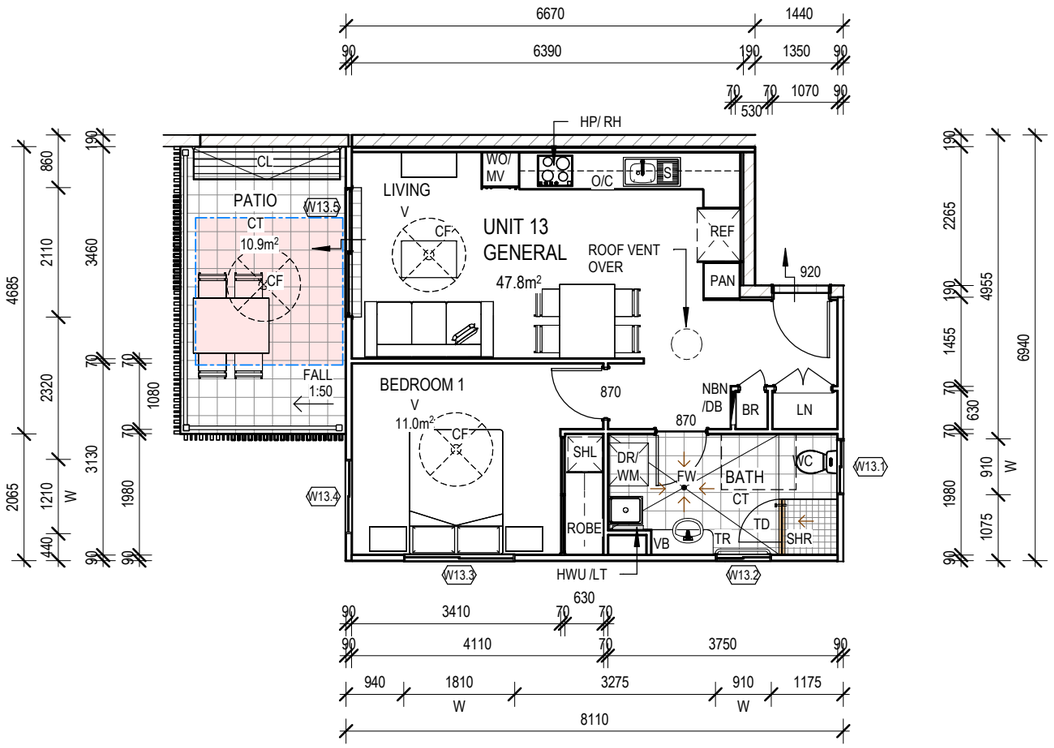
FLOOR SLAB SETDOWNS:
BATHROOM , WC & LAUNDRY - min. 50mm

PROVIDE WATERPROOFING TO ALL WET ZONES IN ACCORDANCE WITH NCC.



1 — Unit 10 - General Level

SCALE 1 : 100



2 — Unit 13 - General Level

SCALE 1 : 100

SD-3

DRAWING INDEX SYSTEM
FOR QBUILD USE ONLY

- ☐ CEILING PLANS
- ☐ CONSTRUCTION DETAILS
- ☐ ELEVATIONS
- ☐ EXTERNAL WORKS
- ☐ FITOUTS
- ☒ FLOOR PLANS
- ☐ FURNITURE & EQUIPMENT
- ☐ HYDRAULICS
- ☐ MASTER PLAN
- ☐ MISC DETAILS
- ☐ PLAY STRUCTURES
- ☐ ROOF PLANS
- ☐ SECTIONS
- ☐ SETOUT PLAN
- ☐ SITE PLAN
- ☐ STANDARDS / OTHER

AMENDMENTS

ISSUE	DATE	SUBJECT	AUTHORISED
A	25/06/2024	PD3 - FOR REVIEW	RB
B	29/07/2024	PD3 - FOR REVIEW	AG
A	30/10/2024	SD1 - FOR REVIEW	AG
A	15/01/2025	SD2 - FOR REVIEW	AG
A	10/02/2025	SD3 - FOR REVIEW	AG
B	21/02/2025	SD3	AG

Queensland Government
Department of Housing and Public Works

ST	25/06/24	
DRAWN	DATE	
RB / AG	25/06/24	
DISCIPLINE TEAM LEADER	DATE	
AUTHORISED FOR ISSUE	DATE	

Social Housing Construction Program

8 MILES AVENUE & 1265 RIVERWAY DRIVE, KELSO
4X1 BED PLATINUM & 1X1 BED GOLD
4X2 BED GENERAL & 4X1 BED GENERAL
UNIT PLANS - SHEET 5

SCALE	AT
1 : 100	A3 SIZE

MASTER SITE NUMBER	CLIENT REFERENCE NUMBER
58908	23961

DRAWING NUMBER	ISSUE	SHEET NO
93378/SD/A02.09	B	13

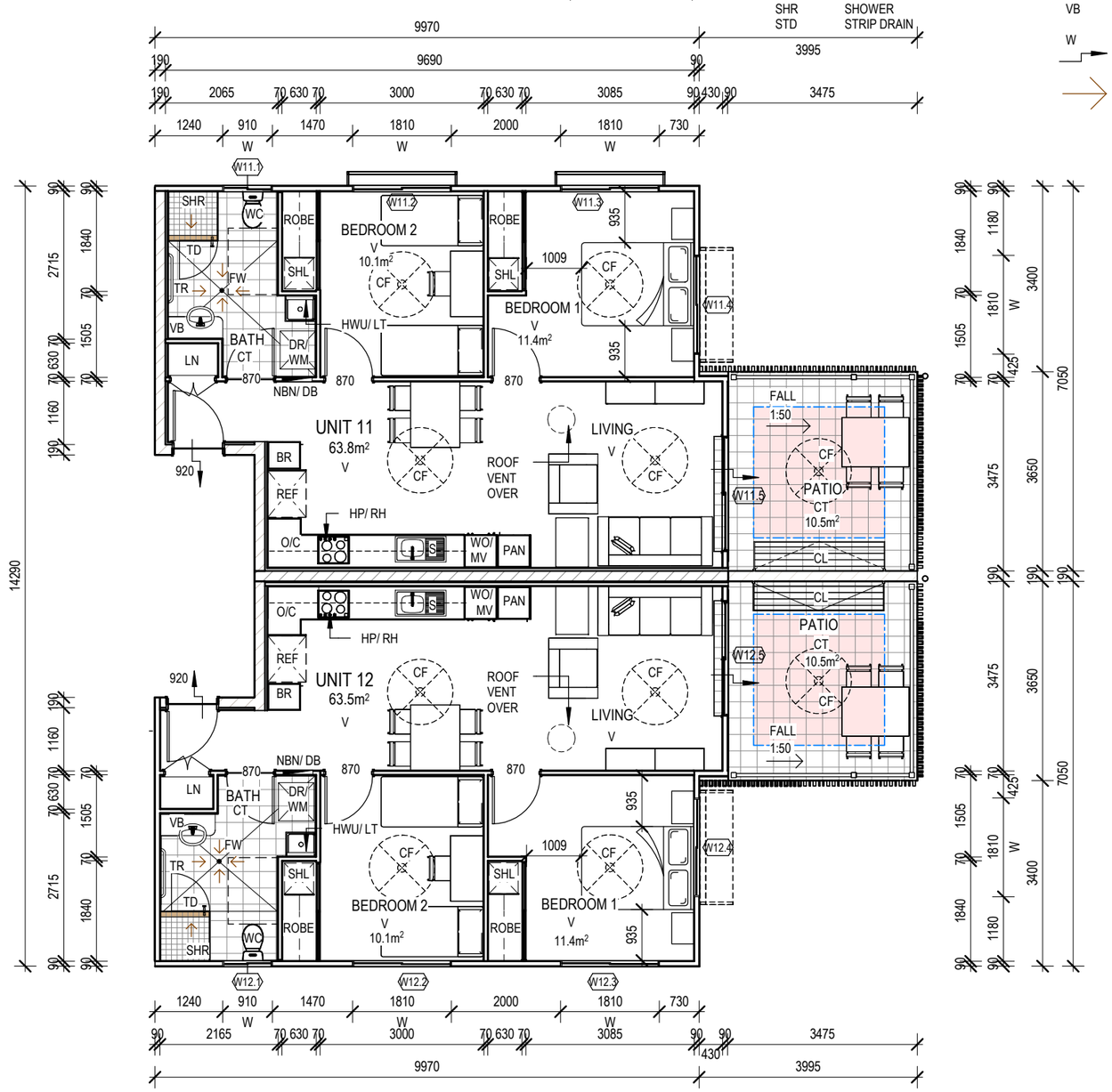
LEGEND

BFC	BROOM FINISH CONCRETE	COL	COLUMN	GS	GARDEN SHED	NBN/DB	'NBN AND DISTRIBUTION B'WITH SPACE TO FIT	S	SINK	TD	THRESHOLD DRAIN	WC	TOILET SUITE WITH CISTERN
BR	BROOM CUPBOARD	DP	METAL DOWN PIPE	HP	HOT PLATES		ROUTER DEVICE IN PROPRIETARY CABINET	SC	PRIVACY SCREEN - TO WINDOW	TRP	1:8 CONCRETE THRESHOLD	WM	WASHING MACHINE
CF	CEILING FAN	DR	DRYER	HWU	INSTANTANEOUS HOT WATER UNIT		RECESSED IN FRAMED WALL	SCN	VERTICAL ALUM. BATTEN SCREEN		RAMP; HEIGHT: 35MM; LENGTH: TO SPAN ACROSS DOOR OPENING	WO	WALL OVEN
CL	SLIMLINE CLOTHESLINE (Aus. Made Eco 240 or equal & approved)	FW	FLOOR WASTE	LN	LINEN CUPBOARD	O/C	OVERHEAD CUPBOARD	SD	SECURITY SCREEN DOOR				1500x1500 CLEAR ZONE / 2400x2400 CLEAR ZONE
CT	CERAMIC TILES	G2	VERTICAL ALUM. BATTEN GALT	LT	LAUNDRY TUB	PAN	PANTRY	SH	SUN HOOD - TO WINDOW	TR	TOWEL RAIL		
		GR	GRAB RAIL (TO AS1428.1)	MW	MICROWAVE - 1100mm AFFL	REF	REFRIGERATOR	SHL	SHELF	V	VINYL		1200x1200 CLEAR ZONE
						RH	RANGE HOOD (DUCTED EXTERNALLY)	SHR	SHOWER	VB	VANITY BASIN (SEMI RECESSED)		900x900 CLEAR ZONE
								STD	STRIP DRAIN	W	WINDOW		1000x1000 CLEAR ZONE
											STEP		1540x2070 CLEAR ZONE
											BATHROOM FALL		1600x1400 CLEAR ZONE
													2250 DIA. TURNING CIRCLE

NOTES

FLOOR SLAB SETDOWNS:
BATHROOM , WC & LAUNDRY - min. 50mm

PROVIDE WATERPROOFING TO ALL WET ZONES IN ACCORDANCE WITH NCC.



Unit 11 & 12 - General Level

1 — SCALE 1 : 100

SD-3

DRAWING INDEX SYSTEM
FOR QBUILD USE ONLY

- ☐ CEILING PLANS
- ☐ CONSTRUCTION DETAILS
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- ☐ ROOF PLANS
- ☐ SECTIONS
- ☐ SETOUT PLAN
- ☐ SITE PLAN
- ☐ STANDARDS / OTHER

AMENDMENTS

ISSUE	DATE	SUBJECT	AUTHORISED
A	25/06/2024	PD3 - FOR REVIEW	RB
B	29/07/2024	PD3 - FOR REVIEW	AG
A	30/10/2024	SD1 - FOR REVIEW	AG
A	15/01/2025	SD2 - FOR REVIEW	AG
A	10/02/2025	SD3 - FOR REVIEW	AG
B	21/02/2025	SD3	AG

Queensland Government
Department of **Housing and Public Works**

ST — DRAWN — 25/06/24 DATE
RB / AG — DISCIPLINE TEAM LEADER — 25/06/24 DATE
AUTHORISED FOR ISSUE — DATE

Social Housing Construction Program
8 MILES AVENUE & 1265 RIVERWAY DRIVE, KELSO
4X1 BED PLATINUM & 1X1 BED GOLD
4X2 BED GENERAL & 4X1 BED GENERAL
UNIT PLANS - SHEET 6

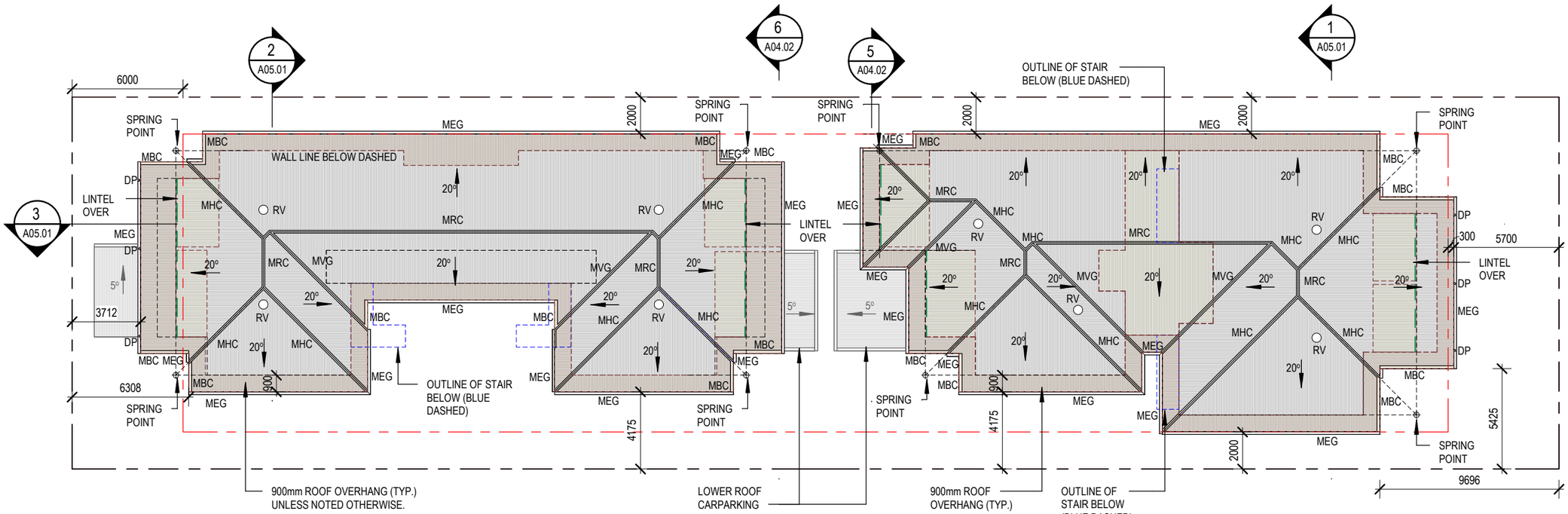
SCALE	AT
1 : 100	A3 SIZE

MASTER SITE NUMBER	CLIENT REFERENCE NUMBER
58908	23961

DRAWING NUMBER	ISSUE	SHEET NO
93378/SD/A02.10	B	14

LEGEND

DP	DOWNPIPE - COLORBOND "MONUMENT"
MBC	METAL BARGE CAPPING - COLORBOND "SOUTHERLY"
MEG	METAL EAVES GUTTER - COLORBOND "MONUMENT" - HALF ROUND PROFILE (SLOTTED)
MHC	METAL HIP CAPPING - COLORBOND "SOUTHERLY"
MRC	METAL RIDGE CAPPING - COLORBOND "SOUTHERLY"
MRS	ROOF SHEETING - COLORBOND "SOUTHERLY" (WITH INSULATION)
MVG	METAL VALLEY CAPPING - COLORBOND "SOUTHERLY"
RV	ROOF VENT
	FLAT SOFFIT
	RAKED SOFFIT
	LINTEL



1 Roof Plan

SCALE 1 : 250

SD-3

DRAWING INDEX SYSTEM
FOR QBUILD USE ONLY

- ☐ CEILING PLANS
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A	10/02/2025	SD3 - FOR REVIEW	AG
B	21/02/2025	SD3	AG

Queensland Government
Department of Housing and Public Works

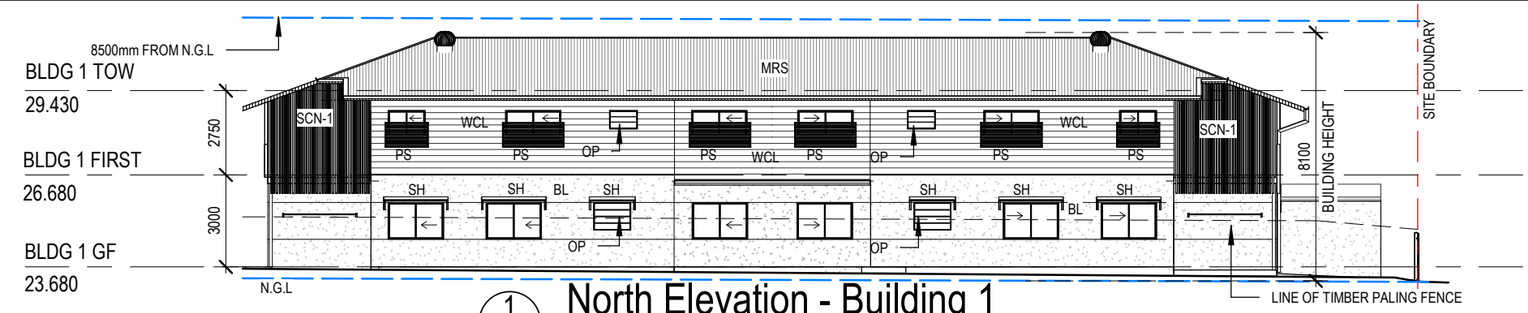
ST	30/01/24
DRAWN	DATE
RB / AG	30/01/24
DISCIPLINE TEAM LEADER	DATE
AUTHORISED FOR ISSUE	DATE

Social Housing Construction Program

8 MILES AVENUE & 1265 RIVERWAY DRIVE, KELSO

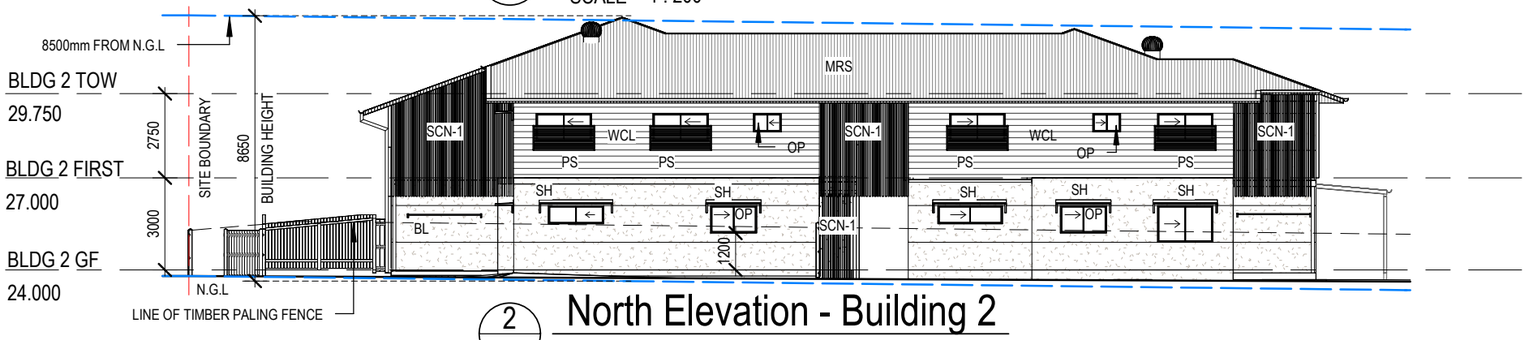
ROOF PLAN

SCALE	As indicated
AT	A3 SIZE
MASTER SITE NUMBER	58908
CLIENT REFERENCE NUMBER	23961
DRAWING NUMBER	93378/SD/A03.01
ISSUE	B
SHEET NO	15



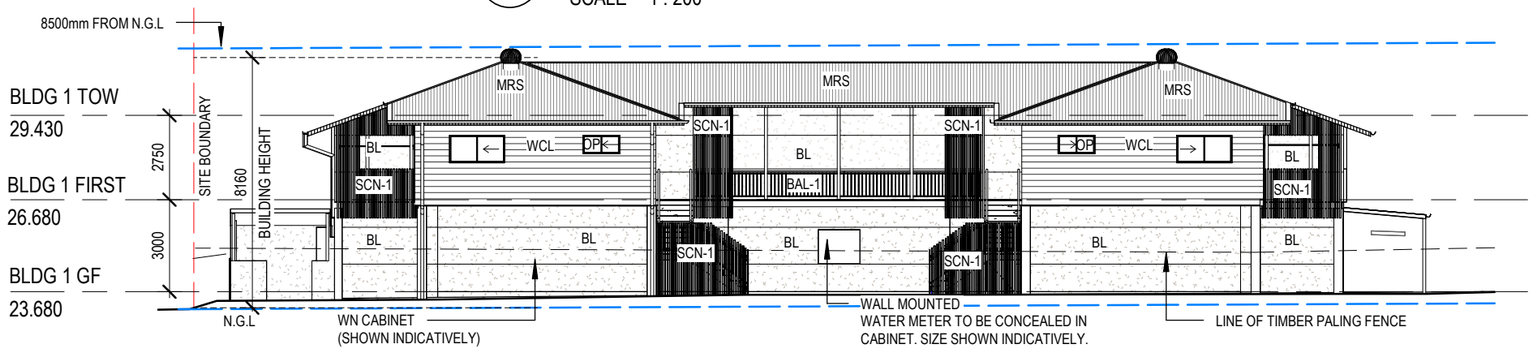
1 North Elevation - Building 1

SCALE 1 : 200



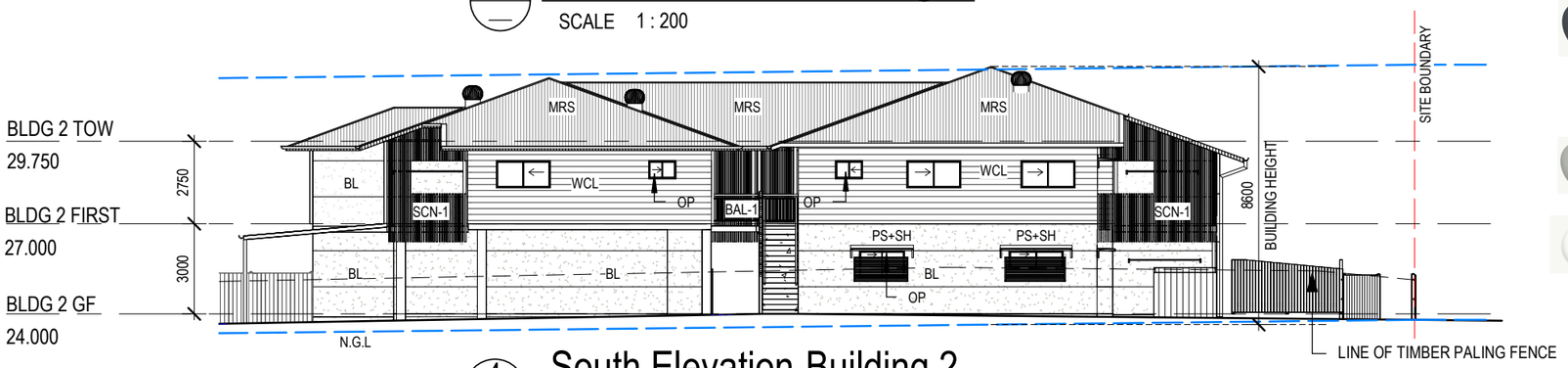
2 North Elevation - Building 2

SCALE 1 : 200



3 South Elevation-Building 1

SCALE 1 : 200



4 South Elevation-Building 2

SCALE 1 : 200

LEGEND

BAL-1	HOT DIP GALVANISED BALUSTRADE
BL	PAINTED AND RENDERED CONCRETE BLOCKWORK - PAINT FINISH(DULUX BEIGE INTENT)
CONC	OFF FORM CONCRETE FINISH (STAIR)
GS	GARDEN SHED
MRS	METAL ROOF SHEETING - COLORBOND "SHALE GREY"
OP	OPAQUE FILM TO WINDOW
PS	PRIVACY SCREEN - POWDERCOATED ALUMINIUM SCREEN CONFIGURATION 'ABABBA', A: 50x16 ALUMINIUM BATTEN; B: 25x16 ALUMINIUM BATTEN,75 GAPS BETWEEN HORIZONTAL BATTENS. SCREEN IN DULUX "VIVD WHITE".
RV	ROOF VENT
SH	WINDOW SUN HOOD - POWDERCOAT ALUMINIUM, IN DULUX "IRONSTONE"
SCN-1	VERTICAL ALUMINIUM BATTEN SCREEN - POWDERCOAT FINISH SCREEN CONFIGURATION 'ABABBA', A: 50x16 ALUMINIUM BATTEN; B: 25x16 ALUMINIUM BATTEN, 75 GAPS BETWEEN VERTICAL BATTENS. BATTEN 'A' IN POWDERCOAT "IRONSTONE" AND BATTEN 'B' IN "VIVID WHITE"
WCL	LINEA WALL CLADDING ON STUD FRAME - PAINT FINISH (DULUX PHANTOM WHITE)

NOTE: A PERFORMANCE SOLUTION REQUIRED FOR ALL EXTERNAL WALLS NOT LISTED UNDER F3D5. THE CONTRACTOR IS TO PROVIDE CERTIFICATE OF CONFORMITY THAT THE SPECIFIED WALL COMPLIES WITH NCC 2022 .

REFERENCE IMAGERY (SCN-1)

	COLORBOND BLISSFUL BEIGE	EXTERNAL WALL (GROUND FLOOR); REFER A02.02 & A02.03
	COLORBOND BEIGE INTENT	EXTERNAL WALL (GROUND FLOOR)
	COLORBOND PHANTOM WHITE	EXTERNAL WALL CLADDING (FIRST FLOOR)
	COLORBOND IRONSTONE	-POWDERCOATED ALUMINIUM SCREEN (SCN-1): BATTEN 'A' IN IRONSTONE -ROOF TRIMS -GUTTERS -DOWNPIPES -SUNHOOD -POST TO BALCONY AND CARBAY
	COLORBOND SHALE GREY	METAL ROOF SHEETING
	COLORBOND VIVD WHITE	-POWDERCOATED ALUMINIUM SCREEN (SCN-1): BATTEN 'B' IN VIVID WHITE -PRIVACY SCREEN (PS)

SD-3

DRAWING INDEX SYSTEM
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- ☐ SETOUT PLAN
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- ☐ STANDARDS / OTHER

AMENDMENTS

ISSUE	DATE	SUBJECT	AUTHORISED
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B	29/07/2024	PD3 - FOR REVIEW	AG
A	30/10/2024	SD1 - FOR REVIEW	AG
A	15/01/2025	SD2 - FOR REVIEW	AG
A	10/02/2025	SD3 - FOR REVIEW	AG
B	21/02/2025	SD3	AG

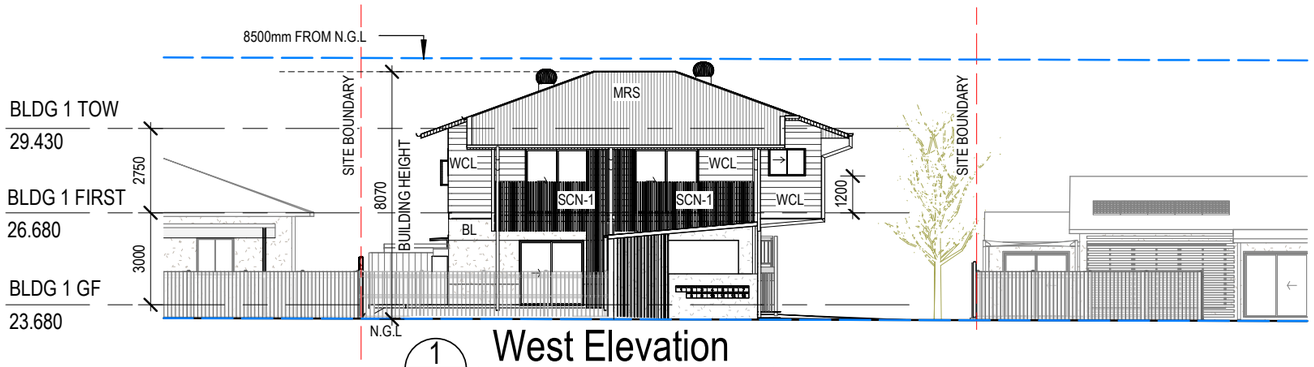
Queensland Government
Department of **Housing and Public Works**

ST	22/04/24
DRAWN	DATE
RB / AG	22/04/24
DISCIPLINE TEAM LEADER	DATE
AUTHORISED FOR ISSUE	DATE

Social Housing Construction Program

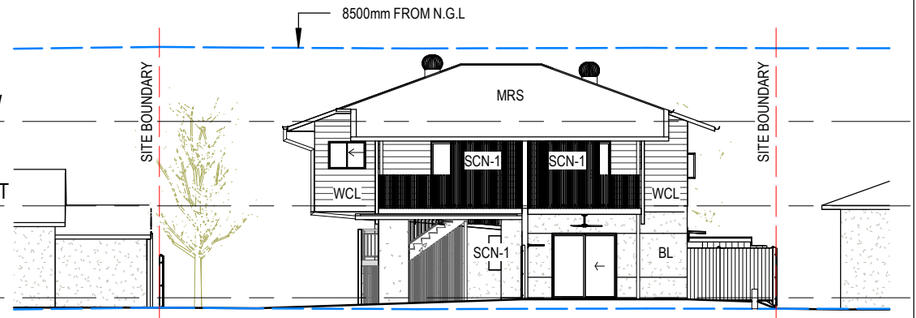
8 MILES AVENUE & 1265 RIVERWAY DRIVE, KELSO
4X1 BED PLATINUM & 1X1 BED GOLD
4X2 BED GENERAL & 4X1 BED GENERAL
ELEVATIONS - SHEET 1

SCALE	As indicated
AT	A3 SIZE
MASTER SITE NUMBER	58908
CLIENT REFERENCE NUMBER	23961
DRAWING NUMBER	93378/SD/A04.01
ISSUE	B
SHEET NO	16



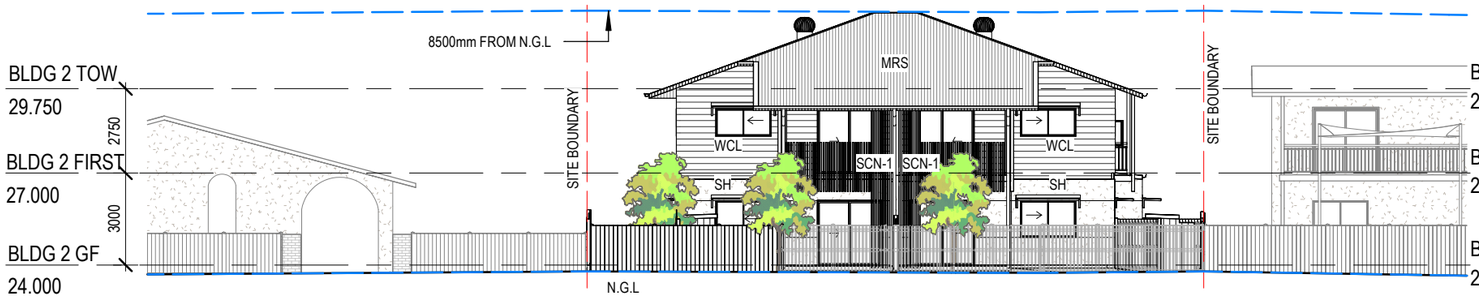
1 West Elevation

SCALE 1 : 200



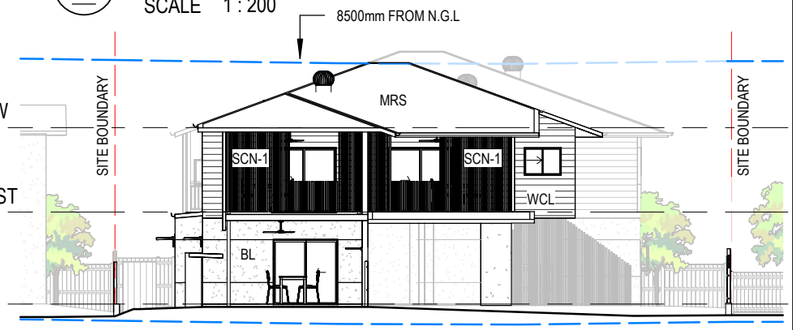
6 East Elevation - Building 1

SCALE 1 : 200



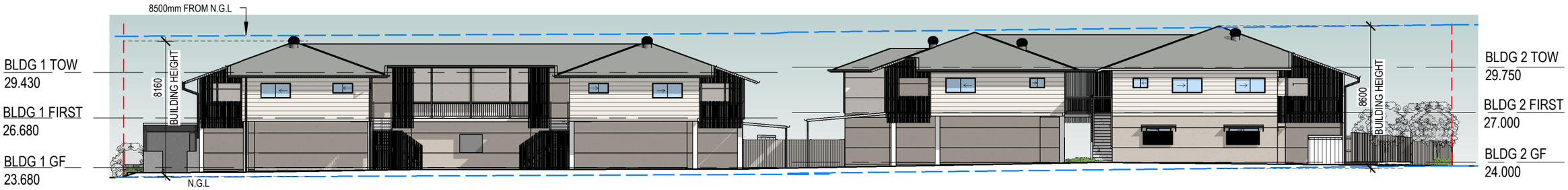
2 East Elevation

SCALE 1 : 200



5 West Elevation - Building 2

SCALE 1 : 200



3 South Elevation

SCALE 1 : 250



4 North Elevation

SCALE 1 : 250

SD-3

DRAWING INDEX SYSTEM
FOR QBUILD USE ONLY

- ☐ CEILING PLANS
- ☐ CONSTRUCTION DETAILS
- ☒ ELEVATIONS
- ☐ EXTERNAL WORKS
- ☐ FITOUTS
- ☐ FLOOR PLANS
- ☐ FURNITURE & EQUIPMENT
- ☐ HYDRAULICS
- ☐ MASTER PLAN
- ☐ MISC DETAILS
- ☐ PLAY STRUCTURES
- ☐ ROOF PLANS
- ☐ SECTIONS
- ☐ SETOUT PLAN
- ☐ SITE PLAN
- ☐ STANDARDS / OTHER

AMENDMENTS

ISSUE	DATE	SUBJECT	AUTHORISED
A	25/06/2024	PD3 - FOR REVIEW	RB
B	29/07/2024	PD3 - FOR REVIEW	AG
A	30/10/2024	SD1 - FOR REVIEW	AG
A	15/01/2025	SD2 - FOR REVIEW	AG
A	10/02/2025	SD3 - FOR REVIEW	AG
B	21/02/2025	SD3	AG

Queensland Government
Department of **Housing and Public Works**

ST	22/04/24		
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RB / AG	22/04/24		
DISCIPLINE TEAM LEADER	DATE		
AUTHORISED FOR ISSUE	DATE		

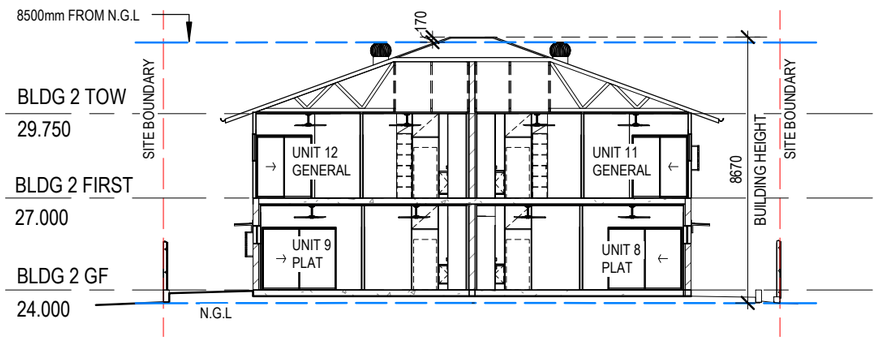
Social Housing Construction Program

8 MILES AVENUE & 1265 RIVERWAY DRIVE, KELSO
4X1 BED PLATINUM & 1X1 BED GOLD
4X2 BED GENERAL & 4X1 BED GENERAL
ELEVATIONS - SHEET 2

SCALE	AT
As indicated	A3 SIZE

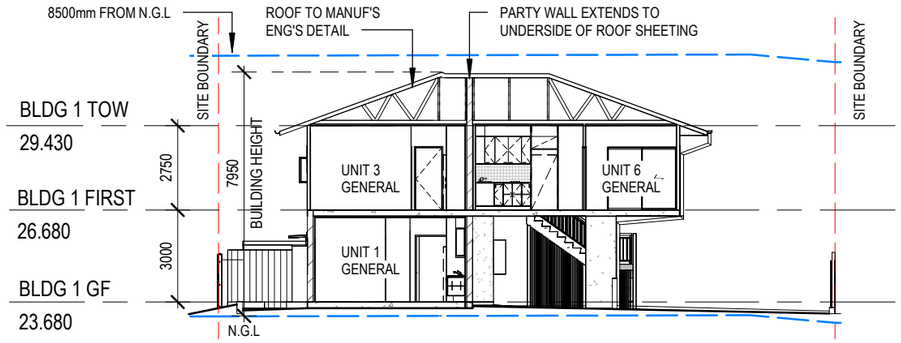
MASTER SITE NUMBER	CLIENT REFERENCE NUMBER
58908	23961

DRAWING NUMBER	ISSUE	SHEET NO
93378/SD/A04.02	B	17



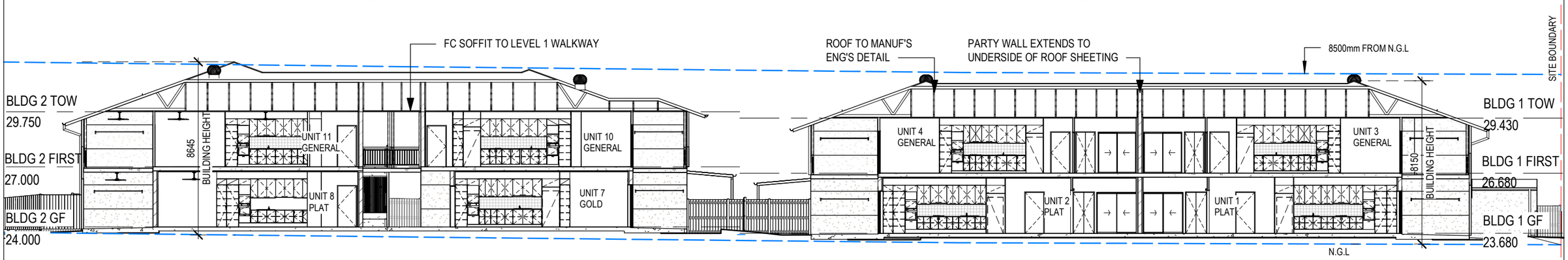
1 Section 1

SCALE 1 : 200



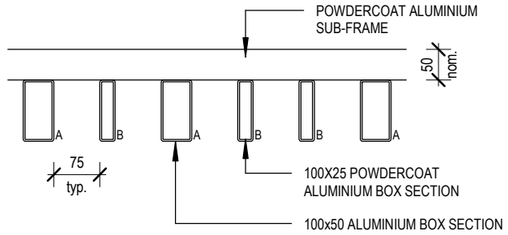
2 Section 2

SCALE 1 : 200



3 Section 3

SCALE 1 : 200



4 Screen Detail SCN-1

SCALE 1 : 10

SD-3

DRAWING INDEX SYSTEM
FOR QBUILD USE ONLY

- ☐ CEILING PLANS
- ☐ CONSTRUCTION DETAILS
- ☒ ELEVATIONS
- ☐ EXTERNAL WORKS
- ☐ FITOUTS
- ☐ FLOOR PLANS
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- ☐ STANDARDS / OTHER

AMENDMENTS

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A	15/01/2025	SD2 - FOR REVIEW	AG
A	10/02/2025	SD3 - FOR REVIEW	AG
B	21/02/2025	SD3	AG

Queensland Government
Department of **Housing and Public Works**

ST	25/06/24
DRAWN	DATE
RB / AG	25/06/24
DISCIPLINE TEAM LEADER	DATE
AUTHORISED FOR ISSUE	DATE

Social Housing Construction Program

8 MILES AVENUE & 1265 RIVERWAY DRIVE, KELSO
4X1 BED PLATINUM & 1X1 BED GOLD
4X2 BED GENERAL & 4X1 BED GENERAL
SECTIONS

SCALE	AT
As indicated	A3 SIZE

MASTER SITE NUMBER	CLIENT REFERENCE NUMBER
58908	23961

DRAWING NUMBER	ISSUE	SHEET NO
93378/SD/A05.01	B	18



1 — 3D View 1 - Site Entrance From Miles Avenue

SCALE



2 — 3D View 2 - Riverway Drive

SCALE

SD-3

DRAWING INDEX SYSTEM
FOR QBUILD USE ONLY

- ☐ CEILING PLANS
- ☐ CONSTRUCTION DETAILS
- ☐ ELEVATIONS
- ☐ EXTERNAL WORKS
- ☐ FITOUTS
- ☐ FLOOR PLANS
- ☐ FURNITURE & EQUIPMENT
- ☐ HYDRAULICS
- ☐ MASTER PLAN
- ☐ MISC DETAILS
- ☐ PLAY STRUCTURES
- ☐ ROOF PLANS
- ☐ SECTIONS
- ☐ SETOUT PLAN
- ☐ SITE PLAN
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AMENDMENTS

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A	25/06/2024	PD3 - FOR REVIEW	RB
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A	30/10/2024	SD1 - FOR REVIEW	AG
A	15/01/2025	SD2 - FOR REVIEW	AG
A	10/02/2025	SD3 - FOR REVIEW	AG
B	21/02/2025	SD3	AG

Queensland Government
Department of **Housing and Public Works**

ST — DRAWN — 22/04/24 DATE

RB / AG — DISCIPLINE TEAM LEADER — 22/04/24 DATE

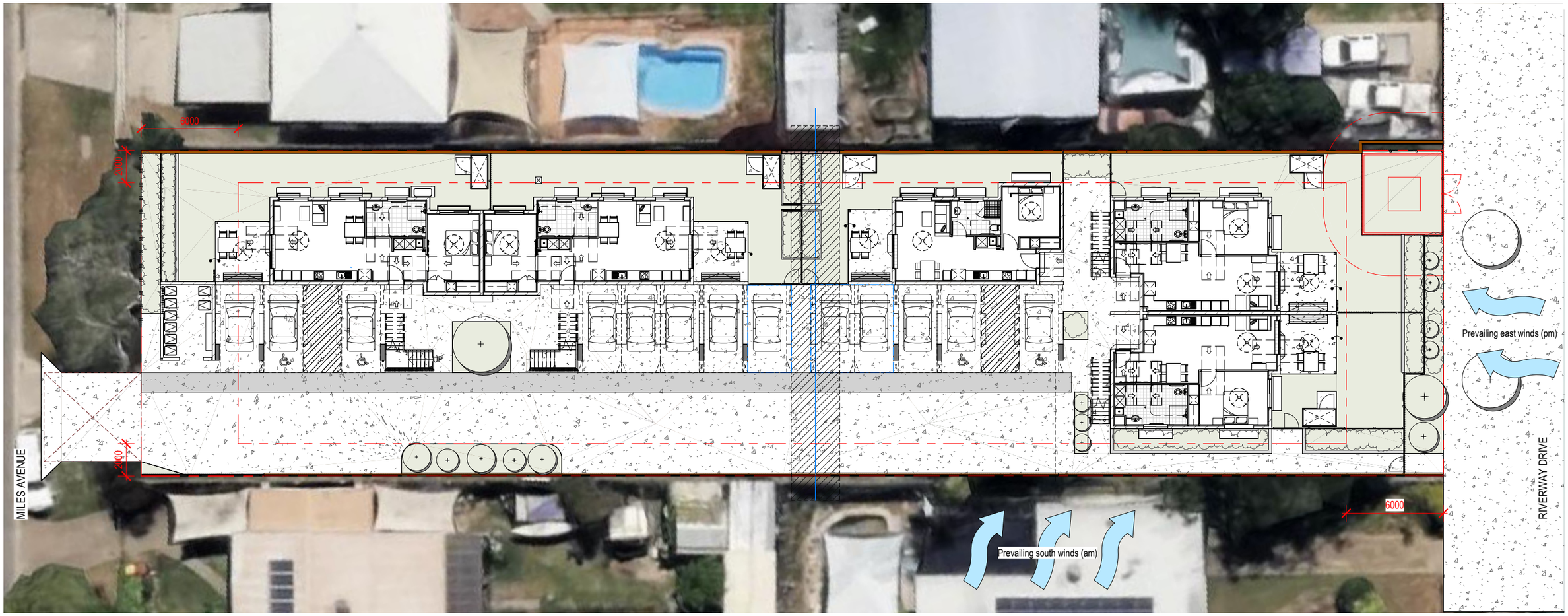
AUTHORISED FOR ISSUE — DATE

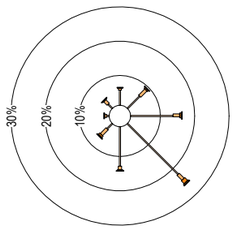
Social Housing Construction Program

8 MILES AVENUE & 1265 RIVERWAY DRIVE, KELSO
4X1 BED PLATINUM & 1X1 BED GOLD
4X2 BED GENERAL & 4X1 BED GENERAL
3D VIEWS

SCALE — AT A3 SIZE

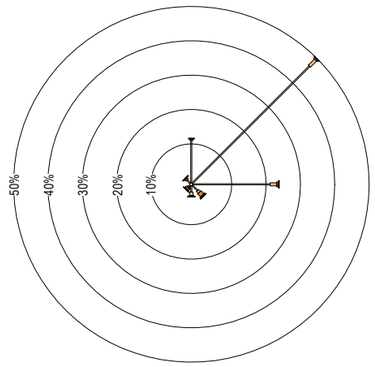
MASTER SITE NUMBER: 58908
CLIENT REFERENCE NUMBER: 23961
DRAWING NUMBER: 93378/SD/A06.01
ISSUE: B
SHEET NO: 19





Wind Rose - 9.00am Townsville

SCALE 1 : 200



3pm Wind Rose - Townsville

SCALE 1 : 200



SD-3

DRAWING INDEX SYSTEM
FOR QBUILD USE ONLY

- ☐ CEILING PLANS
- ☐ CONSTRUCTION DETAILS
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- ☐ SECTIONS
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- ☐ SITE PLAN
- ☒ STANDARDS / OTHER

AMENDMENTS

ISSUE	DATE	SUBJECT	AUTHO-RISED
B	29/07/2024	PD3 - FOR REVIEW	AG
A	30/10/2024	SD1 - FOR REVIEW	AG
A	15/01/2025	SD2 - FOR REVIEW	AG
A	10/02/2025	SD3 - FOR REVIEW	AG
B	21/02/2025	SD3	AG

Queensland Government
Department of **Housing and Public Works**

ST	29/07/24
DRAWN	DATE
RB / AG	29/07/24
DISCIPLINE TEAM LEADER	DATE
AUTHORISED FOR ISSUE	DATE

Social Housing Construction Program

8 MILES AVENUE & 1265 RIVERWAY DRIVE, KELSO
4X1 BED PLATINUM & 1X1 BED GOLD
4X2 BED GENERAL & 4X1 BED GENERAL
ESD STRATEGY

SCALE	AT
As indicated	A3 SIZE

MASTER SITE NUMBER	CLIENT REFERENCE NUMBER
58908	23961

DRAWING NUMBER	ISSUE	SHEET NO
93378/SD/A06.02	B	20

WINDOW SCHEDULE				
Window Number	Height	Width	Comment	Description
W1.1	1200	1810	Sliding window	
W1.2	1200	1810	Sliding window	
W1.3	900	1210	Louvre window	Opaque window
W1.4	1200	1810	Sliding window	
W2.1	1200	1810	Sliding window	
W2.2	1200	1810	Sliding window	
W2.3	900	1210	Louvre window	Opaque window
W2.4	1200	1810	Sliding window	
W3.1	900	1210	Sliding window	
W3.2	900	1810	Sliding window	
W3.3	600	910	Louvre window	Opaque window
W3.4	900	1810	Sliding window	
W4.1	900	1210	Sliding window	
W4.2	900	1810	Sliding window	
W4.3	600	910	Louvre window	Opaque window
W4.4	900	1810	Sliding window	
W5.1	900	1210	Sliding window	
W5.2	900	1810	Sliding window	
W5.3	600	1210	Sliding window	Opaque window
W6.1	900	1210	Sliding window	
W6.2	900	1810	Sliding window	
W6.3	600	1210	Sliding window	Opaque window
W7.1	1200	1810	Sliding window. RW35 as per Acoustic Report	
W7.2	900	1510	Sliding window	
W7.3	600	2110	Sliding window. RW32 as per Acoustic Report	
W8.1	900	1510	Sliding window	Opaque window
W8.2	600	1810	Sliding window. RW38 as per Acoustic Report	
W8.3	1200	1810	Sliding window. RW38 as per Acoustic Report	
W9.1	900	1510	Sliding window	Opaque window
W9.2	600	1810	Sliding window. RW38 as per Acoustic Report	

WINDOW SCHEDULE				
Window Number	Height	Width	Comment	Description
W9.3	1200	1810	Sliding window. RW38 as per Acoustic Report	
W10.1	900	1810	Sliding window. RW32 as per Acoustic Report	
W10.2	600	910	Sliding window.	Opaque window
W10.3	900	1810	Sliding window. RW32 as per Acoustic Report	
W11.1	600	910	Sliding window	Opaque window
W11.2	900	1810	Sliding window. RW35 as per Acoustic Report	
W11.3	900	1810	Sliding window. RW38 as per Acoustic Report	
W11.4	900	1810	Sliding window. RW38 as per Acoustic Report	
W12.1	600	910	Sliding window	Opaque window
W12.2	900	1810	Sliding window. RW35 as per Acoustic Report	
W12.3	900	1810	Sliding window. RW38 as per Acoustic Report	
W12.4	900	1810	Louvre window. RW38 as per Acoustic Report	
W13.1	1200	910	Sliding window.	
W13.2	600	910	Sliding window.	Opaque window
W13.3	900	1810	Sliding window. RW35 as per Acoustic Report	
W13.4	900	1210	Sliding window. RW35 as per Acoustic Report	

Grand total: 46

PATIO SLIDING DOOR SCHEDULE			
Door Number	Height	Width	Comment
W1.5	2110	2110	Sliding door.
W2.5	2110	2110	Sliding door.
W3.5	2110	2110	Sliding door.
W4.5	2110	2110	Sliding door.
W5.4	2110	2110	Sliding door.
W6.4	2110	2110	Sliding door.
W7.4	2110	2110	Sliding door. RW35 as per Acoustic Report
W8.4	2110	2110	Sliding door. RW38 as per Acoustic Report.
W9.4	2110	2110	Sliding door. RW38 as per Acoustic Report.
W10.4	2110	2110	Sliding door. RW35 as per Acoustic Report
W11.5	2110	2110	Sliding door. RW38 as per Acoustic Report.
W12.5	2110	2110	Sliding door. RW38 as per Acoustic Report.
W13.5	2110	2110	Sliding door. RW35 as per Acoustic Report

Grand total: 13

NOTES

1. SECURITY SCREENS REQUIRED TO OPENABLE SECTIONS OF ALL WINDOWS AND SLIDING DOORS.
2. PROVIDE OPAQUE GLASS TO ALL BATHROOM WINDOWS.

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DRAWING INDEX SYSTEM
FOR QBUILD USE ONLY

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- ☐ CONSTRUCTION DETAILS
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- ☐ EXTERNAL WORKS
- ☐ FITOUTS
- ☐ FLOOR PLANS
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- ☐ SECTIONS
- ☐ SETOUT PLAN
- ☐ SITE PLAN
- ☒ STANDARDS / OTHER

AMENDMENTS

ISSUE	DATE	SUBJECT	AUTHORISED
A	30/10/2024	SD1 - FOR REVIEW	AG
A	15/01/2025	SD2 - FOR REVIEW	AG
A	10/02/2025	SD3 - FOR REVIEW	AG
B	21/02/2025	SD3	AG

Queensland Government
Department of **Housing and Public Works**

ST — DRAWN — 01/10/24 DATE
RB / AG — DISCIPLINE TEAM LEADER — 01/10/24 DATE
AUTHORISED FOR ISSUE — DATE

Social Housing Construction Program

8 MILES AVENUE & 1265 RIVERWAY DRIVE, KELSO
4X1 BED PLATINUM & 1X1 BED GOLD
4X2 BED GENERAL & 4X1 BED GENERAL
WINDOW AND SLIDING DOOR SCHEDULE

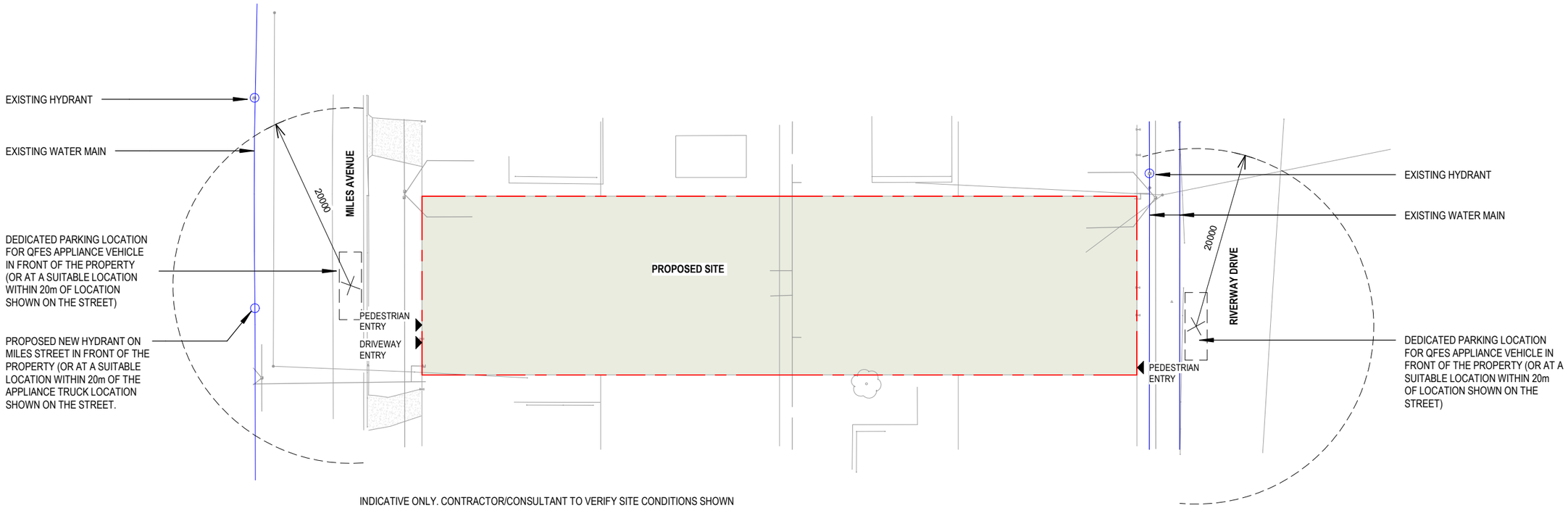
SCALE: 1 : 100 AT A3 SIZE
MASTER SITE NUMBER: 58908
CLIENT REFERENCE NUMBER: 23961
DRAWING NUMBER: 93378/SD/A07.01
ISSUE: B
SHEET NO: 21

FIRE HYDRANT

IT APPEARS THE FIRE HYDRANT COVERAGE COULD BE ACHIEVED TO ALL PARTS OF THE BUILDING FROM THE QFES APPLIANCE TRUCKS AT APPROXIMATELY THE LOCATIONS SHOWN, REFER "FIRE HYDRANT LOCATION DIAGRAM" , WITH THE TRUCKS USING THE STREET SPRING HYDRANTS ON THE TOWNSVILLE CITY COUNCIL (TCC) MAINS. THIS IS SUBJECT TO THE PRESENT LAYOUT AS SHOWN REMAINS UNCHANGED.

IT IS NOTED A NEW SPRING HYDRANT WOULD BE REQUIRED ON THE MILES AVENUE STREET NETWORK OF THE TCC MAINS, IN FRONT OF THE PROPERTY (OR AT A SUITABLE LOCATION WITHIN 20m OF THE APPLIANCE TRUCK LOCATION SHOWN ON THE STREET).

THE FH DESIGN CRITERIA FOR THE SITE IS 10L/s @ 200kPa, BASED ON THE LARGEST FIRE COMPARTMENT SIZE OF EACH SOU LESS THAN 500m2, SUBJECT TO COMPLIANT FIRE SEPERATION BETWEEN FLOOR LEVELS. THE FLOW PRESSURE TEST PROVIDED APPEARS TO ACHIEVE THIS.



INDICATIVE ONLY. CONTRACTOR/CONSULTANT TO VERIFY SITE CONDITIONS SHOWN ON THE DRAWING WITH CONTOUR & DETAIL SURVEY & ACTUAL SITE CONDITIONS.

1

Fire Hydrant Location Diagram

SCALE 1 : 500

SD-3

DRAWING INDEX SYSTEM
FOR QBUILD USE ONLY

- ☐ CEILING PLANS
- ☐ CONSTRUCTION DETAILS
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- ☐ FLOOR PLANS
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- ☐ SECTIONS
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- ☐ SITE PLAN
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AMENDMENTS

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A	10/02/2025	SD3 - FOR REVIEW	AG
B	21/02/2025	SD3	AG

Queensland Government
Department of **Housing and Public Works**

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Social Housing Construction Program

8 MILES AVENUE & 1265 RIVERWAY DRIVE, KELSO

FIRE HYDRANT DIAGRAM

SCALE	AT
As indicated	A3 SIZE

MASTER SITE NUMBER	CLIENT REFERENCE NUMBER
58908	23961

DRAWING NUMBER	ISSUE	SHEET NO
93378/SD/A08.01	B	22

Revision History

Version	Date	Amendments
1.3	28/02/2025	Schematic design report based on SD3 drawings
1.2	10/09/2024	Response to architect comments
1.1	29/08/2024	Updated comments regarding DDA accessibility
1.0	23/07/2024	First Issue

Preliminary Design Regulatory Assessment

Our Reference: QLD20242261

Preliminary building assessment of the proposed Social Housing 13x unit development
8 Miles Avenue Kelso QLD 4815

This report has been prepared to assist in preparation of the documentation required for issue of the relevant Building Approval for the proposed development of the new double storey building containing 13 sole occupancy units at 8 Miles Avenue Kelso QLD 4815.

This regulatory assessment report is based on the latest design drawings received by this office. The following drawings & documentation were assessed:

Document Name	Prepared By
Schematic Design Drawings Pages: A-00.01 to A08.01	Queensland Government Department of Housing, Local Government, Planning and Public Works

It is intended that any non-compliances with the design are identified and resolutions discussed to assist in the ongoing development of design documentation.

BCA Parameters

For the purposes of this assessment, the following building characteristics are applicable:

BCA Version Applicable	NCC 2022 Volume One
Occupancy	Sole Occupancy Units
Class of Building	Class 2 (Sole Occupancy Units)
Rise in Storeys	Two (2)
Number of Storeys	Two (2)
Effective Height	Less than 12m (approx. 3m)
Floor Area	
Ground Floor	393.8m^2
First Floor	568.9m^2
Total	962.7m^2
Type of Construction	Type 'C' **Note:** Part C2D6 concessions applies with the provision of two exits to each storey
Required Fire Ratings (FRL) for Load-Bearing Parts	**External walls** FRL 90/90/90 Less than 1.5m from an FSF **Common walls and fire walls** FRL 60/60/60 **Note:** Specification 5 Clause 23
Number of Occupants (as per D12D18)	N/A
Required Fire Safety Features	• Compartmentation and separation of all SOUs • Non-Combustible façade and framing (C2D10) • Fire Hydrant System to AS 2419. • Automatic shutdown of air handling system between compartments (E2D3(2)) • Portable Fire Extinguishers to AS 2444 • Combined Smoke Detection System & Occupant Warning System (OWS) and alarm system throughout SOUs to AS 3786 & AS 1670.1

Assumed Construction Characteristics

The following structural characteristics of the development have been assumed for the purposes of this assessment

Building Element	Construction Type
External Wall Cladding	Masonry & fibre cement weather board claddings
Structural Floors	Concrete raft slabs
Framing	Timber framing throughout
Roof	Non-combustible metal deck

Abbreviations Used in this Report

To assist in reading of this report the following terminology has been abbreviated:

NCC or BCA	National Construction Code 2022
FER	Fire Engineering Report
QFES	Queensland Fire & Emergency Service
FRL	Fire Resistance Level
CRF	Critical Radiant Heat Flux
DTS	Deemed to Satisfy provision
BOH	Back of House
EWIS	Emergency Warning and Intercommunication System
FEA	Fire Engineering Assessment utilizing a Performance-Based Assessment of the BCA
FSF	Fire Source Feature
SDR	Smoke Development Rate
FIS	Fire Isolated Stairwell

Executive Summary of Compliance Issues

The proposed building design has been reviewed for compliance with the Deemed to Satisfy provisions of the BCA. The tables located on pages 8 to 24 outline the relevant BCA clauses, any shortfall with the current design and suggested actions to assist in the development of the design documents for building approval issue.

Note: Performance Solutions are shown as a ★ symbol in the following section

Accessibility & Weatherproofing Performance Solutions

The following matters have been identified as a non-compliance under the BCA DTS provisions and should be assessed by a suitability qualified & registered professional to formulate the appropriate performance solution(s).

Clause	Further Comment
Part F3P1	Currently there are no DTS provisions permitting the use of fibre cement products as wall cladding. A performance solution assessment will be required to be undertaken once all cladding systems have been finalised.

Administrative Items

The following is a list of applicable items that will be required to undertake a final assessment at the above address.

Item		Further Comment
1.	Provide a completed DA Form 2 Application Form	
2.	Builders details	To be included on the DA Form 2
3.	A copy of the Development Approval (town planning permit), Endorsed Plans and any other associated approvals (MCU, OPW, ROL, *etc.*)	
4.	A copy of the Acoustic Report	This report will be required as part of the MCU and subsequent SARA referral for works near a transport noise corridor. Construction requirements of this report will need to be included in the building design
5.	QFES assessment advice	To be submitted once services designs are developed to a suitable stage
6.	Energy rating reports and BCA Part J assessments	
7.	'Construction Issue' architectural drawings and specifications	
8.	Structural drawings, computations, and independent certification (Form 15(s))	
9.	A Copy of the Geotechnical Investigation (Soil) Report	
10.	Civil (drainage) drawings and computations	Drawings are to be approved by council
11.	Electrical services drawings, certification (Form 15), and specifications	
12.	Mechanical services drawings, certification (Form 15), and specifications	
13.	Fire services drawings, hydraulic calculations, pressures and flows for street mains, certification (Form 15), and specifications	
14.	Re-establishment survey plan	
15.	Consents for any easements/sub stations from the relevant electrical authority	
16.	Provide a copy of the Qleave levy payment	

Preliminary Design Matters

The following table presents a summary of our preliminary BCA compliance assessment for this project. The intent of this assessment is to provide guidance to designers on 'significant' regulatory compliance matters that either (i) need to be considered in preparing working drawings or (ii) potentially cause non-compliance with the *Building Act 1975 (Qld.) & Building Regulations 2006 (Qld.)*.

Item	Further Comment	Additional Info
	Part B – Structural Provisions	
Part B1 – Glazed assemblies and must be design and materials specified must be in accordance with this part	• Structural engineer to have regard for glazed assemblies and the appropriate wind category/effective height/wind speed relative to effective height as per AS 1170.2	
	Part C – Fire Resistant Construction	

Part C2D2 including Specification 5 - The fire ratings (FRL) for primary structures such as external and internal walls, floors and roofs to be in accordance with S5C24 – Type C construction.	• For Type C construction, all external walls within 1.5m of a *fire source feature* are required to have an FRL
	• Current DTS FRLs for **external walls** in proximity to a FSF are identified as:
	  ○ FRL 90/90/90 for walls within 1.5m of fire source feature (boundary)
	• Current DTS FRLs for **external columns** in proximity to a FSF are identified as:
	  ○ FRL 90/-/- for columns within 1.5m of fire source feature (boundary)
	• Current DTS FRLs for **internal loadbearing & non-loadbearing walls separating public corridors and SOUs**:	

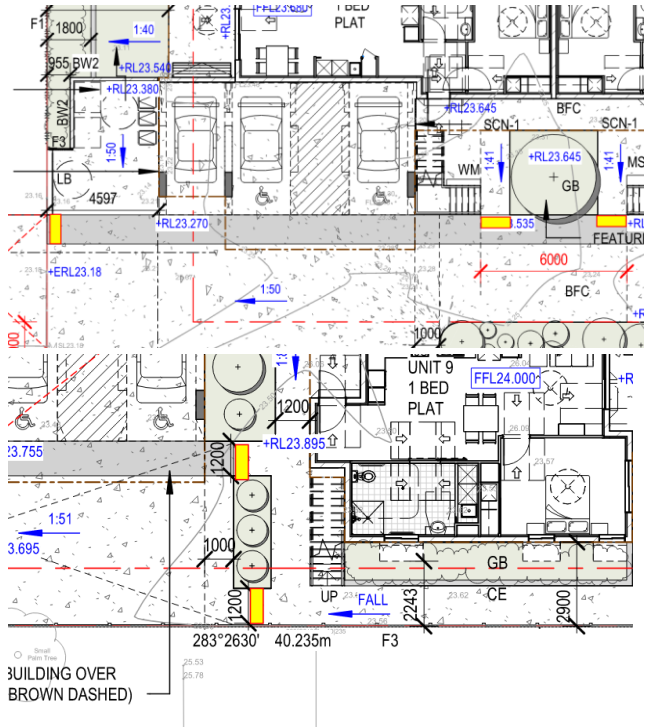
Item	Further Comment	Additional Info
	○ FRL 60/60/60 for walls bounding public corridors ○ FRL 60/60/60 for walls between SOUs	
Specification 5 – General Requirements Specification 5 Clause 8 - Enclosure of shafts Fire isolated lift shafts, stairwell shafts, and any other shaft that is required to have an FRL must be enclosed top and bottom via a concrete lid with the same FRL as the shaft	• Working drawings to document wall types and floor plan to show wall tags (*i.e.,* external walls, lightweight claddings, separating walls etc.). • Working drawings to document the fire rated wall types (*i.e.,* a proprietary system is to be used, with system FRL, requirements, and specifications nominated). • Fire rated wall systems need only be tested from the outside to satisfy the requirements of Table S5C24a • As per the above, FRLs are required between each SOU, as well as the public corridors. • The currently exists no external walls identified as being non-compliant with the above setbacks for Type C construction.	
Part C2D6 – A building having a rise in storeys of 2 may be of Type C construction if it is a Class 2 or 3 building and each sole-occupancy unit has access to at least 2 exits or its own direct access to a road or open space	This concession applies given the provision of two stairways to the first floor and all ground floor units being provided with two exits	
Part C2D11 – Fire Hazard Properties - The fire hazard properties of linings, materials and assemblies must be in accordance with BCA Specification 7. Including floor linings, floor coverings, wall lining and ceiling linings (including carpark ceiling insulation), air-handling ductwork (AS4254.1.2), lift cars, sarking-type materials (must be non-combustible and a	Submit floor and wall linings and other related material indices for further review. Working drawings to document a floor and wall covering schedule.	

Item	Further Comment	Additional Info
flammability index of 5 max), insulation (must be non-combustible also).	The following fire hazard indices are required to be submitted, and must achieve the following values: • Wall & Ceiling cladding *Public areas/corridors* to all buildings– Must achieve a group rating of 1 or 2 under AS 5637.1, • Wall & Ceiling cladding *within SOU's* – Must achieve a group rating of 1, 2 or 3 under AS 5637.1, and have a smoke growth rate index of not more than 100 or an average specific extinction are of less than 250m^2/kg • Roof sarking – Must have a flammability index of not greater than 5 (If applicable)	
Part C4D12 - Doorways in Class 2 buildings must be protected in accordance with this part	SOU entry doors must be protected in accordance with this part and must have an FRL of -/60/30 with a self-closing mechanism.	
Part C4D13 & C4D15 - Service penetrations through fire rated walls and floors must not compromise the FRL of the wall or floor. Compliance mechanisms shall include the protection of penetrations with fire collars, fire rated putty, fire dampers and the like or provision for services shafts	• Details to be provided and details nominated on Architectural Drawings. • Architect/Builder to provide a schedule of penetrations, along with all associated testing reports for all products. • Working drawings to show penetration details and protection types. Service shafts in this building are to be protected in accordance with Specification 5 *i.e.,* non-loadbearing shafts to be protected with FRL -/90/90. Top and bottom of shaft to be protected with the same FRL. **Note:** Refer to Part F for acoustic requirements for service penetration collars etc.	

Item	Further Comment	Additional Info
Part C4D16 Construction joints to be protected in a manner to comply with AS 1530.4	Provide typical detail indicating fireproofing of construction joint/s for review.	
	Parts D2 & D3 – Access and Egress	
Part D2D8 - Dimensions of exits Exits and paths of travel to an exit from all levels to have a minimum unobstructed width based on use and occupant numbers (minimum 1m required). Head clearance to be min. 2.0m	• Door heights and widths to be documented at design documentation stage.	
Part D2D15 – Discharge from exits	• Bollards or other barriers to be provided at doorways where the potential for blockage by a vehicle exists • Nominate RLs to verify compliance with this clause (D1.10(c)(i))	
Part D3D4 - Required stairs and ramps (*i.e.,* the internal stairways) must be constructed to D3D3 or only of: a) Reinforced or prestressed concrete, or b) Steel in no part less than 6mm thick, or c) Timber that - i. Has a finished thickness of not less than 44mm, and ii. Has an average density of not less than 800 kg/m^3 at a moisture content of 12%, and iii. Has not been joined by means of glue unless it has bene laminated and glued with resorcinol formaldehyde or resorcinol phenol formaldehyde glue	Working drawings to document compliance	

Item	Further Comment	Additional Info
Part D3D8 - Fuel and electrical services must not be installed in a required exit or in a path of travel	• Electrical meters to be enclosed within a non-combustible (Metal) cupboard with doors installed with smoke seals. Drawings to note this requirement. • Gas to the subject property to be confirmed (assuming no gas meter near either the front entry door or rear sliding door).	
Part D3D9 - Enclosure of space under stairs and ramps under non-required fire isolated staircase are to have walls and ceilings with an FRL of 60/60/60 minimum and any access door nominated as a self-closing fire door of FRL-/60/30	Though not currently proposed, if this is to be included, the area under the internal staircase to have these requirements nominated, working drawings to show propriety systems only (*i.e.,* CSR Redbook systems).	
Part D3D14 – Goings and risers: • Max. 18 risers for each flight. • Max. 3 winders in a quarter landing. • No winders in required stairway • Riser (190mm – 115mm) • Goings (355mm – 240mm) • Openings between risers max 124mm • Treads to be provided with non-slip finish.	Working drawings confirm riser and going dimensions of all stairs including landing dimensions	
Part D3D16 – Thresholds The threshold of a door must not incorporate a step or ramp at point closer than the width of the door leaf where the door does not open externally and there is more than one riser.	Confirm there will be no thresholds at external doorways. Or where proposed, document threshold ramps in accordance with AS 1428.1	
Part D3D17 – Balustrades and other barriers All balustrades are required to balconies, voids openings and ramps where there is a difference in floor level in excess of 1.0m. Note that where the fall	• Detail barriers to be provided to stairway and void between ground and first floor. BSGM recommends the balustrade heights be nominated	

Item	Further Comment	Additional Info
height is in excess of 4.0m, the balustrade system must not contain any horizontal elements or elements allowing a toehold.	at 1050mm with 120mm spacing to allow for on-site tolerances • Balustrades/barriers to both sides of internal stairs to extend to the nosing of the bottom tread.	
Part D3D22 – Handrails. A detail showing all handrails to all stairs is to be provided in accordance with this part.	Detail handrails in line with the above.	
Part D3D24 - A doorway serving as a required exit or forming part of required exit must not have sliding, revolving, shutter, tilt doors	Confirm rear sliding doors to ground floor units can be opened with a force of not greater than 110N.	
Part D3D26 – Doors in a required exit or in paths of travel to an exit to be provided with hardware, which allows opening of door using a single device and a single-handed action.	A doorway in a required exit must be readily operable without a key from the side that faces a person seeking egress. Door furniture must be a single hand downward action lever located between 900mm to 1200mm above the floor. Working drawings to document compliance under this part.	
Part D3D29 – Protection of openable windows for a class 2 where the fall is greater than 2m to be in accordance with this part	Protection of openable windows within bedrooms of the class 3 shall consisting of a restricting device restricting the window opening to max 125mm or a screen over the openable portion capable of resisting 250N of force. Barriers are required in accordance with (C) if the fall is greater than 4m. Window schedule to document compliance with this part.	
Part D4 – Access for People with a Disability		
Part D4D2 – Areas required to be documented as accessible under this part.	The following areas are required to be fully accessible in accordance with AS 1428.1:	

Item	Further Comment	Additional Info
	• From a pedestrian entrance required to be accessible to at least one floor containing sole occupancy units and to the entrance doorway of each sole occupancy unit located on that level. • To and within not less than 1 of each type of room or space for use in common by the residents, including a cooking facility, sauna, gymnasium, swimming pool, common laundry, games room, individual shop, eating area, or the like.	
AS 1428.1 as referenced within Part D4 – Accessibility details are required to be provided on the working drawing for compliance with this part and the accessibility standard	Accessways must be provided from the pedestrian entries at the allotment boundaries and from any required accessible carparking spaces Architectural details to confirm the following: • Access from street to the pedestrian entries and common areas including handrails, tactile ground indicators etc. • Confirm all gradients for the main pedestrian accessible path of travel & ramps from the allotment boundary to the entry doors on the ground floor • Decals nominated on door schedule for any common area glazing proposed • Dimension exact clear width between skirtings and other obstructions within all public corridors to confirm adequate turning spaces are being provided. • Details of sliding door sets, threshold ramps, D handles and door hardware to be nominated. **Note:** Subject to further review once design documented has been finalized	Suggested TGSI locations: 

Item	Further Comment	Additional Info
Part D4D4 – Parts of a Class 2 building to be accessible	• Confirm RLs at external thresholds. A maximum 35mm threshold ramp may be incorporated at these locations.	
Part D4D6 - Accessible car spaces	• Accessible car space dimensions and bollard locations to be in accordance with AS 2890.6 (*i.e.,* 5400mm long by 2400mm wide with a shared space of 5400mm x 2400mm with a head height clearance of 2500mm and bollard)	
Part D4D13 – Glazing on accessways	If no chair rail, handrail or transom, all frameless or fully glazed doors, sidelights and any glazing capable of being mistaken for a doorway or opening within Ground Floor lobby, it must be clearly marked per AS1428.1 *i.e.,* glazing decals. Document in working drawings	
Part E – Services and Equipment		
Part E1D2 – Fire Hydrants Fire hydrants to be provided to building with a floor area >500m^2 and situated on each level of the building in accordance with AS 2419. Hydrants to have water supply and pressures and flows in accordance with AS 2419, and to be located so as to provide coverage to all points of the floor level from 30m hose unless otherwise approved by the Relevant Fire Brigade Authority. **Note:** AS 2419 – 2021 to be used in hydrant design as per BCA 22022	• Fire hydrant system to rely on single street hydrant as a feed hydrant for a brigade booster appliance. Street plugs available at both Miles Avenue and Riverway Drive to serve as feed hydrants for brigade pumping appliance. • 1 hydrant to run simultaneously for pressure and flow calculations to Class 2 • Pressures and flows from water authority required to confirm requirements and compliance. 10L/s minimum flow rate at a minimum pressure of 200kPa • Fire Service drawings are required to show street hydrant locations, hardstand, and coverage to all	New street plug to be installed to Miles Avenue subject to QFES approval

Item	Further Comment	Additional Info
	parts of the development as per the preliminary coverage plans. • Current preliminary coverage checks indicate compliant coverage from street hydrant set up (*i.e.,* 20m to hardstand from street plug, Brigade pumping applicant 10m setback from Building Envelope, 60m hose length). To be documented is pressure and flows are compliant. • Further review of special fire service design items required will be done once service drawings have been submitted for review. Service designer to confirm the extent of departures to the hydrant code for referral to QFES	

Part E1D14 – Portable fire Extinguishers
Portable fire extinguishers to be provide in accordance with AS 2444 provisions to high-risk areas such as Plant rooms, Switch boards, Car parks and the like
	• Architectural drawings to nominate details
	• Working drawings to nominate a fire extinguisher for the electrical switchboards between 2m and 20m from the switchboards.
	• Working drawings to nominate fire extinguishers to the apartment levels as follows:
	  ○ an ABE type fire extinguisher; and
	  ▪ (ii) a minimum size of 2.5 kg; and
	  ▪ (iii) distributed outside a *sole-occupancy unit*—
	  ○ to serve only the *storey* at which they are located; and
	  ○ so that the travel distance from the entrance doorway of any sole-occupancy unit to the nearest fire extinguisher is not more than 10 m.	

Item	Further Comment	Additional Info
Part E2D3 – Smoke Hazard Management	• Air handling systems which do not form part of a smoke hazard management system and recycle air from one fire compartment to another (between SOUs and public spaces) must be: • Designed and installed to operate as a smoke control system in accordance with AS 1668.1, or • Incorporate smoke dampers where the air handling ducts penetrate elements separating the fire compartments, and • Be provided automatic shut down and activation of the smoke dampers by detectors complying with cl. 7.5 of AS 1670.1 • Smoke hazard management system to be adopted in accordance with BCA Specification 20 and AS 1670.1/AS 3786 respectively. • Smoke alarms to be connected to consumer mains source and located as per Building Regulations • Smoke hazard management policy required for further review.	
Part E2D8 & E2D9 as provisioned by Part E2D3	• Smoke detectors must be located in accordance with AS 1670.1. Smoke alarms are required in public corridors (*i.e.,* balconies and stairways from First Floor) as AS 2118.1 system is not installed • Building to be provided with a smoke detection system in accordance with AS 1670.1/AS 3786, which activates a building occupant warning system in accordance with Clause 7 (C7) of Specification 20	

Item	Further Comment	Additional Info
	• FIP to be nominated to the front of the building, with red strobe alarm etc. detailed also. Clearances to be in accordance with AS 1670.1.	
Specification 20 – Smoke detection and alarm systems required for Class 2 buildings less than 25m in effective height	• Smoke detectors must be located in accordance with AS 1670.1 & QLD Building Regulation 13AC *i.e.,* within every bedroom and common areas of SOUs, *etc.* • Building occupant warning system to be provided throughout in accordance with AS 1670.1 cl. 3.22. • Smoke detectors in the Class 2 public corridors need not be located where the sprinkler system is installed. • AS 1670.1 cl 3.25.5 – Cupboards greater than $3m^2$ are required to have a smoke detector serve them, otherwise cupboards to be divided up into compartments less than $3m^2$	
Part F – Health and Amenity		
Part F1D5 – External waterproofing membranes Waterproofing membranes installed to roofs, balconies, *etc.,* to consist of materials complying with AS 4654.1 and designed & installed as per AS 4654.2	Balcony's must provide for adequate vertical termination height for external waterproofing membranes as per AS 4654. Design engineer to confirm site design wind speed to determine adequate termination height.	
Part F2D2 – Waterproofing of wet areas	• Nominate location and provide typical detail of waterproofing method to be adopted for review. Include details of step downs, falls, up-stands and floor wastes connecting to drainage system. • Floor wastes to be provided in each wet area at First Floor (*i.e.,* shower floor waste and central wet area floor waste and laundries)	

Item	Further Comment	Additional Info
Part F3D3 - Sarking-type material used for weatherproofing of roofs and walls must comply with AS/NZS 4200.1 and AS 4200.2.	Provide sarking specifications for review.	
Part F3D4 – Glazed assemblies	• All glazing within external walls must comply with AS 1170.2, AS 2047 & AS 1288 (as applicable). • Provide details of window and glazing design for review.	
Part F3P1 & F3D5 – Weatherproofing	★ Currently there are no DTS provisions permitting the use of fibre cement products as wall cladding. A performance solution assessment will be required to be undertaken once all cladding systems have been finalised.	
Part F4D2 – Facilities in Residential Buildings	Working drawings to show the following facilities within SOUs: • a kitchen sink and facilities for the preparation and cooking of food • a bath or shower • a closet pan • a washbasin • A laundry facility with provision for a washing machine, clothes drying facility or machine and a wash tub **Note:** if a combined washbasin/washtub is proposed, a performance solution will be required to support this	
Part F4D8 - Construction of sanitary compartments	Doors to sanitary compartments must be sliders, open outwards or have lift off hinges where the door is within 1.2m of WCs	

Item	Further Comment	Additional Info
Part F4D10 – Microbial (legionella) control	Hot, warm, and cooling water systems must be installed in accordance with AS 3666.1. Provide specifications of water temperature conditioning systems for review.	
Part F5D2 – Heights of rooms and other spaces	Room heights to be confirmed in working drawings. The following applies: • Kitchens, laundries, corridors, and passageways – 2.1m • Habitable rooms – 2.4m • Sanitary compartments – 2.1m	
Part F6D2 – Natural Light	Natural light must be provided to all habitable rooms within the SOUs via windows, excluding roof lights, which: • have an aggregate light transmitting area measured exclusive of framing members, glazing bars or other obstructions of not less than 10% of the floor area of the room, and • are open to the sky or face a court or other space open to the sky or an open verandah, carport or the like	Window schedule provided confirms suitable levels of natural light have been provided
F6D6 – Ventilation of Rooms	All rooms must have ventilation via: • Natural ventilation complying with F6D7, or • Mechanical ventilation via a system complying with AS 1668.2 Where natural ventilation is to be relied upon, it must be provided via openings, windows, or doors which are openable and:	As above. Natural ventilation is adequate based on window schedule provided. **Note:** where openable windows cannot provide the minimum 5% ventilating area (*e.g.,* where required to be permanently closed for acoustic purposes) ventilation may need to be augmented by a mechanical ventilation or air conditioning system complying with AS 1668.2 & AS/NZS 3666.1

Item	Further Comment	Additional Info

	• have a ventilating area not less than 5% of the floor area of the room required to be ventilated, and
	• are open to—
	  ○ a suitably sized court, or space open to the sky, or
	  ○ an open verandah, carport, or the like, or
	  ○ an adjoining room in accordance with F6D8	

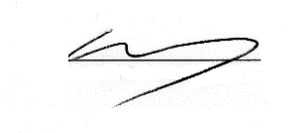
Part F7D1 – Sound transmission & insulation	• SOU separating walls are required to have a discontinuous wall. • Confirm R_w+C_{tr} rating of each floor level where apartments are located. • Walls are required to have a minimum R_w+C_{tr} value of not less than 50 • Floors are required to achieve an R_w+C_{tr} not less than 50 and an impact sound rating of not more than L_{nw} 62	
Part F7D7 – Sound insulation for services	Services, including those located in wall or floor cavities, where penetrating separating walls/floors must be separated from the rooms of any SOUs by construction R_w+C_{tr} of not less than: • 40 if the adjacent room is a habitable room, or • 25 if the adjacent room is a kitchen or other non-habitable room In current location, services riser penetrations and cabinets to be separated by construction with R_w+C_{tr} 25	

Item	Further Comment	Additional Info
Part F8D4 – Flow rates and discharge of exhaust systems to be in accordance with this part	• Working drawings to nominate exhaust fans to all internal laundries, sanitary compartments, and bathrooms with no windows, ducted directly outside. • Flows rates to be 20L/s for bathrooms and sanitary compartments & 40L/s for kitchens	
Part J – Energy Efficiency		
Parts J1 to J7 – Energy Efficiency	• The building is to comply with Parts J1 – J7. An energy report indicating compliance and all requirements is to be provided for review.	

Note: BSGM may have further comments once documents are received.

If there are any queries with regard to this report, please don't hesitate to contact the undersigned.
Regards,





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QBuild

QHIGI Housing

8 Miles Avenue & 1265 Riverway Drive Acoustic Design Report

February 2025



Question today
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QHIGI Housing
8 Miles Avenue & 1265 Riverway Drive Acoustic Design Report

QBuild

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Rev	Date	Details
0	15/07/2024	Acoustic design report
1	27/02/2025	Acoustic design report – minor updates (latest issue architectural drawings)

	Name	Date	Signature
Prepared by:	A. Cuskelly	27/02/2025	
Reviewed by:	J. Shuker	27/02/2025	
Approved by:	S. Grieve	27/02/2025	

WSP acknowledges that every project we work on takes place on First Peoples lands.
We recognise Aboriginal and Torres Strait Islander Peoples as the first scientists and engineers and pay our respects to Elders past and present.

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Executive summary

Department of Housing, Local Government, Planning and Public Works have engaged WSP Australia Pty Ltd (WSP) to provide acoustic consulting advice for a proposed residential development at 8 Miles Avenue and 1265 Riverway Drive, Kelso, Queensland (the Project). The proposed development falls within the Townsville City Council local government area.

The Project will comprise 13 dwellings across two storeys. The expected key noise sources associated with the Project include 13 carparking spaces and possible air-conditioning plant.

Minimum external building fabric requirements have been established in accordance with the *Queensland Development Code MP4.4 – Buildings in a transport noise corridor*. Minimum internal construction requirements have been established in accordance with the *National Construction Code, Volume One, Building Code of Australia 2022*.

Expected noise emissions have been assessed against established acoustic criteria. The project must satisfy acoustic quality objectives provided by the *Queensland Environmental Protection (Noise) Policy 2019* and the acoustic criteria for mechanical plant as per the *Queensland Environmental Protection Act (EPA) 1994*. In lieu of background noise measurements, background noise levels were estimated as per the guidance provided by superseded Australian Standard *AS 1055.2 – Description and Measurement of Environmental Noise* to establish EPA criteria.

Noise emissions from the proposed carparking spaces were assessed, assuming a typical number of vehicle movements in the day, evening, and night-time periods. To achieve compliance with EPP noise criteria, a 1.8 m barrier is required along the southern boundary of the proposed development.

At the time of this assessment, it was not known whether air-conditioning plant is proposed for the development. As such, an upper limit has been provided for outdoor condenser fan units. It is expected that no other significant mechanical plant or noise generating equipment will be associated with the development.

The proposed development was assessed against the requirements of the noise-related performance outcomes listed in the Townsville City Plan (2024). The design is readily able to achieve the performance outcomes by implementing the mitigation strategies outlined in this report.

1 Project background

Department of Housing, Local Government, Planning and Public Works (QBuild) have engaged WSP Australia Pty Ltd (WSP) to provide acoustic consulting advice for the proposed residential development at 8 Miles Avenue and 1265 Riverway Drive, Kelso, Queensland.

The project falls under the jurisdiction of the Townsville City Council.

1.1 Purpose of this report

The key acoustic issues associated with the Project have been identified as:

- Control of noise ingress: The Project is located within a *Traffic Noise Corridor - State-controlled Road*. The road traffic noise ingress needs to be considered to minimise the impact on future residents at the proposed development. It is essential that the design meets the minimum requirements of *Queensland Development Code MP4.4 – Buildings in a transport noise corridor*. This is addressed in Section 4.
- Control of privacy between adjacent spaces: This is a key design element to ensure that there is an appropriate level of privacy between adjacent residences. The design must meet the minimum requirements of the *National Construction Code, Volume One, Building Code of Australia 2022*. This is addressed in Section 5.
- Control of building services noise: Noise emissions emitted by the Project need to be controlled such that the on-site internal noise and off-site noise emission criterion are met. This is addressed in Section 6.

1.2 Project site and receivers

The Project site is located at 8 Miles Avenue and 1265 Riverway Drive, Kelso, Queensland. The proposed development will comprise 13 dwellings across two storeys and 13 carparking spaces. The proposed site layout and elevations are shown in Figure 1.1. and Figure 1.2, respectively.

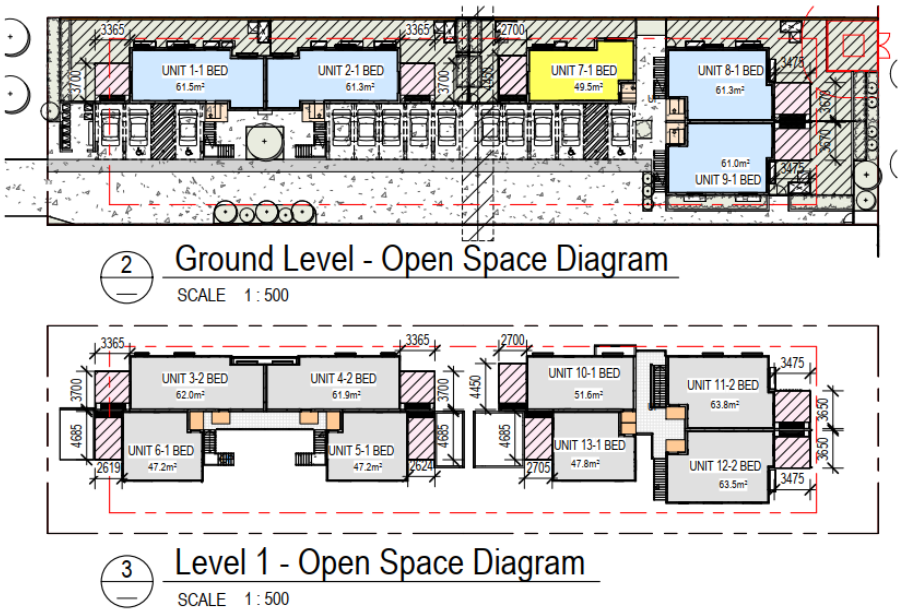


Figure 1.1 Project site – general layout

(source: QHIGI Housing Construction Program drawing 93378/PD/A00.02, dated 21/02/2025)

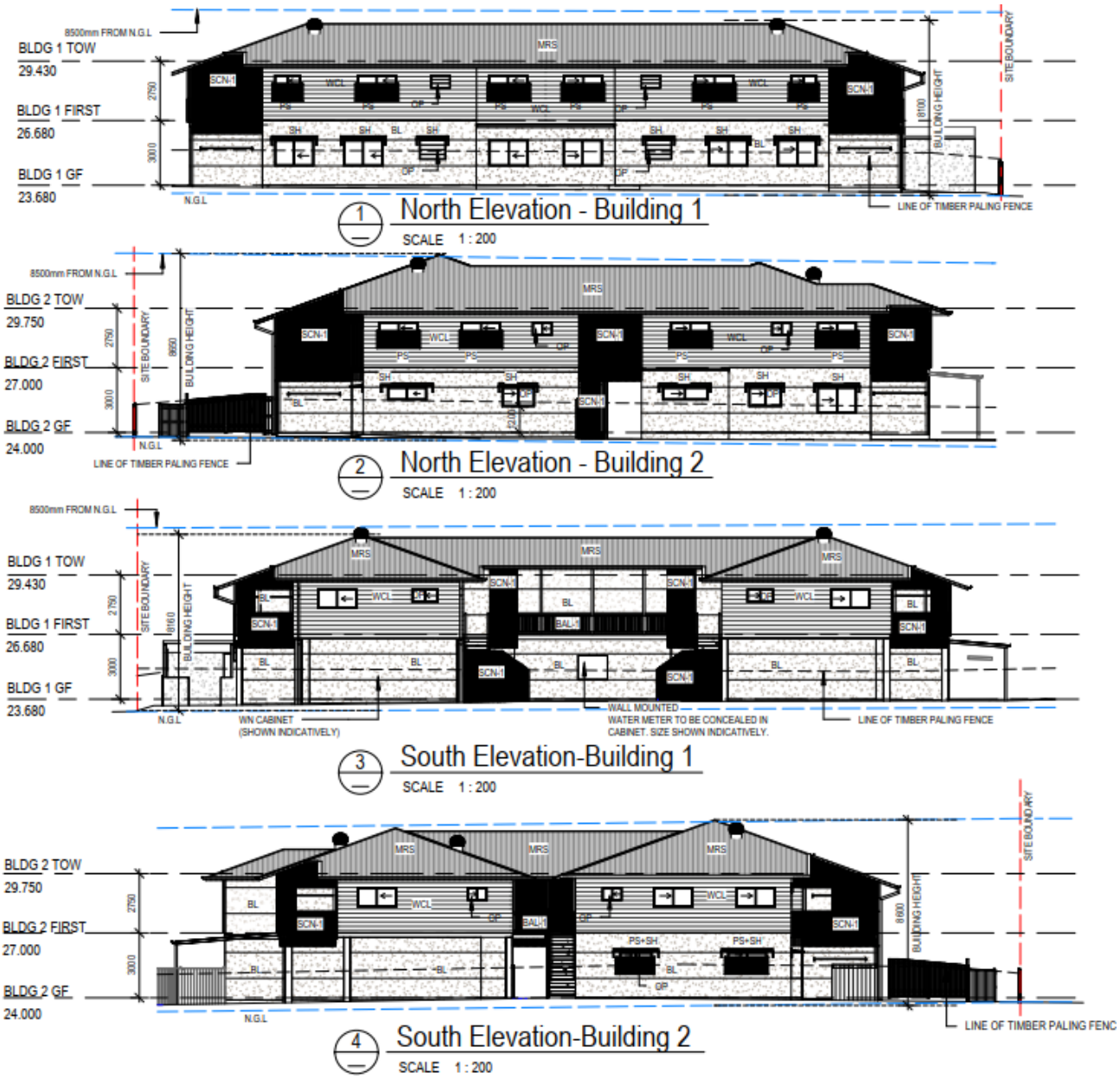


Figure 1.2 Project site – elevations

(source: QHIGI Housing Construction Program drawing 93378/PD/A04.01, dated 21/02/2025)

The Project site is within proximity of several residential and commercial receivers. The nearest receivers are residential dwellings to the north, south and west of the site.

The Project site and adjacent receivers are displayed in Figure 1.3 as per the *Townsville City Plan.* The Project site lies within a *Low-density residential zone*, with *Community facilities, District centre*, and *Recreation and open space zones* in the Project site vicinity.



Figure 1.3 Project site and surrounds – Townsville City Plan zoning
(source: Townsville City Plan, accessed 24 February 2025)

2 Existing noise environment

2.1 Expected background noise

In lieu of an environmental noise survey, baseline noise levels have been taken from superseded Australian Standard *AS 1055.2 – Description and Measurement of Environmental Noise* (AS1055.2) to establish the expected background noise levels at the nearest sensitive receivers.

The site is located within a *Transport Noise Corridor – State-controlled Road* and a block away from small scale commercial buildings. As such, the estimated background noise levels have been based on AS1055.2 noise category R3 *'Area with medium density transportation or some commerce or industry'*. The corresponding noise levels are presented in Table 2.1 below.

It is noted that the Project is not located within a Railway Transport Noise Corridor or an Australian Noise Exposure Forecast (ANEF) contour.

Table 2.1 AS1055.2 noise category R3 – background noise levels

Time period	**Average background sound pressure level, $L_{90,T}$ dBA**	
	Monday to Saturday	**Sunday and public holidays**
Day (7 am – 6 pm)	50	50
Evening (6pm – 10pm)	45	45
Night (10pm – 7am)	40	40

2.2 Road traffic noise

The Project site is located within a *Transport Noise Corridor (TNC) – State-controlled Road (SRC)* as defined by the State Planning Policy Interactive Mapping System (accessed 24 February 2025). The site location and TNC contours are shown in Figure 2.1.

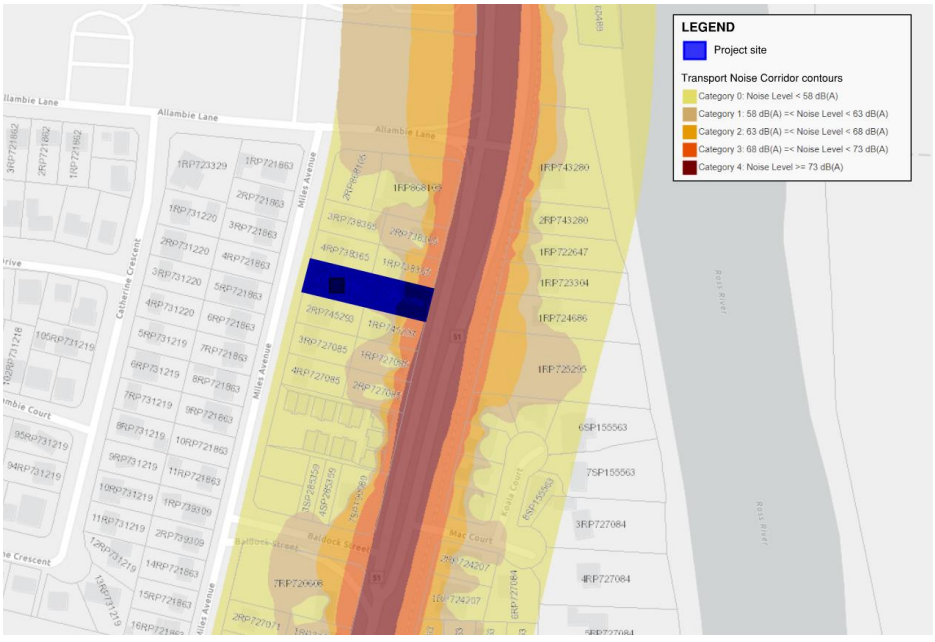


Figure 2.1 Transport Noise Corridor contours

(source: Queensland State Planning Policy Interactive Mapping System, accessed 24 February 2025)

3 Design criteria

The following standards, guidelines and documentation are relevant to the Project, and have been used to determine the applicable design criteria:

- Australian Standard AS/NZS 2107:2016 – Acoustics – Recommended design sound levels and reverberation times for building interiors
- National Construction Code, Volume One, Building Code of Australia 2022 (NCC BCA 2022)
- Queensland Development Code MP4.4 (QDC MP4.4) – Buildings in a transport noise corridor (version 1.1, dated 17 August 2015)
- Queensland Environmental Protection (Noise) Policy (EPP Noise) 2019
- Queensland Environmental Protection Act (EPA) 1994 (current 27 September 2024)
- Townsville City Plan (planning scheme) - Version 2024/01

Additionally, we note that review and consideration has been made of the following documents:

- Architectural drawings: QHIGI Housing Construction Program, drawing series 93378 SD3 (dated 21 February 2025)

3.1 External noise emissions

The Project has the potential to contribute to the external noise environment of the project site surroundings. It is expected that noise emissions will be dominated by the mechanical plant equipment and car park movements. It has been assumed that mechanical plant may be operational across all time periods (day, evening and night).

The proposed development has noise sensitive receivers within proximity, including residential dwellings and commercial buildings.

3.1.1 Townsville City Plan

The Townsville City Plan (TCP 2024) presents acoustic performance outcome requirements for developments that fall under the *'Low density residential zone code'*, which is applicable to the Project. These requirements are outlined in Table 3.1.

Table 3.1 TCP 2024 Low density residential zone code – Table 6.2.1.3 performance outcomes

Performance outcomes	Acceptable outcomes
Amenity	
PO10 Development minimises impacts on surrounding land and provides for an appropriate level of amenity within the site, having regard to: a) noise; b) hours of operation; c) traffic; d) visual impact; e) odour and emissions; f) lighting; g) access to sunlight; h) privacy; and i) outlook.	No acceptable outcome is nominated.
Location	
PO32 Air conditioning units are insulated so that adjoining properties are not affected by the noise source, and are not significantly visible from the street.	No acceptable outcome is nominated.

The TCP 2024 nominates EPP Noise to provide guidance for the assessment of noise emissions for proposed developments. As such, criterion for the Project is established in accordance with EPP Noise and the EPA.

Infrastructure overlay map OM-10.1 (Noise corridors - Roads) is also relevant to the project. This overlay reiterates the TNC noise contours as detailed in Section 2.2 of this report.

3.1.2 Environmental Protection Act 1994

The development's air-conditioning equipment must comply with the noise emission limits outlined by the EPA.

The criteria and resultant noise limit for air conditioning plant noise emissions is summarised in Table 3.2. The expected background noise levels established in Section 2.1 have been used to determine the criteria.

Table 3.2 EPA noise emissions criteria (air-conditioning plant)

Period	Criteria	Noise limit, L_{eq} dBA
Day (7 am – 6 pm)	<5 dBA above background	55
Evening (6 pm – 10 pm)	<5 dBA above background	50
Night (10pm – 7 am)	<3 dBA above background	43

3.1.3 *Environmental Protection (Noise) Policy (2019)*

The EPP Noise provides acoustic quality objectives that are designed to protect the acoustic environment and health and wellbeing of sensitive receivers. The relevant acoustic quality objectives for nearby receivers are outlined in Table 3.3.

Table 3.3 EPP acoustic quality objectives

Sensitive receptor	**Time of day**	**Acoustic quality objectives (measured at the receptor) dBA**			**Environmental value**
		$L_{eq,adj,1hr}$	$L_{10,adj,1hr}$	$L_{01,adj,1hr}$	
Residence (for indoors)	Daytime (7am-6pm) and Evening (6pm-10pm)	35	40	45	Health and wellbeing
	Night-time (10pm-7am)	30	35	40	Health and wellbeing, in relation to the ability to sleep
Residence (for outdoors)	Daytime (7am-6pm) and Evening (6pm-10pm)	50	55	65	Health and wellbeing
	Night-time (10pm – 7am) (1)	45	50	60	Health and wellbeing, in relation to the ability to sleep
Commercial and retail activity (for indoors)	When the activity is open for business	45	-	-	Health and wellbeing, in relation to the ability to converse
Park or garden that is open to the public, for use other than for sport or organised entertainment	Anytime	The level of noise that preserves the amenity of the existing park or garden			Community amenity

(1) The differences between the Residence (for indoors) and Residence (for outdoors) *Daytime and evening* noise targets have been used to determine the suitable Night-time noise targets for Residence (for outdoors), (i.e. assumed 15 dB attenuation provided by the facade).

3.2 Internal noise levels

Internal noise levels can have significant impacts on the intended use of a space; from privacy issues to protecting the amenity of the end user. It is important to consider external noise intrusion, such as road traffic noise, and the expected on-site impact of mechanical plant (i.e. air-conditioning equipment) on internal noise levels across the development.

3.2.1 *AS/NZS 2107:2016*

AS/NZS 2107:2016 (AS2107) provides recommended design criteria for internal noise levels for occupied spaces. Table 3.4 presents the recommended internal noise levels relevant to the Project.

Table 3.4 AS/NZS 2107:2016 Internal noise

Occupancy	**Type of occupancy in AS/NZS 2107:2016**	**Design sound levels L_{eq}, dBA**
Bedrooms	Houses in suburban areas — Sleeping areas (night time)	30 to 35
Kitchen and living areas	Houses in suburban areas — Living areas	30 to 40

It is noted that there are no acoustic reverberation time targets proposed for Residential Buildings in AS2107. It is expected that residential apartment finishes and furnishings will sufficiently control reverberation.

3.3 Internal sound insulation

This section outlines the minimum internal airborne and impact sound insulation criteria for the development's residential apartments. The requirements are set by the National Construction Code, Volume One, Building Code of Australia 2022.

3.3.1 NCC BCA

The proposed development is expected to be classified Class 2 or 3 under the NCC BCA. Class 2 and 3 developments must achieve the acoustic performance requirements outlined in Part F5 of the NCC BCA.

Table 3.5 summarises sound transmission and insulation minimum requirements for Class 2 and 3 developments.

Table 3.5 NCC BCA sound transmissions and insulation minimum requirements

Building Element	Description	Impact noise requirements	Airborne noise requirements
Walls	Separating sole occupancy units	—	$R_w + Ctr \geq 50$
	Separating a habitable room of a sole occupancy unit from a bathroom, sanitary compartment, laundry or kitchen in an adjacent sole occupancy unit	Discontinuous construction	$R_w + Ctr \geq 50$
	Separating a sole occupancy unit and a stairway, public corridor, public lobby or the like	—	$R_w \geq 50$
	Separating a sole occupancy unit and a plant room and lift shaft	Discontinuous construction	$R_w \geq 50$
	A door between a sole occupancy unit and a stairway, public corridor, lobby or the like.	—	$R_w \geq 30$
Floors	Separating sole-occupancy units and separating sole-occupancy units and a plant room, lift shaft, stairway, public corridor, public lobby or the like.	$L_{nT,w} \leq 62$	$R_w + Ctr \geq 50$
Services	A duct, soil, waste, water supply pipe and stormwater pipe located in a wall or floor cavity, serves or passes through more than one sole occupancy unit if the adjacent room is a habitable room (other than a kitchen)	—	$Rw + Ctr \geq 40$
	A duct, soil, waste, water supply pipe and stormwater pipe located in a wall or floor cavity, serves or passes through more than one sole occupancy unit if the adjacent room is a kitchen or any other non-habitable room.	—	$Rw + Ctr \geq 25$
Pumps	The point of connection between the service pipes in a building and any circulating or other pump.	A flexible coupling at the connection	—

4 External building fabric

This section outlines the minimum external construction requirements to sufficiently control noise ingress for compliance with relevant acoustic criteria.

4.1 QDC MP4.4 assessment

The Project site is located within a TNC SCR noise corridor, indicating that the site may be exposed to noise levels as high as $L_{10,18hr}$ 72 dBA. The noise contour categories vary across the proposed development, with the proposed dwelling structures falling into categories 0, 1, 2 and 3, dependent upon the distance from Riverway Drive.

Figure 4.1 shows the noise contour categories overlayed onto the Ground Level plan for the proposed development. Figure 4.2 shows the noise contour categories overlayed onto the Level 01 plan for the proposed development.

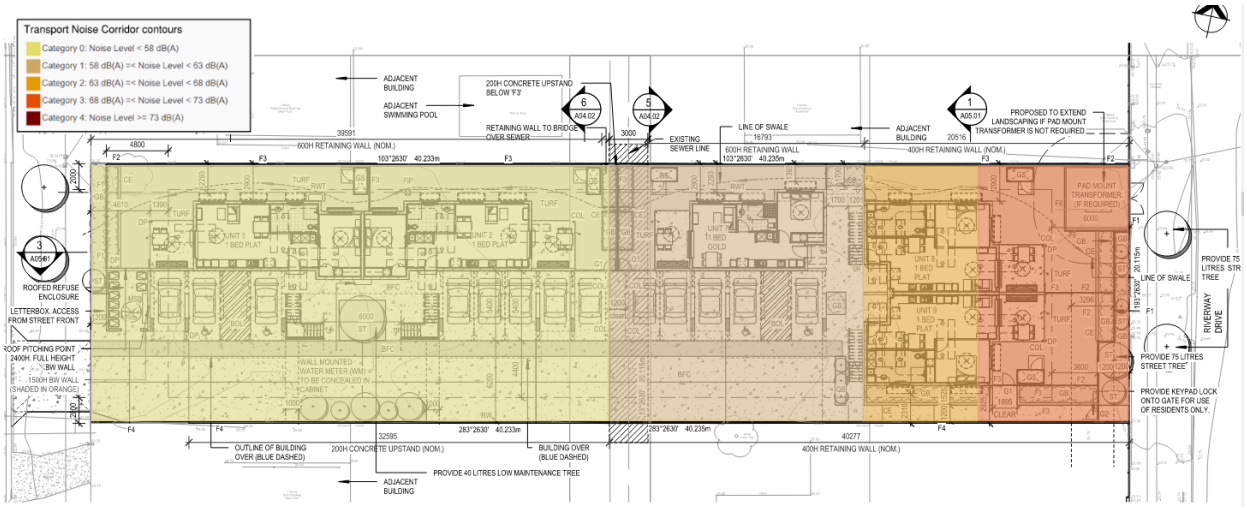


Figure 4.1 QDC MP4.4 noise contours – Ground Level

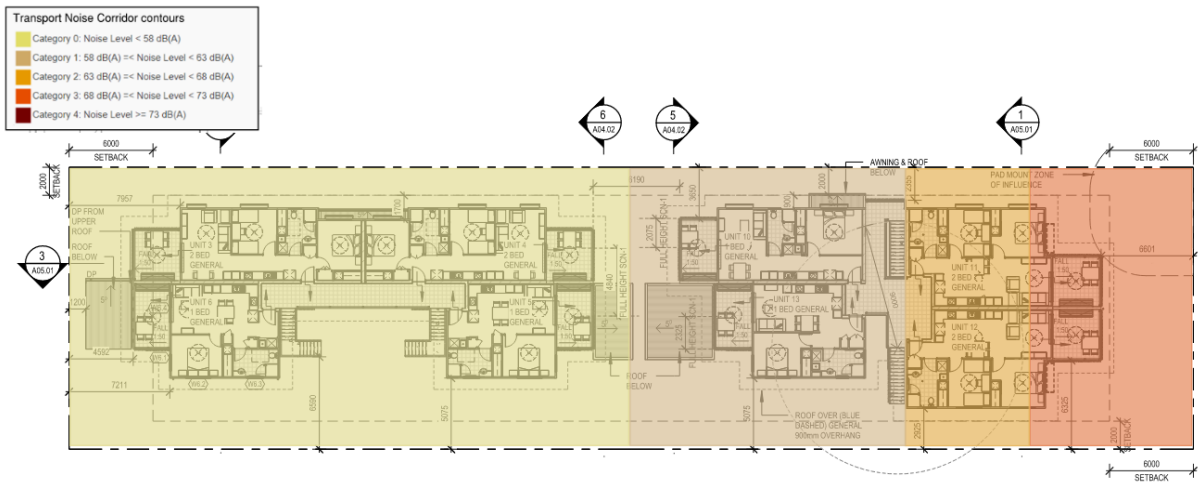


Figure 4.2 QDC MP4.4 noise contours – Level 1

The units and their applicable QDC MP4.4 categories are also listed below:

- **Category 3 and 2:** Units 8, 9, 11 and 12
- **Category 1:** Unit 7, 10 and 13
- **Category 0:** Units 1, 2, 3, 4, 5 and 6

Table 4.1 is a reproduction of the minimum acoustic performance requirements for various building elements, from Schedule 2 of QDC MP4.4.

Table 4.1 QDC MP4.4 acoustic performance requirements

Noise category	Minimum transport noise reduction (dBA) required for habitable rooms	Component of building's external envelope	Minimum Rw required for each component	Recommended constructions
Category 3	35	Glazing	38 (where total area of glazing for a habitable room is greater than 1.8m^2)	Minimum 14.38 mm thick laminated glass, with full perimeter acoustically rated seals. Or; Double glazing consisting of one pane of minimum 5 mm thick glass and one pane of minimum 6 mm thick glass with at least 44 mm air gap, and full perimeter acoustically rated seals.
			35 (where total area of glazing for a habitable room is less than or equal to 1.8m^2)	Minimum 10.38 mm thick laminated glass, with full perimeter acoustically rated seals.
		External walls	47	Two leaves of clay brick masonry at least 110mm thick with: (i) cavity not less than 50 mm between leaves; and (ii) 50 mm thick mineral insulation or 50 mm thick glass wool insulation with a density of 11 kg/m^3 or 50 mm thick polyester insulation with a density of 20 kg/m^3 in the cavity. Or; Two leaves of clay brick masonry at last 110 mm thick with: (i) cavity not less than 50 mm between leaves; and (ii) at least 13 mm thick cement render on each face Or; Single leaf of clay brick masonry at least 110 mm thick with:

Noise category	Minimum transport noise reduction (dBA) required for habitable rooms	Component of building's external envelope	Minimum Rw required for each component	Recommended constructions
				(i) a row of at least 70 mm x 35 mm timber studs or 64 mm steel studs at 600 mm centres, spaced at least 20 mm from the masonry wall; and (ii) mineral insulation or glass wool insulation at least 50 mm thick with a density of at least 11 kg/m^3 positioned between studs; and (iii) one layer of plasterboard at least 13 mm thick fixed to outside face of studs. Or; Single leaf of minimum 150 mm thick masonry of hollow, dense concrete blocks, with mortar joints laid to prevent moisture bridging.
		Roof	41	Concrete or terracotta tile or metal sheet roof with sarking, plasterboard ceiling at least 10 mm thick fixed to ceiling joists, glass wool insulation at least 50 mm thick with a density of at least 11kg/m3 or polyester insulation at least 50 mm thick with a density of at least 20 kg/m^3 in the cavity. Or; Concrete suspended slab at least 100 mm thick.
		Floors	45	Concrete slab at least 100 mm thick. Or; Tongued and grooved boards at least 19 mm thick with: (i) timber joists not less than 175 mm x 50 mm; and (ii) mineral insulation or glass wool insulation at least 75 mm thick with a density of at least 11 kg/m^3 positioned between joists and laid on plasterboard at least 10 mm thick fixed to underside of joists; and (iii) mineral insulation or glass wool insulation at least 25 mm thick with a density of at least 11 kg/m^3 laid over entire floor, including tops of joists before flooring is laid; and (iv) secured to battens at least 75 mm x 50 mm; and

Noise category	Minimum transport noise reduction (dBA) required for habitable rooms	Component of building's external envelope	Minimum Rw required for each component	Recommended constructions
				(v) the assembled flooring laid over the joists, but not fixed to them, with battens lying between the joists.
		Entry doors	33	Fixed so as to overlap the frame or rebate of the frame by not less than 10 mm, fitted with full perimeter acoustically rated seals and constructed of - (i) solid core, wood, particleboard or blockboard not less than 45mm thick; and/or (ii) acoustically laminated glass not less than 10.38 mm thick.
Category 2	30	Glazing	35 (where total area of glazing for a habitable room is greater than 1.8m^2)	Minimum 10.38 mm thick laminated glass, with full perimeter acoustically rated seals
			32 (where total area of glazing for a habitable room is less than or equal to 1.8m^2)	Minimum 6.38 mm thick laminated glass with full perimeter acoustically rated seals.

Noise category	Minimum transport noise reduction (dBA) required for habitable rooms	Component of building's external envelope	Minimum Rw required for each component	Recommended constructions
		External Walls	41	Two leaves of clay brick masonry at least 110 mm thick with cavity not less than 50 mm between leaves. Or; Single leaf of clay brick masonry at last 110 mm thick with: (i) a row of at least 70 mm x 35 mm timber studs or 64 mm steel studs at 600 mm centres, spaced at least 20 mm from the masonry wall; and (ii) mineral insulation or glass wool insulation at least 50 mm thick with a density of at least 11 kg/m^3 positioned between studs; and (iii) one layer of plasterboard at least 10 mm thick fixed to outside face of studs. Or; Single leaf of brick masonry at least 110 mm thick with at least 13mm thick render on each face. Or; Concrete brickwork at least 110 mm thick. Or; In-situ concrete at least 100 mm thick. Or; Precast concrete at least 100 mm thick and without joints.
		Roof	38	Concrete or terracotta tile or metal sheet roof with sarking, plasterboard ceiling at least 10 mm thick fixed to ceiling cavity, mineral insulation or glass wool insulation at least 50 mm thick with a density of at least 11 kg/m^3.

Noise category	Minimum transport noise reduction (dBA) required for habitable rooms	Component of building's external envelope	Minimum Rw required for each component	Recommended constructions
		Floors	45	Concrete slab at least 100 mm thick. Or; Tongued and grooved boards at least 19 mm thick with: (i) timber joists not less than 175 mm x 50 mm; and (ii) mineral insulation or glass wool insulation at least 75 mm thick with a density of at least 11 kg/m^3 positioned between joists and laid on plasterboard at least 10 mm thick fixed to underside of joists; and (iii) mineral insulation or glass wool insulation at least 25 mm thick with a density of at least 11 kg/m^3 laid over entire floor, including tops of joists before flooring is laid; and (iv) secured to battens at least 75 mm x 50 mm; and (v) the assembled flooring laid over the joists, but not fixed to them, with battens lying between the joists.
		Entry Doors	33	Fixed so as to overlap the frame or rebate of the frame by not less than 10 mm, fitted with full perimeter acoustically rated seals and constructed of - (i) solid core, wood, particleboard or blockboard not less than 45mm thick; and/or (ii) acoustically laminated glass not less than 10.38 mm thick.
Category 1	25	Glazing	27 (where total area of glazing for a habitable room is greater than 1.8m^2)	Minimum 4 mm thick glass with full perimeter acoustically rated seals.

Noise category	Minimum transport noise reduction (dBA) required for habitable rooms	Component of building's external envelope	Minimum Rw required for each component	Recommended constructions
			24 (where total area of glazing for a habitable room is less than or equal to 1.8m^2)	Minimum 4 mm thick glass with standard weather seals.
		External Walls	35	Single leaf of clay brick masonry at least 110 mm thick with: (i) a row of at least 70 mm x 35 mm timber studs or 64 mm steel studs at 600 mm centres, spaced at least 20 mm from the masonry wall; and (ii) one layer of plasterboard at least 10 mm thick fixed to outside face of studs. Or; Minimum 6mm thick fibre cement sheeting or weatherboards or plank cladding externally, minimum 90 mm deep timber stud or 92 mm metal stud, standard plasterboard at least 13 mm thick internally.
		Roof	35	Concrete or terracotta tile or metal sheet roof with sarking, plasterboard ceiling at least 10mm thick fixed to ceiling cavity.
		Entry Doors	28	Fixed so as to overlap the frame or rebate of the frame, constructed of - (i) Wood, particleboard or blockboard not less than 33 mm thick; or (ii) Compressed fibre reinforced sheeting not less than 9 mm thick; or (iii) Other suitable material with a mass per unit area not less than 24.4 kg/m^2; or (iv) Solid core timber door not less than 35mm thick fitted with full perimeter acoustically rated seals.
Category 0	No additional acoustic treatment required – standard building assessment provisions apply.			

Whilst the recommended constructions above are deemed to satisfy the requirements of the QDC MP4.4 constructions, alternative construction can also be investigated, so long as the Transport Noise Reduction (TNR) requirement is achieved for all habitable rooms.

5 Internal sound insulation

The following section provides an overview of the internal construction requirements for the proposed residential development. Construction requirements have been presented with regards to achieving compliance with the criteria established in Section 3.

5.1 Separating partitions

Acoustic separation requirements have been established for internal partitions to meet the requirements of the NCC BCA. Indicative internal partition constructions are provided in Table 5.1.

Table 5.1 NCC BCA acoustic internal partitions constructions (Class 2 and 3)

Requirement	Wall construction
R_w + Ctr ≥ 50 dB Discontinuous	**Lightweight, double stud** — 2 x 13 mm fire rated plasterboard (minimum 10.5kg/m^2 per layer) fixed to one side of 64 mm steel stud frame — 2 x rows of 64 mm steels studs at 600 mm centres with an air gap not less than 20 mm between the rows of studs — Minimum 50 mm insulation with a density of 11 kg/m^3 in the wall cavity — 2 x 13 mm fire rated plasterboard (minimum 10.5 kg/m^2 per layer) fixed to other side of 64 mm steel stud frames Wall to be built from slab to soffit
R_w + Ctr ≥ 50 dB	**Masonry** 150 mm concrete panel
	Lightweight, single stud — 1 x 13 mm fire rated plasterboard (10.5kg/m^2 per layer) and 1 x 13 mm sound rated plasterboard (13 kg/m^2 per layer) — 92mm steel stud frame at 600 mm centres with resilient rail/connection (such as Rondo Quiet Stud) — Minimum 75 mm insulation with a density of 14 kg/m^3 in the wall cavity — 1 x 13 mm fire rated plasterboard (10.5 kg/m^2 per layer) and 1 x 13 mm sound rated plasterboard (13 kg/m^2 per layer) Wall to be built from slab to soffit
R_w ≥ 50 dB Discontinuous	**Lightweight, double stud** — 2 x 13 mm standard plasterboard (8.5 kg/m^2 per layer) — 2 x rows of 51 mm steel studs with a minimum distance of 20 mm between the internal stud faces — Minimum 50 mm thick insulation with a density of 11 kg/m^3 in the cavity — 1 x 13 mm standard plasterboard (8.5 kg/m^2 per layer) Wall to be built from slab to soffit.

Requirement	Wall construction
$R_w \geq 50$ dB	**Lightweight, single stud** — 2 x 13mm fire rated plasterboard (10.5 kg/m^2 per layer) — 1 x row of 92mm steel stud frame at 600 mm centres — 50 mm insulation (min. 11 kg/m^3) — 2 x 13mm fire rated plasterboard (10.5 kg/m^2 per layer) Wall to be built from slab to soffit

5.2 Floors

Acoustic separation requirements have been established for floor and ceiling systems to meet the requirements of the NCC BCA. Indicative constructions are provided in Table 5.2.

Table 5.2 NCC BCA acoustic floor constructions (Class 2 and 3)

Requirement	Floor and ceiling construction
$R_w + Ctr \geq 50$ dB and $L_{nT,w} \leq 62$	**Masonry (Type 1)** — 150 mm thick concrete slab with 28 mm metal furring channels and isolation mounts fixed to underside of slab, at 600 mm centres — 65 mm thick polyester insulation with a density of 8 kg/m^3, positioned between furring channels 1 x 13 mm standard plasterboard (8.5 kg/m^2 per layer) fixed to isolation mounts and furring channels
	Masonry (Type 2) 200 mm thick concrete slab with carpet on underlay
	Timber Floor on joists — 1 x 9 mm chipboard floor sheeting over 190 × 45 mm timber joists at 450 mm centres — R2.5 glass wool insulation positioned between timber joists — 28 mm metal furring channels and isolation mounts fixed to underside of joists, isolation mounts to be of natural rubber with a dynamic factor of not more than 1.1 and static deflection of not less than 3 mm at actual operating load; and 2 x 16 mm fire-protective grade plasterboard (10.5 kg/m^2 per layer) fixed to furring channels

The following notes are made in relation to floor and ceiling systems:

- *Pipework:* Where the pipe in the partition cavity only serves one sole-occupancy unit, the pipework must not be fixed to the wall leaf on the side of the adjoining sole-occupancy unit, and have a clearance of at least 10 mm to the other wall leaf.
- *Services:* All services must not be chased into masonry elements. Where the pipe in the partition cavity only serves one sole-occupancy unit, the pipework must:
  - not be fixed to the wall leaf on the side of the adjoining sole-occupancy unit, and
  - have a clearance of at least 10 mm to the other wall leaf.

Also note that pipes may require acoustic lagging if they pass in the wall cavity between habitable spaces.

5.3 Services

The following service systems are required to be acoustically treated under the NCC BCA, if they serve or pass through more than one tenancy:

- Mechanical services ducts
- Soil pipes
- Waste pipes
- Water supply pipes
- Stormwater pipes.

5.3.1 Pipes

The required acoustic treatments for pipes that pass through more than one tenancy are presented in Table 5.3.

Table 5.3 NCC BCA acoustic construction requirements for pipes

Adjacency	Acoustic separation requirement	Pipe lagging	System lining	Insulation
Habitable spaces	$R_w + Ctr \geq 40$	Equivalent to Pyrotek '4525C' or Bradford 'Acoustilag 45'	Wall or ceiling - 1 x 13 mm plasterboard	75 mm thick glass wool insulation with a minimum density of 14 kg/m^3; a suitable product is 75 mm Pink Batts 'Silencer'. For ceilings, insulation is to extend a minimum of 1200 mm on either side of the pipe.
Any other space	$R_w + Ctr \geq 25$	Not required		

(1) Where water supply pipes pass through an inter-tenancy wall, a discontinuous partition construction is required.

5.3.2 Mechanical services risers

The minimum required acoustic treatments for mechanical services risers that pass through more than one tenancy are presented in Table 5.4.

Table 5.4 NCC BCA acoustic construction requirements for mechanical services risers

Adjacency	Acoustic separation requirement	Studs	System lining	Insulation
Habitable spaces	$R_w + Ctr \geq 40$	102 mm C-H metal studs	*Shaft side*—1 x 25 mm Gyprock 'Shaft Liner Panel' between the studs *Occupied side*—2 x 16 mm fire rated plasterboard	50 mm glasswool insulation in the cavity with a minimum density of 14 kg/m^3; a suitable product is 50 mm thick Pink Batts 'Silencer'
Any other space	$R_w + Ctr \geq 25$	Steel studs at 600 mm centres	*Occupied side*—1 x 13 mm fire rated plasterboard	Not required

5.3.3 Water supply pipe

When installed in a wall separating sole-occupancy units, a water supply pipe must:

- Only be installed in the cavity of a discontinuous construction. Discontinuous construction is defined such that walls are to have a minimum 20 mm gap between separate leaves. Cavity masonry walls are to have resilient wall ties or no wall ties. For other walls there are to be no mechanical linkages between wall leaves except at the wall periphery. A staggered stud wall is not deemed to be discontinuous.
- In the case of a pipe that serves only one sole-occupancy unit, not to be fixed to the wall leaf on the side adjoining any other sole-occupancy unit and have a clearance not less than 10 mm to the other wall leaf.

5.3.4 Pipe isolation

All hydraulic pipes shall be isolated at support points to minimise the transfer of structure borne noise to the building structure and to comply with the intrusive noise criteria. The following treatments are required:

- Pipe insulation (Bradflex), 6 mm thick neoprene, closed cell foam or “unicushion” is required between all pipes and the pipe clamps, alternatively.
- Provide neoprene element vibration isolation hangers to pipe supports or mounting points.

There must be no direct contact between waste pipes and other building elements; we suggest that a minimum of 10 mm clearance is maintained to other building elements. Fittings and pipes must not be chased into concrete or masonry elements.

5.3.5 Hydraulic services access panels

An access door or panel must not open into any habitable room. Where it opens into a non-habitable room (wet areas including kitchens), it must be firmly fixed so as to overlap the frame or rebate of the frame by not less than 10 mm, be fitted with a sealing gasket along all edges and be constructed from:

- wood, particleboard or blockboard not less than 33 mm thick, or
- compressed fibre reinforced cement sheeting (CFC) not less than 9 mm thick, or
- Other suitable material with a mass per unit area not less than 24.4 kg/m^2.

6 Noise emissions

This section assesses the predicted noise emissions associated with the proposed development and addresses the expected on and off-site impacts.

6.1 Environmental noise emissions

Environmental noise emissions from the proposed development are required to comply with the acoustic criteria established in Section 3.1. The primary source of noise is expected to be the carpark. There are no current plans to install air-conditioning plant however it is understood that this could change.

6.1.1 Building services

At the early stage of this Project, the mechanical ventilation and exhaust air strategies were not known. As such, an assessment of noise impact could not be undertaken. Upon selection of preliminary and/or final building services equipment, potential off site environmental noise impacts can be accurately assessed, and specific noise mitigation measures designed/incorporated, if necessary. Notwithstanding, compliance with the project specific noise emission standards is expected to be readily achievable through implementation of best practice design principles and incorporation of standard noise mitigation measures, such as:

- Selection of 'low noise' plant and equipment.
- Maximising separation distance between noise generating plant and equipment and adjacent residential receiver locations.
- Site noise generating plant and equipment to maximise shielding benefits from structural/architectural elements of the building (i.e. balustrades, structural columns/blades, etc.).
- Consideration of duct reticulation (supply and return) and use of internally lined duct and bends.
- Strategic location of ventilation outlets.
- Minimising air velocity through duct work
- Spatial allowance and specification of acoustic attenuators where the above design principles and standard noise mitigation measures do not provide sufficient attenuation.

6.1.2 Air conditioning plant

It is understood that it is not common for social housing to implement air conditioning units within apartments, however there's a possibility it could be considered in the future for this Project.

It is likely that this would be implemented as a split system air conditioning unit in each apartment, with an associated condenser fan on each balcony (i.e. 13 in total). In this scenario, the condenser fans would need to have sound power levels no greater than 60 dBA in order to comply with the relevant acoustic criteria outlined in Section 3.1.

6.1.3 Carpark

The Ground Level carpark is expected to include 13 parking spaces. Noise emissions from the carpark have been assessed using the methodology outlined in BayLfU *Parking Area Noise (2007)*. The method assumes a sound power level of 63 dBA for a single light vehicle movement (i.e. parking or vacating).

The following inputs were assumed for the worst-case hour scenarios, to determine the noise impact from light vehicles parking and vacating:

- Day (7 am to 6 pm): each parking space is filled or vacated within the hour
- Evening (6pm to 10 pm): each parking space is filled or vacated within the hour
- Night (10 pm to 7 am): half of the parking spaces are either filled or vacated within the hour

Calculations concluded that a barrier is required along the southern boundary of the proposed development to achieve compliance at the nearest southern receiver (10 Miles Avenue and 1267 Riverway Drive). The noise barrier will need to have a minimum height of 1.8 m and should be of a solid construction with no gaps. The barrier should have a minimum surface mass of 12 kg/m^2 (e.g. 25 mm thick lapped timber palings).

6.2 On-site noise emissions

Noise emissions from the carpark and potential air-conditioning units also need to be controlled such that the internal noise level criteria in Section 3.2 is not exceeded. It is expected that the façade element requirements as outlined in Section 4 will sufficiently control noise ingress from on-site noise sources.

7 Performance outcomes assessment

This section of the report addresses the TCP 2024 acoustic performance outcomes relevant to the Project, as outlined in Section 3.1.1. The assessment of the performance outcomes is provided in Table 7.1.

Table 7.1 Assessment of TCP 2024 performance outcomes

Performance outcome	Acceptable outcome	Response
PO10	n/a	This outcome concerns preserving amenity at the land uses surrounding the proposed development, including noise. It is considered that acoustic amenity is maintained where noise emissions form the development comply with the acoustic criteria established in Section 3.1. The assessment in Section 6 shows that the development can comply with the acoustic criteria by implementing appropriate mitigation.
PO32	n/a	This outcome concerns noise emissions from air conditioning units associated with the development. It is considered that noise emissions are acceptable where they comply with the acoustic criteria established in Section 3.1. The assessment in Section 6 shows that the development can comply with the acoustic criteria by selecting plant with appropriate noise levels.

8 Conclusion

QBuild have engaged WSP to provide acoustic consulting advice for a proposed residential development at 8 Miles Avenue and 1265 Riverway Drive, Kelso, Queensland. The assessment is required to ensure the planned use of the site demonstrates compliance with relevant statutory requirements.

The project must satisfy acoustic quality objectives provided by EPP Noise and the acoustic criteria for mechanical plant as per the EPA. Background noise levels were estimated as per the guidance provided by superseded standard AS1055.2 to establish the EPA criteria.

Additionally, the Project is required to meet the minimum design requirements prescribed by QDC MP4.4 and the NCC BCA.

Noise emissions from the proposed carparking spaces were assessed, assuming a typical number of vehicle movements in the day, evening and night-time periods. To achieve compliance with the EPP Noise criteria, a 1.8 m barrier is required along the southern boundary of the proposed development.

At the time of this assessment, it was not known if air-conditioning plant was expected for this development. As such, an upper limit was provided for condenser fan units associated split system air conditioning. It is expected that no other mechanical plant or noise generating equipment will be associated with the development.

The proposed development was assessed against the requirements of the noise-related performance outcomes listed in the Townsville City Plan (2024). The design is readily able to achieve the performance outcomes by implementing the mitigation strategies outlined in this report.

Table of Contents and Submission Requirements

PN93378 – 8 Miles Avenue & 1265 Riverway Drive Kelso 4815

Document & Construct of a 13-unit apartment complex, 4x1 Bedroom Platinum, 1x1 Bed Gold, 4 x2 Bed general, 4x1 Bed General,
8 Miles Ave &1265 Riverway Drive, Kelso, Townsville, 4815

Principal	Department Housing and Public Works
Project Number:	**93378**

Please direct all enquiries during the Tender Period to **QBuild NQ Tenders**

Email:	QBuild.NQ.Tenders@epw.qld.gov.au

Queensland Government

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2	Project Requirements
2.01	Schematic Design
2.02	93378 Arch Drawing Transmittals SD
2.03	Social Housing Specifications (Parts A&B)
2.04	SHDG Toolkit-Technical Summary Sheets 2024
2.05	11a External Consultants Package (zip)
2.06	13a QTD B01-Bathroom-Issue H
2.07	13b QTD K01-Kitchen Details-Platinum-Issue E
2.08	13c QTD K02-Kitchen Details-Gold-Issue B
2.09	16 Q-Fire Services Design Brief - (Sprinkler Systems) v2.0
2.10	GHD Feasibility Report – 8 Riverway Drive & 1265 Kelso
2.11	Concept Sketch
2.12	Design Brief Miles Ave 8_Riverway Drive 1265, KELSO_V2
2.13	Town Planning Summary
2.14	Acoustic Report SD Rev1
2.15	QLD20242261 - Schematic Design Building Assessment - 8 Miles Avenue Kelso QLD 4815
2.16	NatHERS Assessment
2.17	L DPWA166-20250226 Hydraulic Assessment SMP
2.18	93378_General Requirements
2.19	93378_ General Requirements Continued
2.20	93378_Preliminaries_AS4300
2.21	93378_ Principals Project Requirements
2.22	Design Work Sheet - Wind Speed Calculation
2.23	QBuild Construction Project Signage Requirements (REF713) (1)
2.24	00_Hoarding_QG-AU_12x2.4m_TEMPLATE-ONLY
2.25	Queensland-charter-for-local-content-tenderer-applicant-guidelines
2.26	Master Equipment Asset Register Spreadsheet

No	Document
2.27	93378_1 QGBC-building-construction-training-policy (1)
2.28	93378_2 QGBC training-policy-factsheet
2.29	93378_3 QGBC Training Policy - Guidelines for contractors
3	**Returnable Schedules**
3.01	AS4300 Tender Form
3.02	93378 Major Works NPC Evaluation (FRM718)
3.03	93378 Tender breakup schedules (FRM097)
3.04	Queensland-charter-for-local-content-statement-intent-for-tenderers-form

Tender Requirements

Project Name	Document & Construct - 9x1 Bed, 4x2 Bed Unit Complex - 8 MILES AVENUE &1265 RIVERWAY DRIVE, KELSO, TOWNSVILLE QLD 4815
Project Number	93378DC1

This contract document has been developed by Contract Services, Department of Housing and Public Works, in accordance with the Building Policy Framework.

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NOTICE TO TENDERERS

Disclaimer:

- *Information provided in this Notice to Tenderers is intended to assist the Tenderer in the preparation of the Tender and may not be inclusive of all the requirements of the Tender Documents.*
- *The Tenderer shall not rely on this Notice to Tenderers.*
- *The Tenderer shall ensure and satisfy itself that its Tender complies in every respect with the requirements of the Tender Documents.*
- *Notwithstanding any provision of the Tender Documents to the contrary, the information provided in this Notice to Tenderers does not form part of the Tender Documents and it shall not alter any requirement of the Tender Documents or any obligation, liability or right of the Tenderer or Principal.*
- *The Principal shall not be liable to the Tenderer for any claim, demand, action, proceeding or suit arising out of or in connection with this Notice to Tenderers or the provision of the information contained herein.*

1. Invitation to Tender

The State of Queensland, through The State of Queensland through the Director General, Department of Housing, and Public Works invites you to submit a tender for:

Project Name	Document & Construct - 9x1 Bed, 4x2 Bed Unit Complex - 8 MILES AVENUE &1265 RIVERWAY DRIVE, KELSO, TOWNSVILLE QLD 4815
Project Number	93378DC1

2. Changes to the Department's suite of building construction and maintenance contracts

Tenderers should note that the Department of Housing and Public Works' suite of building construction and maintenance contracts have recently been updated in response to legislative and policy updates. Other minor general updates to the documents have also been undertaken at this time.

Tenderers are responsible for familiarising themselves with the Tender Documents applicable to this tender, noting that they may be different from previous versions.

Copies of the Government's suite of building construction and maintenance contracts are available at: https://www.forgov.qld.gov.au/building-construction-and-maintenance-contract-templates.

Guidelines and additional information are available online regarding:

- the Queensland Procurement Policy, the Ethical Supplier requirements and the Queensland Government Supplier Code of Conduct;
- the Queensland Government Building Policy Framework and Prequalification (PQC) System;
- the Queensland Government Building and Construction Training Policy;
- the Trust Account framework; and
- the Queensland Charter for Local Content.

3. BIF Act

If this is an eligible contract, a project trust account may be required, and a separate retention trust account may be required for holding cash retentions, pursuant to the *Building Industry Fairness (Security of Payment) Act 2017* (Qld).

To support industry, a comprehensive range of tools and materials are available on the Queensland Building and Construction Commission (QBCC) website.

4. Australian Government funding

This project is the subject of Australian Government funding. Accordingly, the Australian Government requires that contractors engaged by the Principal be accredited under and comply with the Work Health and Safety Accreditation Scheme. Further information can be obtained at www.fsc.gov.au.

Work Health and Safety Accreditation Scheme

The Australian Government is committed to improving Work Health and Safety ("WHS") outcomes in the building and construction industry. An important initiative to achieve this is the Work Health and Safety Accreditation Scheme (the "Scheme"). The Scheme is established by the *Federal Safety Commissioner Act 2022* (Cth) and specified in the *Federal Safety Commissioner (Accreditation Scheme) Rules 2023* (Cth).

Depending on the value of a project, only persons who are accredited by the Federal Safety Commissioner under the Scheme can enter into head contracts for building work that is funded directly or indirectly by the Australian Government. Rule 26(g) of the *Federal Safety Commissioner (Accreditation Scheme) Rules 2023* (Cth) outlines provisions applying to joint venture arrangements that include accredited and unaccredited builders.

The Scheme accreditation requirement applies to building work that is indirectly funded by the Australian Government where:

- the project includes building work of $4 million (including GST) or more; and
- the value of the Australian Government contribution to the project is at least $6 million (including GST) and represents at least 50 per cent of the total construction project value; or
- the Australian Government contribution to a project is $10 million (including GST) or more, irrespective of the proportion of Australian Government funding.

Building work is considered indirectly funded where it is funded by the Commonwealth (Australian Government) or a Commonwealth authority through grants and other programs. This includes building projects where the Australian Government provides money through a funding agreement or grants to a person, for example a state or territory government who then may contract with persons who will undertake the building work or persons who will arrange for the building work to be carried out.

Indirectly funded building work also includes building projects that the person, who receives Australian Government funding, facilitates by agreement (for example pre-commitment lease, Build Own Operate ("BOO") and Build Own Operate Transfer ("BOOT") arrangements).

If a project meets the above threshold amounts, the requirement that accredited builders carry out the building work only applies to contracts for building work that are valued at $4 million (GST inclusive) or more.

Tenderers are referred to the Tender Form, clause 21 of the Conditions of Tender and Clause 15.3 of the Special Conditions of Contract.

5. Project Specific Notice to Tenderers section

Without limiting any provision of the Tender Documents in regard to a Conforming Tender, the Tenderer's attention is drawn to the requirement to submit the following documents with its tender:

Returnable Schedules	• AS4300 Tender Form • Trade Breakdown • QCLC Statement Intent for Tenderers • Program of Works (to be submitted by tenderer)

Non-Price	• Non Price Criteria Workbook
	  ○ Local Benefits
	  ○ Workplace Health and Safety
	  ○ Resources

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	○ Methodology and Program ○ (The non price criteria is presented in a Microsoft Excel workbook and **must** be used for Tenderer's response to non-price criteria. The workbook **must** be submitted in Microsoft Excel format)

6. Project Signage

The requirement for Project Signage is applicable for this project. Contractors are to ensure all associated costs are allowed for within their tender price.

7. Site Meeting

There will be no mandatory site meeting scheduled. Any requests for a site visit should be emailed to QBuild.NQ.Tenders@epw.qld.gov.au no later than 4th of April 2025.

Failure to attend mandatory site meeting will result in your offer as being considered as an Alternative Offer.

8. Anticipated Procurement Timeline

The principal anticipates that the evaluation process will take approximately Four (4) weeks from close of tenders with an anticipated award date of approximately Mid-June 2025 Tenderers should account for this period within any submitted tender response.

9. Submission and Further assistance

To submit a Tender, complete the documents listed below and submit by the date and time as stated on the QBuild eTender website for this tender.

- The Tender shall also be submitted in electronic format delivered to the QBuild eTender website in accordance with the requirements of the Manual Tender Form.
- Completed Tender Price Break-up
- QCLC – Statement of Intent Tenderers; and
- Major Works NPC Evaluation workbook

Should you require further assistance after reviewing these documents with submitting your tender, you can contact the nominated QBuild officer. QBuild.NQ.Tenders@epw.qld.gov.au

CONDITIONS OF TENDER

Lump sum using the Special Conditions of Contract to Australian Standards® General conditions of contract for design and construct AS4300-1995.

1. INTERPRETATION

1.1 These Conditions of Tender apply to:

(a) Tenders submitted through an electronic tender system (electronic tender); and

(b) Tenders submitted in hardcopy format (hardcopy tender).

1.2 Meanings assigned to words and expressions in the Conditions of Contract and the Special Conditions of Contract shall apply to those words and expressions used in the Tender Documents and, except where the context otherwise requires, 'include' is not a word of limitation.

1.3 Unless the contrary intention applies, the following definitions also apply:

'Alternative Tender' means any Tender that is not a Conforming Tender;

'Best Endeavours Process' means a process that includes, as a minimum:

(a) arranging, attending and participating in meetings with relevant parties;

(b) disclosing relevant information, other than confidential or commercially sensitive information, in a timely way between relevant parties;

(c) genuinely considering proposals made by another party, and responding in a timely way with reasons for any response given; and

(d) not engaging in capricious or unfair conduct that undermines the freedom of any party or the process;

'Conforming Tender' means a Tender made on the basis of the Tender Documents for the execution of the whole of the work under the Contract in accordance with the Tender Documents and which:

(a) complies in every respect with the requirements of the Tender Documents including (without limitation) the Conditions of Tender; and

(b) does not contain provisions not required or not allowed by the Tender Documents;

'electronic tender system' refers to:

(a) Queensland Government's supplier portal; or

(b) another Information System, specified in the Tender Form;

'Information System' means a system for generating, sending, receiving, storing or otherwise processing electronic communications;

'Intellectual Property Rights' means copyright, patents and all rights in relation to inventions, registered and unregistered trademarks (including service marks), registered designs, circuit layouts and all other rights resulting from intellectual activity in the industrial, scientific, literary or artistic fields;

'Principal's Contact Officer' means the Principal's Contact Officer specified in the Tender Form;

'Tender' means an offer submitted by a Tenderer;

'Tenderer' means a party submitting a Tender and includes a party invited directly or indirectly by the Principal to submit a Tender;

'Tender lodgement address' means the address described as such in the Tender Form;

'Time for close of Tender' means the Time for close of Tender stated in the Tender Form, or if an addendum has been issued changing the Time for close of Tender, the Time for close of Tender stated in the addendum.

2. TENDER DOCUMENTS

2.1 "Tender Documents" comprise:

(a) the Tender Form;

(b) these Conditions of Tender;

(c) the Australian Standards® Code of Tendering (AS4120-1994) as amended by these Conditions of Tender;

(d) the Australian Standards® General conditions of contract for design and construct (AS4300-1995) as amended by the Special Conditions of Contract and the Supplementary Special Conditions of Contract;

(e) the Principal's Project Requirements;

(f) any documents or parts of documents expressly referred to in the Tender Documents; and

(g) any other documents as are issued and/or referred to by the Principal for the purpose of tendering;

(h) but excluding the Notice to Tenderers and any other document or part thereof which is expressly stated to be excluded from the Tender Documents.

2.2 To the extent of any discrepancy or inconsistency between these Conditions of Tender and AS4120-1994, these Conditions of Tender shall prevail.

2.3 In the event of any discrepancy or inconsistency between the Special Conditions of Contract and AS4300-1995, the Special Conditions of Contract shall prevail.

2.4 In the event of any discrepancy or inconsistency between the Special Conditions of Contract and the Supplementary Special Conditions of Contract, the Supplementary Special Conditions of Contract shall prevail.

2.5 An electronic copy of the Tender Documents (excluding AS4120-1994 and AS4300-1995) is available at the electronic location stated in the invitation to tender.

2.6 AS4120-1994 and AS4300-1995 are available for purchase at the Standards Australia Webstore, http://www.standards.org.au.

2.7 All information contained in the Tender Documents which is not in the public domain is to be treated as confidential ("Confidential Information"). Confidential Information contained in the Tender Documents is only to be used for the purpose of preparing a Tender in response to the Invitation to Tender and the Tender Documents.

2.8 A party issued with Tender Documents:

(a) must ensure that only appropriate employees have access to the Confidential Information. In all such cases, the party is to inform such employees of the confidential nature of the information and that it must not be disclosed;

(b) must not and must ensure that its employees and agents do not at any time disclose such Confidential Information directly or indirectly to any person whatsoever for any reason, or use or permit it to be used directly or indirectly for any reason; and

(c) fully indemnifies the Principal against any loss, costs, expenses, demands or liability, whether direct or indirect, arising out of disclosure or unauthorised use of Confidential Information by the party, its employees and agents.

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3. LODGEMENT OF TENDER

3.1 For electronic tender:

(a) Subject to clause 3.1(c), the Tender shall be submitted in electronic format delivered to the electronic tender system indicated as the Tender lodgement address – electronic tender.

(b) The Tender shall be deemed to have been delivered to the electronic tender system designated to receive the electronic communications at the date and time stated on the electronic receipt issued to the Tenderer. Any Tender, or part thereof, that has not been delivered to the designated electronic tender system before the Time for close of Tender may be rejected at the discretion of the Principal.

(c) In the event of:

(i) a technical failure of the Tenderer's Information System or of the Principal's electronic tender system, resulting in an inability to submit the Tender in electronic format as required by clause 3.1(a); or

(ii) a failure of the Principal's electronic tender system to issue an electronic receipt to the Tenderer acknowledging receipt of an electronic Tender from the Tenderer in accordance with clause 3.1(a),

the Principal's Contact Officer may, on request by the Tenderer, allow the Tender to be submitted in either hardcopy format, in a sealed envelope, delivered to the tender box location advised by the Principal's Contact Officer, or by email, to the email address advised by the Principal's Contact Officer.

(d) If a hardcopy or email Tender is submitted pursuant to clause 3.1(c), the Tender shall:

(i) include the Project Name and Project Number, the Time for close of Tender and the Tenderer's name and address; and

(ii) be lodged in the tender box at the location advised by the Principal's Contact Officer by being placed therein, or received by email to the advised email address, before the Time for close of Tender. Hardcopy or email Tenders not in the tender box or email inbox respectively, before the Time for close of Tender may be rejected at the discretion of the Principal.

3.2 For hardcopy tender:

(a) The Tender shall be submitted in hardcopy format, in a sealed envelope, addressed and delivered to the Tender lodgement address – hardcopy tender.

(b) The envelope shall be endorsed with the Project Name and Project Number, the Time for close of Tender and the Tenderer's name and address. The Tender shall be lodged in the tender box at the Tender lodgement address – hardcopy tender by being placed therein before the Time for close of Tender. Any Tender, or part thereof, not in the tender box before the Time for close of Tender may be rejected at the discretion of the Principal.

(c) In exercising its discretion as to the rejection of any Tender, the Principal shall, amongst other factors, consider any evidence that such Tender was dispatched to the Tender lodgement address – hardcopy tender in sufficient time to reach that office and be placed in the tender box under normal circumstances before the Time for close of Tender.

3.3 A Tender received by a means other than that expressly provided for in these Conditions of Tender may not be considered.

4. TENDER REQUIREMENTS

4.1 For electronic tender, the Tender shall include electronic versions of a completed Tender Form plus all other documents required by the Tender Documents including completed Schedules in the form/s provided in these Conditions of Tender.

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4.2 For hardcopy tender, the Tender shall include an original and four (4) copies (unless otherwise specified in the Tender Documents) of a completed Tender Form plus all other documents required by the Tender Documents including completed Schedules in the form/s provided in these Conditions of Tender.

4.3 The Tenderer shall complete and sign all documents that are required to be completed, signed and lodged as the Tender.

4.4 The Tenderer shall execute all such further documents and do all acts and things required by the Principal for the purposes of giving effect to these Conditions of Tender.

4.5 The Tenderer and all relevant third parties shall do all acts and things required by the Principal for the purposes of giving effect to these Conditions of Tender.

5. INFORMATION

5.1 Unless otherwise agreed with the Principal's Contact Officer, all communications between the Tenderer and the Principal upon which the Tenderer intends to rely for the purposes of its Tender shall be in writing and addressed to or issued by the Principal's Contact Officer.

5.2 The Tenderer shall not communicate with any person or corporation who is the intended owner, occupant, operator or manager of any facility the subject of the Tender except with the express written approval of the Principal's Contact Officer.

5.3 The Principal will not be liable for any claim on the grounds of erroneous or insufficient information.

5.4 The Principal shall not be bound by, and the Tenderer may not rely upon, any oral advice or information given or furnished in respect of the Tender but shall be bound only by written or electronically transferred advice or information furnished by or on behalf of the Principal.

5.5 For the purposes of evaluation of Tenders, Tenderers shall provide such additional information as may be requested by the Principal, including financial data.

6. TENDERER TO INFORM ITSELF

6.1 The Tenderer is deemed to have visited and inspected the site and its surrounds and satisfied itself of conditions and facilities and otherwise acquainted itself with all matters relating to the proposed Contract before submitting its Tender.

7. TENDERING BY GOVERNMENT AGENCIES

7.1 Notwithstanding clause 6.2.2 of AS4120-1994, the Principal may invite, consider or accept a Tender from one or more government agencies.

8. COSTS OF TENDERING

8.1 Costs of tendering shall be borne by the Tenderer.

9. PRINCIPAL NOT BOUND

9.1 Notwithstanding the evaluation of Tenders (if any) in accordance with clause 10, the Principal may in its absolute discretion and at any time accept, or decline to accept, any Tender.

9.2 Without derogating from the provisions in clause 9.1, the Principal may, in its absolute discretion, decline to evaluate any Tender that it has determined to be an Alternative Tender.

9.3 Notwithstanding that the Principal may have invited Tenders from selected organisations or has otherwise procured submission of Tenders, the Tenderer acknowledges that:

(a) the Principal may not, at the time of inviting tenders, have satisfied itself as to the Tenderer's financial capacity to satisfactorily perform and complete the Contract in accordance with its terms; and

(b) the Principal may decline to consider or accept a Tender from a Tenderer who has not been able to satisfy the Principal that it has sufficient financial capacity to satisfactorily perform and complete the Contract in accordance with its terms.

9.4 The Tenderer may be requested to provide financial information to a party nominated by the Principal for the purpose of an assessment by the Principal that the Tenderer has sufficient financial capacity to satisfactorily perform and complete the Contract in accordance with its terms. The Tenderer must provide such information within seven (7) days of request. A failure to provide the requested information within seven (7) days may result in a decision by the Principal that the Tenderer does not have sufficient financial capacity to satisfactorily perform and complete the Contract in accordance with its terms. In the provision of financial information to the party nominated by the Principal, the Tenderer accepts that such information may be provided by the Principal to the Queensland Building and Construction Commission for the purposes of determining the continuing capacity of the licensee to meet any licensing criteria required by the *Queensland Building and Construction Commission Act 1991* (Qld).

10. TENDER EVALUATION

10.1 The Principal shall evaluate Conforming Tenders in accordance with the tender evaluation criteria contained in Schedule 1 or, in the absence of a Schedule 1, on the basis of best value for money for Government determined in accordance with the Queensland Procurement Policy.

10.2 The Principal, if it determines to evaluate an Alternative Tender, shall evaluate such Alternative Tender on the basis of best value for money for Government determined in accordance with the Queensland Procurement Policy which may, or may not, be the tender evaluation criteria contained in Schedule 1.

10.3 Where both Conforming and Alternative Tenders have been evaluated, the Principal may accept that Tender which on a view of all circumstances represents the best value for money for Government determined in accordance with the Queensland Procurement Policy.

10.4 In the event that the Tender contains an ambiguity in relation to the Tender Sum, then the “Tender Sum” inclusive of GST amount in words stated in the Tender Form shall prevail.

10.5 The Tenderer shall provide such additional information as may be requested by the Principal, including relating to compliance with the Ethical Supplier Threshold, the Ethical Supplier Mandate and the Supplier Code of Conduct.

10.6 Information relating to the Tenderer including, without limitation, that relevant to the evaluation criteria and the Tenderer’s compliance with Government policies and legislation that may be held by any Government Department or Instrumentality may be obtained by or made available to the Principal and the Tender evaluation panel for its information and verification, for the purposes of Tender evaluation.

11. TENDER EVALUATION PROCESS

11.1 In the evaluation of Tenders (if any) in accordance with clause 10, the Principal may, without being under any obligation to do so, in its absolute discretion and at any time:

(a) seek clarification in respect of any aspect of a Tenderer’s Tender (including to request the Tenderer to provide additional information, documents or evidence in connection with its Tender);

(b) shortlist or prefer any one or more Tenderers; and

(c) discuss or negotiate with, or receive presentations, further submissions or final offers from, any one or more Tenderers in respect of their Tender, in such manner, and as to such aspects of the Tender, as the Principal determines, including price.

11.2 The provisions of clause 11.1 and any exercise by the Principal of its rights under clause 11.1:

(a) is without prejudice to any other rights of the Principal;

(b) apply notwithstanding clause 6.6 of AS4120-1994;

(c) except to the extent notified otherwise by the Principal in writing, are subject to the other express provisions of these Conditions of Tender;

(d) shall not give rise to any representation by the Principal as to the acceptability or otherwise of any Tender;

(e) shall not preclude the Principal from at any time considering or accepting any Tender (whether or not the subject of the exercise by the Principal of its rights under clause 11.1); and

(f) shall not give rise to any obligation (implied or otherwise) on the Principal except to the extent expressly provided in these Conditions of Tender or notified by the Principal in writing.

11.3 Except to the extent the Principal expressly agrees otherwise, the provisions of these Conditions of Tender shall continue to apply to any process which the Principal may undertake under clause 11.1 in connection with the evaluation of Tenders.

12. PROJECT FUNDING

12.1 The Principal will not provide particulars of project funding arrangements to Tenderers.

13. INTELLECTUAL PROPERTY

13.1 Intellectual Property Rights in all material, whether of the Tenderer or a third party, submitted by a Tenderer in its Tender is assigned to the Principal, without any requirement for further documentation or writing, upon acceptance by the Principal of its Tender.

13.2 To the extent that any material submitted by a Tenderer is the subject of pre-existing Intellectual Property Rights of third parties, the Tenderer warrants that it is able to procure an assignment of all such Intellectual Property Rights to the Principal and agrees to obtain such assignment upon acceptance of its Tender.

13.3 The Tenderer indemnifies the Principal against any loss, costs, expenses, demands or liability, whether direct or indirect, arising out of any claim by a third party against the Principal alleging that the material contained in the Tender or acts by the Principal in relation to the Principal's use of the Tender material infringe any Intellectual Property Rights of that third party.

14. RIGHT TO INFORMATION AND DISCLOSURE

14.1 The *Right to Information Act 2009* (Qld) ("RTI Act") provides members of the public with a legally enforceable right to access documents held by Queensland Government agencies. The RTI Act requires that documents be disclosed upon request, unless the documents are exempt or on balance, disclosure is contrary to public interest.

14.2 Information contained in a Tender is potentially subject to disclosure to third parties. In the assessment of any disclosure required by the Principal pursuant to the RTI Act, the Tenderer accepts that any information provided in its Tender, including information marked as confidential, will be assessed for disclosure in accordance with the terms of the RTI Act.

14.3 Notwithstanding any other provision of the Tender Documents or a Tender, if a Tender is accepted, the Principal may publish on a Queensland Government website or by any other means, Contract information including:

(a) the name and address of the Principal and the successful Tenderer;

(b) a description of the goods and/or services to be provided pursuant to the Contract;

(c) the date of award of Contract (including the relevant stages if the Contract involves more than one stage);

(d) the Contract value (including the value for each stage if the Contract involves more than one stage and advice as to whether any non-price criteria were used in the evaluation of tenders);

(e) the procurement method used; and

(f) for contracts with a value over $10 million, the Contract, or summary information in respect of the Contract, between the Principal and the Contractor.

14.4 For open tenders, where the Tender Sum has a weighting of 100% in the Tender Evaluation Criteria, the Principal may publish the names of all Tenderers and lump sum Tender Sums tendered.

15. REGISTRATION AS A PRE-QUALIFIED TENDERER

15.1 The Principal may decline to consider or accept a Tender from a Tenderer who, prior to the award of Contract, does not hold a Certificate of Prequalification, or is not appropriately registered for the work the subject of the Tender, pursuant to the Prequalification (PQC) System released and current at the time and date at which Tenders were invited.

16. TENDERER WARRANTIES

16.1 The Tenderer warrants that in submitting its Tender, except as expressly disclosed in its Tender:

(a) it has no knowledge of the Tender Sum of any other tenderer, nor has it communicated with any other tenderer in relation to the Tenderer's Tender Sum, or a price above or below which a tenderer may tender (excluding any pricing advised by the Principal), nor has it entered into any contract, arrangement or understanding with another tenderer to the effect that the Tenderer or another tenderer will tender a non-competitive sum, for the work the subject of the Tender, at time of submission of its Tender;

(b) it has not entered into any contract, arrangement or understanding to pay or allow any money directly or indirectly to a trade, industry or other association (above the published standard fee) relating in any way to its Tender or any contract that may be entered into consequent thereon;

(c) it has not paid or allowed any money or entered into any contract, arrangement or understanding to pay or allow any money directly or indirectly to or on behalf of any other tenderer, nor received any money or allowance from or on behalf of any other tenderer, relating in any way to its Tender or any contract that may be entered into consequent thereon;

(d) it shall maintain the skill and expertise necessary to complete the work under the Contract for the duration of the Contract;

(e) all persons nominated in the Tender as key personnel will remain working on the project to the extent indicated in the Tender unless the Principal otherwise consents in writing;

(f) it will fulfil all aspects of the Tender, including without limitation the Tenderer's Tender evaluation criteria offers;

(g) it will comply with the Ethical Supplier Threshold, the Ethical Supplier Mandate and the Supplier Code of Conduct;

(h) it will cooperate with the Principal, the QGP Compliance Branch and any Government Department or Instrumentality for Ethical Supplier Threshold compliance and investigative purposes including, without limitation, providing any requested documents related to the Tenderer's compliance with the Ethical Supplier Threshold;

(i) it will fulfil all obligations required in respect of Queensland Government policies; and

(j) it will give the Principal prior notice of any likely change in circumstances in respect of this clause 16.

16.2 The Tenderer agrees that the foregoing warranties shall form part of the proposed Contract and a breach of any of the foregoing warranties shall be a substantial breach of Contract under the proposed Contract.

16.3 In addition to any other actions the Principal may take, any breach of the warranties given in this clause 16 will result in a review of the Tenderer's PQC registration status.

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17. FORMAL INSTRUMENT OF AGREEMENT

17.1 If the Annexure to the Special Conditions of Contract indicates that the execution of a Formal Instrument of Agreement is required, the successful Tenderer and the Principal shall execute a Formal Instrument of Agreement in accordance with the Special Conditions of Contract.

18. TRUST ACCOUNTS

18.1 In this clause 18, terms defined by the *Building Industry Fairness (Security of Payment) Act 2017* (Qld) ("BIF Act") as relevant to the operation of Chapter 2 of the BIF Act and used (without separate definition) in this clause, have the meaning given to them by the BIF Act.

18.2 The Tenderer's attention is drawn to:

(a) Chapter 2 (Statutory trusts) of the BIF Act; and

(b) Clause 43.4 of the Special Conditions of Contract.

18.3 The Tenderer acknowledges and agrees that if it is the successful Tenderer, it will establish and maintain a project trust account and a retention trust account if and when it is required to do so under the BIF Act and Clause 43.4 of the Special Conditions of Contract.

19. ETHICAL SUPPLIER THRESHOLD

19.1 The Tenderer must comply with the Ethical Supplier Threshold and the Tenderer must provide true and correct responses to the criteria set out in the Ethical Supplier Threshold questionnaire on the Tender Form.

19.2 If, at any time after the Tenderer submits its Tender, the Tenderer's responses to the criteria set out in the Ethical Supplier Threshold questionnaire are no longer true and correct for any reason, the Tenderer must promptly notify the Principal's Contact Officer of the change to the Tenderer's response.

19.3 The Tenderer acknowledges that if, at any time, the Tenderer's response to a criterion set out in the Ethical Supplier Threshold questionnaire on the Tender Form is "yes", the Principal may:

(a) in accordance with clause 9.2, decline to evaluate the Tender, as if it were an Alternative Tender; or

(b) in accordance with clause 9.1, decline to accept the Tender.

20. ETHICAL SUPPLIER MANDATE

20.1 The Principal may decline to consider or accept a Tender from a Tenderer who, at the date of submission of the Tender and any time prior to the award of Contract, is subject to a current sanction under the Ethical Supplier Mandate according to the online supplier check tool released and current at the time and date at which Tenders were invited.

20.2 Notwithstanding any other provision of the Tender Documents or a Tender, the Tenderer acknowledges and agrees that the Principal may refer matters about the Tenderer's compliance with the Ethical Supplier Mandate and the Ethical Supplier Threshold to the QGP Compliance Branch which may, in its absolute discretion, publish information about the Tenderer's compliance with the Ethical Supplier Mandate and the Ethical Supplier Threshold including but not limited to information about sanctions and penalties imposed on the Tenderer.

21. WORK HEALTH AND SAFETY ACCREDITATION SCHEME

21.1 If stated in the Annexure to the Special Conditions of Contract, this clause 21 will apply.

21.2 For the purposes of this clause:

'builder', 'building work' and 'WHS Accreditation Scheme' have the same meanings as in the *Federal Safety Commissioner Act 2022* (Cth).

21.3 The successful Tenderer must be accredited under the WHS Accreditation Scheme when entering into contracts for building work. The builder must maintain accreditation while the building work is being carried out.

21.4 The successful Tenderer must comply with all conditions of the WHS Accreditation Scheme accreditation.

22. PERFORMANCE REPORTING

22.1 The Tenderer acknowledges that:

(a) if the Tenderer is awarded a Contract, the Principal will, in accordance with the Prequalification (PQC) System, prepare and submit performance reports to the PQC Registrar. The performance reports may include, amongst other things, information regarding:

(i) achievements or compliance with representations made in response to evaluation criteria listed in Schedule 1;

(ii) compliance with any legislation relating to workplace health and safety, industrial relations, taxation and workers compensation legislation; and

(iii) compliance with the provisions of the Contract, including, but not limited to, those clauses concerning Collusive Arrangements (Clause 6.3), Subcontracting (Clause 9.2), Occupational Health and Safety Audit (Clause 15.2), Training Policy (Clause 29.1A), Site Personnel Register (Clause 29.4) and Payment of Workers and Subcontractors (Clause 43);

(b) the Queensland Government has published a document entitled “Building and construction Code of Practice 2000”, previously entitled “Queensland Code of Practice for the Building and Construction Industry”, (the Code of Practice). The Tenderer is reminded that by being registered pursuant to the Prequalification (PQC) System they have provided an undertaking that they will abide by the Code of Practice; and

(c) an adverse performance report or non-compliance with the Code of Practice will result in a review of the Contractor’s PQC registration status.

23. STATUTORY INSURANCE SCHEME

23.1 The Tenderer must note that where the work under the Contract involves ‘residential construction work’, as that term is defined in the *Queensland Building and Construction Commission Act 1991* (Qld), payment of the required insurance premium must be made to the Queensland Building and Construction Commission. The cost of complying with that obligation shall be deemed to be included in the Tender.

24. BEST PRACTICE PRINCIPLES

24.1 If the Annexure to the Conditions of Contract indicates that the Best Practice Principles apply, this clause 24 applies.

24.2 The Tenderer must complete the Returnable Tender Schedule – BPP Consent and include it with its Tender.

24.3 The Best Practice Principles set an expectation that projects will implement:

(a) best practice workplace health and safety systems and standards; and

(b) best practice commitment to apprentices and trainees.

24.4 The Tenderer is required to demonstrate in its Tender:

(a) how it will implement best practice workplace health and safety systems and standards, and best practice commitment to apprentices and trainees; and

(b) the Best Endeavours Process by which the Tenderer will use its best endeavours to engage subcontractors who will implement best practice workplace health and safety systems and standards, and best practice commitment to apprentices and trainees.

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24.5 Any Tender that does not comply with the requirements of this clause 24 will be considered an Alternative Tender.

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SCHEDULE 1 – Tender Evaluation

Principal's Determination

The Principal shall determine whether a Tender is an Alternative Tender or Conforming Tender and, in doing so, shall have regard to the following, without limitation:

1. whether the Tender contains errors of an administrative nature which do not amend or change the substance of the offer;

2. whether the Tender contains clarification of an ambiguity; and

3. the extent to which the Tender does not contain all of the documents required by the Tender Documents to be submitted.

In making a determination, the Principal's consideration shall not be limited to the matters nominated at 1, 2, and 3 above.

Where, in addition to the Tender Sum, the Tenderer is required to submit information addressing other tender evaluation criteria and the Tenderer fails to address any of the criteria then the Tender shall be deemed to be an Alternative Tender. Where the Tenderer is required to submit information addressing tender evaluation criteria in addition to the Tender Sum, the Tenderer must be able to demonstrate and evidence ability against each of the criteria. If, in the opinion of the Principal, in any criteria, the Tenderer fails to demonstrate a satisfactory ability in relation to that criterion, the Principal may decline to further evaluate the Tender. Without limiting the foregoing, if the criteria have points allocated to it and the Tenderer receives a point score less than 50% of the highest possible point score for a given criterion, the Principal in its absolute discretion may decline to further evaluate the Tender.

Any Tender that contains qualifications shall be deemed to be an Alternative Tender.

In the event that the Tender contains an ambiguity in relation to the Tender Sum, then the "Tender Sum" inclusive of GST amount in words stated in the Tender Form shall prevail.

Best Practice Principles

If the Annexure to the Conditions of Contract indicates that the Best Practice Principles apply, the Tenderer must include in its Tender:

- the completed Returnable Tender Schedule – BPP Consent, as required by clause 24 of the Conditions of Tender; and
- details demonstrating how the Tenderer will achieve the best practice principles for the project, being best practice workplace health and safety systems and standards and best practice commitment to apprentices and trainees, including by providing details demonstrating:
    - how the Tenderer will implement best practice workplace health and safety systems and standards and best practice commitment to apprentices and trainees as required by clause 24 of the Conditions of Tender; and
    - the Tenderer's Best Endeavours Process by which the Tenderer will use its best endeavours to engage subcontractors who will implement best practice workplace health and safety systems and standards and best practice commitment to apprentices and trainees as required by clause 24 of the Conditions of Tender.

Tender Evaluation Criteria – Price Quality Method (PQM)

Criterion 1 *Price Criterion - Tender Sum* *Points (total)* *70*

Where a Tenderer tenders a rate for the provisional number of delay days stated in the Tender Form and a higher rate for delay days thereafter then, for the purposes of evaluating tenders only, the Tender Sum shall be adjusted by deleting the Provisional Delay Allowance plus GST and adding the total of the provisional number of delay days multiplied by the higher tendered rate plus GST.

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Criterion 2 Non-Price Criteria *Points (total) 30*

The Tenderer is required to address each of the following:

1.	Local Benefits	Sub-Points	4
2.	Workplace Health and Safety	Sub-Points	8
3.	Resources	Sub Points	10
4.	Methodology and Program	Sub-Points	8

Refer Major Works NPC Evaluation Workbook for full details

The Tenderer must objectively and numerically identify the extent to which the Tender addresses the above criteria (other than the Tender Sum) and otherwise substantiate the Tender in respect of the criteria in a submission containing not more than 5000 words. Responses to the above criteria (other than the Price Criterion) shall be bound separately to the Tender Form and shall not include the Tender Sum.

Quality Premium Adjustment of Tender Sums, if the Price Quality Premium method of Tender Evaluation is used by the principal

For the purposes of tender evaluation only, the Tender Sum of each tender will be adjusted by application of a quality premium calculated as follows:

- Weighted Score for each non-price criterion = Tenderer's criterion score (0-5)/5 (or such other applicable scoring range) x weighting (0-10) (or such other weighting)
- Weighted Sum = sum of all non-price criterion Weighted Scores
- Weighted Sum Margin = Tenderer's Weighted Sum –the Weighted Sum of the Tenderer with the lowest Weighted Sum
- Quality Premium for each tender = pre-tender estimate x Weighted Sum Margin / (100-weighting)

For the purposes of the tender evaluation only, the Quality Premium thus established for each tender will be subtracted from the tendered sum of that tender and the tenders compared accordingly.

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Special Conditions of Contract and Annexure

To be read in conjunction with Australian Standard® General conditions of contract for design and construct AS4300-1995.

Project Name	Document & Construct - 9x1 Bed, 4x2 Bed Unit Complex - 8 MILES AVENUE &1265 RIVERWAY DRIVE, KELSO, TOWNSVILLE QLD 4815
Project Number	93378DC1

This contract document has been developed by Contract Services, Department of Housing and Public Works, in accordance with the Building Policy Framework.

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CONDITIONS OF CONTRACT

1. GENERAL

The Conditions of Contract shall be the Australian Standard® General conditions of contract for design and construct (AS4300-1995) as amended by the Special Conditions of Contract.

2. INTERPRETATION

In the event of conflict or inconsistency between the provisions of the Australian Standard® General conditions of contract for design and construct (AS4300-1995) and the Special Conditions of Contract, the Special Conditions of Contract shall take precedence.

References to “Annexures” to AS4300-1995 shall be read as reference to Annexures attached to the Special Conditions of Contract.

References to “attached to these Conditions” shall be read as reference to attachments to the Special Conditions of Contract.

SPECIAL CONDITIONS OF CONTRACT

To be read in conjunction with Australian Standard® General conditions of contract for design and construct AS4300-1995.

1. CONSTRUCTION OF CONTRACT

No amendment

2. INTERPRETATION

Add the following before the definition of 'Certificate of Practical Completion':

"'Best Endeavours Process' means the process set out in the Contractor's tender by which the Contractor will use its best endeavours to engage subcontractors who will implement best practice workplace health and safety systems and standards, and best practice commitment to apprentices and trainees;

'Best Practice Principles' means the Queensland Government guidelines titled "Best Practice Principles: Quality, safe workplaces" or any guidelines which replace those guidelines;

'BIF Act' means the *Building Industry Fairness (Security of Payment) Act 2017* (Qld) and the regulations made under or in respect of that Act;

'business day' means a day that is not:

(a) a Saturday or Sunday; or

(b) a public holiday, special holiday or bank holiday in the place where the Works will be situated; or

(c) a day in the period from 22 December in a particular year to 10 January in the following year, both days inclusive;"

Add the following after the definition of 'direction':

"'Ethical Supplier Mandate' means the Queensland Government policy titled "Buy Queensland: Ethical Supplier Mandate" or any policy that replaces that policy;

'Ethical Supplier Threshold' means the Ethical Supplier Threshold described in the Queensland Procurement Policy;"

Add the following after the definition of 'Final Payment Claim':

"'Government Department or Instrumentality' means:

(a) any government department responsible for compliance with government policy, including without limitation:

(i) the QGP Compliance Branch;

(ii) the Queensland Apprenticeship and Traineeship Office within the Department of Trade, Employment and Training; and

(iii) Local Content with the Department of State Development, Infrastructure and Planning; and

(b) any government regulator, including without limitation:

(i) the Queensland Building and Construction Commission;

(ii) the Office of Industrial Relations;

(iii) the Fair Work Commission;

(iv) the Australian Taxation Office; and

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(v) the Office of the Federal Safety Commissioner;"

Add the following after the definition of 'Legislative Requirements':

"'Local Benefits Test' means the local benefits test described in the Queensland Procurement Policy"

Add the following after the definition of 'Practical Completion':

"'Prequalified Subcontractor' means a subcontractor who, at the time of entering into a subcontract, is registered on the whole-of-Government Prequalification (PQC) System for the PQC Rating and Registration Category relevant to the proposed subcontract;"

Add the following after the definition of 'Principal's Project Requirements':

"'Provisional Delay Allowance' means the amount set out in the Schedule of Agreed Damages for Delay contained in the Tender Form, or if no Provisional Delay Allowance is set out, the amount calculated according to the formula set out in the Schedule of Agreed Damages for Delay contained in the Tender Form, which amount is deemed to be included in the Contract Sum;"

Add the following after the definition of 'public liability policy':

"'QGP Compliance Branch' means the State of Queensland's Queensland Government Procurement Compliance Branch within the Department of Housing and Public Works and any successor administrative unit;

'Queensland Procurement Policy' means the Queensland Government policy titled "Queensland Procurement Policy" or any policy which replaces that policy;"

Delete the definition of 'subcontractor' and replace with:

"'subcontractor' includes Consultant;"

Add the following after the definition of 'Superintendent's Representative':

"'Supplier Code of Conduct' means the Queensland Government Code titled "Queensland Government Supplier Code of Conduct" or any code that replaces that code;"

Add the following after the definition of 'work under the contract':

"'Working Day' means a day stated as such in the Annexure;

'Working Hours' means the hours stated as such in the Annexure;"

3. NATURE OF CONTRACT

3.1. Performance and Payment

Add after the first sentence:

"If the Annexure indicates that the Best Practice Principles apply, the Contractor must uphold any commitments in relation to the Best Practice Principles made in the Contractor's tender when executing and completing the work under the Contract and must ensure that Subcontractors uphold commitments in relation to the Best Practice Principles in their tenders."

3.2. Quantities

No amendment

3.3. Adjustment for Actual Quantities – Schedule of Rates

Add new paragraph at the end of Clause 3.3:

"This Clause does not apply to any Provisional Delay Allowance included in the Contract and the Contractor's entitlement (if any) for payment in respect of delays or for payment of any amount forming part of the Provisional Delay Allowance is governed by Clause 36."

Add new subclauses:

“

3.4. **Variations in Rates of Exchange and Duty**

(a) Subject to subclause (b), if it is shown to the satisfaction of the Superintendent:

(i) that the Contractor has placed its orders for any materials, machinery, or other goods, forming part of the Works and required to be imported from overseas sources, in time to achieve a rate of progress satisfactory to the Superintendent, and

(ii) that at the time of the Contractors payment of an invoice for any materials, machinery or other goods forming part of the Works a difference has occurred in comparison to the price obtained and included in the tender of such materials, machinery or other goods, which difference is solely attributable to an alteration in the rates of exchange or duty,

the value of such difference shall, upon application in writing to the Superintendent by the Contractor or upon notification in writing to the Contractor by the Superintendent, be taken into account in determining the final Contract Sum.

The value of such difference shall be calculated in accordance with the entire example calculation included in the schedule attached to these Conditions.

For the purposes of this Clause 3.4 and the example calculation included in the schedule attached to these Conditions, the evaluation of such difference shall be based upon:

(iii) the selling exchange rate for the appropriate foreign currency as published by the Reserve Bank of Australia at the closing of business on the 14th day prior to the closing of tenders,

(iv) the selling exchange rate for the appropriate foreign currency as published by the Reserve Bank of Australia as applied at the time of payment of the invoice by the Contractor for the material, machinery, or other goods,

(v) the rate of duty payable at the closing of business on the 14th day prior to the closing of tenders, and

(vi) the rate of duty paid at the time of payment of the invoice by the Contractor for the material, machinery, or other goods.

(b) In the case of an application to the Superintendent by the Contractor, the provisions of subclause (a) shall apply only to those goods listed by the Contractor in the schedule attached to these Conditions, properly completed and submitted within 10 business days after acceptance of tender, or, in the case of goods required by a variation to the Contract, to those listed in the schedule attached to these Conditions submitted at the time of submission of the Contractor’s price for the variation.

3.5. **Customs Tariff (Anti-Dumping) Legislation**

(a) For the purpose of this Clause 3.5:

‘dumped goods’ means goods resulting from a practice where a supplier exports goods to another country at a price below the price charged in the country of manufacture or below the cost of manufacturing the goods.

(b) The Contractor warrants that:

(i) it will not supply dumped goods or goods suspected of being dumped for the term of the Contract;

(ii) it will do business with ethically, environmentally and socially responsible suppliers, and will seek to influence the supply chain in this regard;

(iii) it has put into place all necessary processes, procedures, investigations and compliance systems to ensure that it can provide the warranties under this Clause at all relevant times; and

(iv) should the Contractor become aware of any risk of breaching this warranty, it shall immediately notify the Principal of such risk and the remediation action it proposes to take.

(c) Notwithstanding Clause 3.4 and 3.5(b) above:

(i) the Contractor shall be responsible for payment of duties (if any) under the *Customs Tariff (Anti-Dumping) Act 1975* (Cth) and any security under the *Customs Act 1901* (Cth) in respect of any duty that might become payable under the *Customs Tariff (Anti-Dumping) Act 1975* (Cth);

(ii) the lump sum or rates accepted by the Principal for the work under the Contract shall include for all amounts payable under this Clause 3.5 and omissions in Schedules of Rates to specifically identify items in respect of such amounts shall not constitute an error under Clause 3.3 and the Contractor shall not be entitled to any additional remuneration whatsoever in respect of any such amounts that are payable or that may become payable; and

(iii) the Contractor shall indemnify the Principal in respect of any payments that are payable or that may become payable under the *Customs Tariff (Anti-Dumping) Act 1975* (Cth) or in respect of any security that is payable or may become payable under the *Customs Act 1901* (Cth) for duty that might become payable under the *Customs Tariff (Anti-Dumping) Act 1975* (Cth).

3.6. **Sale of Goods Legislation**

The *Sale of Goods (Vienna Convention) Act 1986* (Qld) is excluded and shall have no effect upon the terms of the Contract."

4. WARRANTIES

4.1. **Contractor's Warranties**

4.1 (b)

Delete/Insert:

"subject to Clause 9, shall engage and retain Consultants who are suitably qualified and experienced;"

4.2. **Warranties Unaffected**

No amendment

5. SECURITY, RETENTION MONEYS AND PERFORMANCE UNDERTAKINGS

5.1. **Purpose**

Add at the end of Clause 5.1, the words:

"and for the purpose of providing security of payment to subcontractors of the Contractor as these terms are defined in the BIF Act."

5.2. **Provision of Security**

No amendment

5.3. **Form of Security**

Delete from the second paragraph the words "party having the benefit of the security" and insert in their place the word "Principal".

Delete/Insert the last sentence of the second paragraph:

"The form of undertaking attached to these Conditions is approved."

5.4. **Time for Provision of Security**

Delete "28 days" and insert in its place "10 business days".

5.5. **Retention Moneys**

No amendment

5.6. **Conversion of Security and Recourse to Retention Moneys**

Delete/Insert:

"The Principal may at any time convert into money security that does not consist of money whether or not the Principal is then entitled to exercise a right under the contract in respect of the security. The Principal shall not be liable in any way for any loss occasioned by such conversion.

The Principal may have recourse to retention moneys, cash security or to moneys obtained by conversion of security where the Principal has become entitled to exercise a right under the Contract in respect of the retention moneys or security or is otherwise entitled at law to have recourse to such moneys or security."

5.7. **Substitution of Security for Retention Moneys**

Delete/Insert:

"The Contractor may request at any time permission to provide an unconditional undertaking approved in writing by the Principal and given by a financial institution or insurance company approved in writing by the Principal to be held by the Principal in lieu of retention moneys. The Principal may in its entire discretion and without giving reasons reject any such request by the Contractor.

The form of undertaking attached to these Conditions is approved.

In the event that the Contractor requests to provide an unconditional undertaking and the Principal elects to agree to the request, the following provisions shall apply notwithstanding any other provision in the Contract to the contrary:

(a) The undertaking shall be for an amount equal to 5% of the Contract Sum and shall be lodged with the Principal.

(b) Unless and until the expiration of a period of 5 Working Days after the undertaking is lodged, retention moneys shall be deducted in accordance with Clause 42.1.

(c) 5 Working Days after the lodgement of the undertaking - retention moneys pursuant to Clause 42.1 shall not be deducted and all retention moneys previously deducted (if any) pursuant to Clause 42.1 shall be the subject of the next following progress certificate issued by the Superintendent with appropriate amounts credited to the Contractor.

(d) Subject to the rights of the Principal under the Contract, the provisions of Clauses 5.6, 5.8 and 42.6 shall apply to the undertakings.

(e) An undertaking given pursuant to this Clause shall be regarded as a performance undertaking with purposes as set out in Clause 5.1."

5.8. **Reduction of Security and Retention Moneys**

Delete "14 days" in the second line of the fourth paragraph and insert in its place "10 business days".

Delete "14 days" in the first line of the fifth paragraph and insert in its place "10 business days".

5.9. **Release of Security and Retention Moneys**

Delete "14 days" in the fourth line of the first paragraph and insert in its place "10 business days".

5.10. **Holding of and Interest on Cash Security and Retention Moneys**

No amendment

5.11. **Deed of Guarantee, Undertaking and Substitution**

Delete "7 days" in the second of the first paragraph and insert in its place "5 business days".

Delete “14 days” in the third of the first paragraph and insert in its place “10 business days”.

6. EVIDENCE OF CONTRACT

6.1. Contract in Absence of Formal Instrument of Agreement

No amendment

6.2. Formal Instrument of Agreement

Delete/Insert the first paragraph:

> “If the Annexure indicates that the execution of a Formal Instrument of Agreement is required, the Principal shall prepare in duplicate a Formal Instrument of Agreement and shall forward it to the Contractor with a request that it be executed.”

Delete “14 days” in the first line of the second paragraph and insert in its place “10 business days”.

Delete “14 days” in the first line of the third paragraph and insert in its place “10 business days”.

Add new paragraph at the end of Clause 6.2:

> “The Formal Instrument of Agreement, when required, shall be in the form attached to these Conditions.”

Add new subclauses:

“

6.3. Collusive Arrangements

The Contractor warrants and represents to the Principal that:

(a) it had no knowledge of the tender price of any other tenderer, nor did it communicate with any other tenderer in relation to its tender price, or a price above or below which a tenderer may tender (excluding any pricing advised by the Principal), nor had it entered into any contract, arrangement or understanding with another tenderer to the effect that the Contractor or another tenderer would tender a non-competitive price, for the work under the Contract, at the time of submission of the Contractor’s tender;

(b) except as disclosed in the Contractor’s tender, it has not entered into any contract, arrangement or understanding to pay or allow any money directly or indirectly to a trade, industry or other association (above the published standard fee) relating in any way to its tender or this Contract, nor paid or allowed any such money, nor will it pay or allow any such money;

(c) except by prior agreement with the Principal, it has not paid or allowed any money or entered into any contract, arrangement or understanding to pay or allow any money directly or indirectly to or on behalf of any other tenderer for the work under the Contract, nor received any money or allowance from or on behalf of any other tenderer relating in any way to the Contractor’s tender or this Contract, nor will it pay or allow or receive any money as aforesaid.

In the event of the Contractor paying or allowing any money in breach of this Clause 6.3, the Principal may deduct from payments to the Contractor an equivalent sum as an amount due from the Contractor to the Principal, in addition to any other claim, demand, action or proceeding the Principal may have against the Contractor (whether for damages or otherwise).

Without limitation, if the Contractor commits a breach of this Clause 6.3, the Principal may at its discretion terminate the Contract and claim damages for breach of contract.

6.4. Parties to the Contract

If any party to this Contract consists of one or more persons this Contract shall bind such persons and their respective executors, administrators, successors (in the case of the Contractor) and permitted assigns (in the case of the Principal) jointly and severally and this Contract must be read and construed accordingly.”

7. SERVICE OF NOTICES

No amendment

8. CONTRACT DOCUMENTS

8.1. Discrepancies

No amendment

8.2. Dimensions

No amendment

8.3. Supply of Documents by Principal

No amendment

8.4. Supply of Documents by Contractor

Delete “14 Days” in the fourth and fifth line of the second paragraph and insert in its place “10 business days”.

Delete “14 Days” in the third line of the fifth paragraph and insert in its place “10 business days”.

8.5. Availability of Documents

No amendment

8.6. Confidential Information

No amendment

8.7. Media Releases

Delete the words:

> “without prior approval of the Principal which approval shall not be unreasonably withheld.”

9. ASSIGNMENT AND SUBCONTRACTING

9.1. Assignment

Delete/Insert:

> “The Principal may, at any time, by notice in writing to the Contractor, assign all or any of its rights under the Contract to any person identified in the notice (‘the assignee’).
>
> The Contractor acknowledges and agrees that from the date of any notice given by the Principal pursuant to this Clause, any assignment by the Principal takes effect as if the assignee had been originally named as a party to the Contract in place of the Principal.
>
> The Contractor must not, without the prior written approval of the Principal, and except on such terms and conditions as are determined in writing by the Principal, assign the Contract or any payment or other right, benefit or interest under or in respect of the Contract.”

9.2. Subcontracting (including Work Performed by Consultants)

Delete/Insert:

> “
>
> (a) The obligations of government agencies contained in the Queensland Procurement Policy shall apply equally to the Contractor as though it is a government agency, and the Contractor shall procure subcontracts in accordance with the requirements of the Queensland Procurement Policy.

(b) The Contractor shall prepare and produce all required copies of the subcontract tender documentation ("Subcontract Tender Documentation"), which:

(i) incorporates suitable conditions of contract which reflect the provisions of the Contract;

(ii) requires subcontract tenders and subcontractors to consent to a relevant Government Department or Instrumentality providing information to the Principal or the QGP Compliance Branch about the tenderer's or subcontractor's compliance with government policies and legislation, including without limitation, commitments made in relation to or required by the Queensland Procurement Policy, the Local Benefits Test, the Ethical Supplier Mandate, the Ethical Supplier Threshold, the Queensland Government Building and Construction Training Policy, the *Work Health and Safety Act 2011* (Qld) and the *Electrical Safety Act 2002* (Qld);

(iii) requires subcontract tenderers and subcontractors to acknowledge that the information referred to in Clause 9.2(b)(ii), which includes without limitation payroll records, management records, time recordings and records of project-specific training that may be held by any Government Department or Instrumentality, may be obtained by or made available to the Principal and the QGP Compliance Branch, for its information and verification of the subcontract tenderer's or subcontractor's compliance with commitments made in relation to or required by government policies and legislation;

(iv) includes terms that evidence the right of the Principal and the QGP Compliance Branch to exercise the discretion in Clause 49.10 to publish any information relevant to the Ethical Supplier Mandate, including but not limited to information about the subcontractor's compliance with the Ethical Supplier Threshold and Ethical Supplier Mandate, and prohibits the subcontractor from exercising any rights at law, including in contract, at common law or in equity, against the Principal or the Contractor in relation to that publication;

(v) if the Annexure indicates that the Best Practice Principles apply, incorporates the requirements of Clause 9.2(e);

(vi) requires the subcontractor to submit statutory declarations in the form attached to these Conditions, if requested by the Superintendent under Clause 43.1(c);

(vii) requires the subcontractor to execute a deed poll in favour of the Principal in the form attached to these Conditions and provide this as part of their tender;

(viii) requires the subcontractor to make and keep the records referred to in Clause 49.1;

(ix) provides for evaluation of subcontract tender responses against clear evaluation criteria and weightings; and

(x) incorporates any other documentation or information required for the tendering or the completion of the relevant work under the Contract.

(c) The Contractor must ensure that all subcontractors and any sub subcontractors:

(i) for the purposes of the Queensland Procurement Policy are:

(A) local suppliers as described in the Queensland Procurement Policy, and if a local supplier is unable to be sourced by the Contractor having used its best endeavours to do so, the Contractor shall seek approval from the Superintendent to use a supplier who is not a local supplier and in doing so shall provide evidence, satisfactory to the Superintendent, of its efforts to source a local supplier;

(B) compliant with the Ethical Supplier Threshold; and

(C) not subject to a current sanction under the Ethical Supplier Mandate;

(ii) are informed of the existence of the BIF Act; and

(iii) either:

(A) have a personal services business determination in effect from the Australian Taxation Office under the *Income Tax Assessment Act 1997* (Cth); or

(B) in relation to the work to be performed under the subcontract (or sub subcontract):

(I) will be paid to achieve a specified result or outcome;

(II) are required to supply the plant and equipment or tools of trade needed to perform the work; and

(III) will be liable for the cost of rectifying any defect in the work performed.

(d) The Contractor shall examine, analyse and evaluate all subcontract tenders received in accordance with the Subcontract Tender Documentation, and in doing so, the Contractor shall:

(i) ensure evaluation of subcontract tender responses against clear evaluation criteria and weightings;

(ii) prepare and retain written records of the evaluation process undertaken, all evaluation findings and recommendations and, if requested, submit these to the Superintendent at the completion of each subcontract evaluation.

(e) If the Annexure indicates that the Best Practice Principles apply and the proposed subcontract has a value of $20,000 exclusive of GST or more and meets the other requirements of the Best Practice Principles, when preparing Subcontract Tender Documentation the Contractor shall:

(i) include the following best practice principles in Subcontract Tender Documentation:

(A) best practice workplace health and safety systems and standards; and

(B) best practice commitment to apprentices and trainees;

(ii) provide for evaluation of subcontract tender responses against clear evaluation criteria, weighted in accordance with the weightings nominated in the Annexure relevant to the Best Practice Principles and the Local Benefits Test;

(iii) provide subcontract tenderers with the following guidance examples of best practice in relation to the best practice principles described in Clause 9.2(e)(i), which are examples only and are not comprehensive, compulsory or exhaustive:

(A) demonstrated commitment to training, including the engagement of apprentices and trainees; and

(B) demonstrated history of compliance and commitment to compliance with work health and safety laws;

(iv) require subcontract tenderers to:

(A) demonstrate as part of their tender, how they propose to address each of the best practice principles described at Clause 9.2(e)(i); and

(B) acknowledge that information relating to the subcontractor relevant to the evaluation of the subcontractor's tender or the subcontractor's compliance with commitments made in its tender relating to the Best Practice Principles that may be held by any Government Department or Instrumentality, may be obtained by or made available to the Principal and the QGP Compliance Branch for information and verification; and

(v) include provisions in any resulting subcontract requiring the subcontractor to fulfil the commitments made in the subcontractor's tender in respect of the best practice principles described in Clause 9.2(e)(i).

(f) If the Annexure indicates that the Best Practice Principles apply and the proposed subcontract has a value of $20,000 exclusive of GST or more and meets the other requirements of the Best Practice Principles, the Contractor must diligently apply the Best Endeavours Process when selecting tenderers and seeking tenders for subcontracts.

(g) The Superintendent may direct the Contractor to select Prequalified Subcontractors. The Contractor may not claim and warrants to the Principal that it shall not claim any extra amount or extension of time from the Principal as a result of complying with a direction given under this Clause 9.2(g).

(h) The Contractor must not, without the prior written approval of the Superintendent which shall not be unreasonably withheld, subcontract or allow a subcontractor to subcontract any of the work under the Contract. When seeking approval pursuant to this Clause, the Contractor shall provide to the Superintendent a request for approval in the form attached to these Conditions and such other information which the Superintendent may reasonably request.

(i) Within 10 business days after a request by the Contractor for approval made in accordance with Clause 9.2(h), the Superintendent shall approve the request or advise the Contractor of any objections. If approval is given to sub subcontract part of the work under the Contract, the Contractor must ensure the requirements of Clause 9.2 are met.

(j) The Principal may at any time prior to the issue of the Final Certificate, undertake an audit in respect of the Contractor's compliance with Clause 9.2, in accordance with the provisions of Clause 49.4."

9.3. **Contractor's Responsibility**

No amendment

9.4. **Selected Subcontract Work**

Delete the words "not less than two" appearing after the words "from a list of" in the third line of the paragraph and insert in their place the words "one or more".

9.5. **Provisions Applying Generally to Selected Subcontract Work**

No amendment

9.6. **Termination of Selected Subcontract**

No amendment

10. NOVATION

Add after the words "or the Selected Subcontractor" in the third line of the second paragraph, the words "or Consultant".

11. PROVISIONAL SUMS

Add new paragraph at the end of Clause 11:

"This Clause does not apply to any Provisional Delay Allowance included in the Contract and the Contractor's entitlement (if any) for payment in respect of delays, or for payment of any amount forming part of the Provisional Delay Allowance is governed by Clause 36."

12. LATENT CONDITIONS

12.1. **Definition**

Delete the word "the" as appearing before the word "Contractor" in the third line of paragraph (a) and insert in its place the words "a competent and experienced".

12.2. **Notification**

No amendment

12.3. **Extension of Time and Cost**

No amendment

12.4. **Time Bar**

Delete “28 days” in the third line of the paragraph and insert in its place “20 business days”.

13. PATENTS, COPYRIGHT AND OTHER INTELLECTUAL PROPERTY RIGHTS

No amendment

14. LEGISLATIVE REQUIREMENTS

14.1. **Complying with Legislative Requirements**

Add new paragraphs at the end of Clause 14.1:

> “Unless otherwise specified in the Annexure, the Contractor shall obtain confirmation of compliance with the *Building Act 1975* (Qld) or, if required, approval under the *Building Act 1975* (Qld), in respect of the design, from a Queensland Building and Construction Commission licensed Building Certifier.
>
> The Contractor shall remain responsible for the design notwithstanding any approval or confirmation of compliance given under or in connection with the *Building Act 1975* (Qld), nor any review or approval of the design undertaken on behalf of the Principal.”

14.2. **Changes in Legislative Requirements**

No amendment

Add new subclause:

> “

14.3. **Work Health and Safety**

(a) For the purposes of this Clause:

‘Act’ means the *Work Health and Safety Act 2011* (Qld);

‘construction project’, ‘construction work’ and ‘principal contractor’ have the same meaning as in the Regulation;

‘inspector’, ‘notifiable incident’, ‘regulator’, ‘structure’ and ‘workplace’ have the same meanings as in the Act;

‘Regulation’ means the *Work Health and Safety Regulation 2011* (Qld);

‘WHS Laws’ means the Act, the Regulation and all other applicable work health and safety legislation, regulations, rules, Codes of Practice and Australian Standards.

(b) Where the work under the Contract comprises a construction project (i.e. a project that involves construction work of $250,000 or more), from the Date of Acceptance of Tender:

(i) the Principal engages the Contractor to be the principal contractor under the Regulation in relation to the work under the Contract and authorises the Contractor to:

(A) have management and control of the workplace at which the work under the Contract is being undertaken including the Site; and

(B) discharge the duties of the principal contractor under the Regulation.

(ii) the Contractor accepts the engagement as principal contactor from the Principal and agrees to fulfil all requirements and give effect to that engagement prior to commencing any of the work under the Contract;

(iii) the Contractor will comply with and discharge all obligations imposed on the Contractor, as principal contractor, as a person who conducts a business or undertaking and otherwise, by the WHS Laws;

(iv) the Contractor will consult with the Principal and will consult with the designers of the whole or any part of a structure to be constructed under the Contract, about how to ensure that risks to health and safety arising from the design are eliminated during construction of the work under the Contract or, if it is not reasonably practicable to eliminate the risks, minimise, so far as is reasonably practicable;

(v) the Contractor will, in performing its obligations under the Contract, take into account and take appropriate action having regard to any information given to the Contractor by the Principal or any other person, about hazards and risks at or in the vicinity of the workplace where the work under the Contract is being carried out, and

(vi) without limiting paragraph (b)(iii), the Contractor will ensure its officers, workers and agents, subcontractors, and its subcontractors' officers, workers, and agents, discharge their respective duties under the WHS Laws in connection with the work under the Contract.

(c) The Contractor will indemnify the Principal against any claim, action, demand, loss, damage, cost, or expense which may be brought against, or suffered or incurred by, the Principal as a result of or in connection with:

(i) any breach of this Clause 14.3 by the Contractor;

(ii) any breach by the Contractor of its obligations under the WHS Laws; and

(iii) any enforcement of obligations imposed on the Contractor under the WHS Laws.

(d) If a notifiable incident occurs at the workplace at which the work under the Contract is being undertaken, the Contractor must:

(i) immediately notify the regulator and the Superintendent of the notifiable incident and provide copies of any communications, notices or reports provided to or received from the regulator or any Authority regarding the notifiable incident to the Superintendent;

(ii) take all reasonably practicable steps to secure the Site where the notifiable incident occurred until an inspector arrives at the Site or any earlier time that an inspector directs;

(iii) conduct a thorough investigation in relation to the root cause and contributing factors of the notifiable incident and provide a copy of the written investigation report within 10 business days of the Superintendent's request; and

(iv) if the Principal wishes to conduct its own investigation, provide the Principal with reasonable assistance (including access to relevant documents and the Contractor's personnel) in investigating any such notifiable incident.

(e) Without limiting any other obligation of the Contractor under the Contract, or the WHS Laws, if material which might contain asbestos or other hazardous substance is discovered, the Contractor must:

(i) immediately notify the Superintendent; and

(ii) comply with all applicable obligations and restrictions imposed by the WHS Laws."

15. PROTECTION OF PEOPLE AND PROPERTY

Add the subclause number "15.1" and the subheading "Protection Measures" to the existing Clause 15.

Add new subclause:

“

15.2. **Occupational Health and Safety Audit**

(a) This Clause 15.2 will apply unless otherwise stated in the Annexure.

(b) For the purpose of this Clause 15.2:

‘Accredited Auditor (Construction)’ means a person accredited by Workplace Health and Safety Queensland as an occupational health and safety auditor to undertake auditing pursuant to the *Work Health and Safety Act 2011* (Qld).

(c) Within 10 Working Days of the Date of Acceptance of Tender, the Contractor must engage an Accredited Auditor (Construction) to perform the functions specified in the Contract.

(d) The cost of performance by the Accredited Auditor (Construction) of the required functions will be reimbursed by the Principal in accordance with the Contract. The reimbursable amount will be a debt due from the Principal to the Contractor.

(e) The Contractor must ensure that the Accredited Auditor (Construction) engaged under Clause 15.2(c) has not:

(i) in the two years prior to the Date of Acceptance of Tender, had a business or employment relationship with the Contractor including without limitation where the Accredited Auditor (Construction) has, either personally or as an employee or an agent of another person or entity, been involved in the development and/or maintenance of the Contractor’s occupational health and safety management system in any capacity other than by reason of having been engaged as an Accredited Auditor (Construction); or

(ii) been engaged by the Contractor as an Accredited Auditor (Construction) more than three times within a 12-month period to perform the functions specified in the Contract.

(f) The Contractor must provide copies of all reports and any corrective action notices received from the Accredited Auditor (Construction) to the Superintendent within 3 Working Days of receipt. In relation to corrective action notices, in addition to any other avenues available under the Contract:

(i) the Superintendent may direct the Contractor, by written notice, to carry out any required corrective action within the time specified in the Superintendent’s notice; or

(ii) the Principal may take action under Clause 39.

(g) A direction given under Clause 15.2(f)(i) constitutes a direction under Clause 30.3. If such a direction is given, the Contractor must inform the Superintendent in writing immediately upon completion of the corrective actions.

15.3. **Work Health and Safety Accreditation Scheme**

(a) If stated in the Annexure, this Clause 15.3 will apply.

(b) For the purposes of this Clause:

‘builder’, ‘building work’ and ‘WHS Accreditation Scheme’ have the same meanings as in the *Federal Safety Commissioner Act 2022* (Cth).

(c) The builder must maintain accreditation under the WHS Accreditation Scheme while building work is carried out.

(d) The builder must comply with all conditions of the WHS Accreditation Scheme accreditation.”

16. CARE OF THE WORK AND REINSTATEMENT OF DAMAGE

No amendment

17. DAMAGE TO PERSONS AND PROPERTY

No amendment

18. INSURANCE OF THE WORK UNDER THE CONTRACT

Delete from the first sentence of the last paragraph of Alternative 1 the words and punctuation “be in joint names of the Principal and the Contractor, and shall cover” and insert in their place the words “provide cover as insured parties to”.

19. PUBLIC LIABILITY INSURANCE

Delete from the first sentence of Alternative 1 the words “in the joint name of the Principal and the Contractor”.

Insert in the first sentence of Alternative 1 the words “as insured parties” after the words “which covers”.

20. INSURANCE OF EMPLOYEES

No amendment

21. PROFESSIONAL INDEMNITY INSURANCE

No amendment

22. INSPECTION AND PROVISIONS OF INSURANCE POLICIES

No amendment

23. SUPERINTENDENT

Add new paragraph at the end of Clause 23:

> “For the purposes of the BIF Act the Superintendent is deemed to be authorised to receive payment claims and to issue payment schedules on behalf of the Principal.”

24. SUPERINTENDENT’S REPRESENTATIVE

No amendment

25. CONTRACTOR’S REPRESENTATIVE

No amendment

26. CONTROL OF CONTRACTOR’S EMPLOYEES AND SUBCONTRACTORS

No amendment

27. SITE

27.1. **Access to and Possession of the Site**

No amendment

27.2. **Access for the Principal and Others**

No amendment

27.3. **Delivery of Materials to and Work on the Site Before Possession**

No amendment

27.4. **Use of the Site by the Contractor**

No amendment

27.5. **Finding of Minerals, Fossils and Relics**

No amendment

Add new subclause:

"

27.6. **Extra Land Required by Contractor**

The Contractor shall procure for itself and at its own cost the right to the occupation or use of any land in addition to the site which the Contractor may deem necessary for the execution of the work under the Contract or for the purposes of the Contract and shall, as a condition precedent to the issue of the Final Certificate, if so required by the Superintendent, provide a properly executed release from all claims or demands (whether for damages or otherwise whatsoever) from the owner or occupier of such land and from any other person having an interest in such land. Any such release shall be in a form approved by the Principal."

28. SETTING OUT THE WORKS

No amendment

29. MATERIALS, LABOUR AND CONSTRUCTIONAL PLANT

29.1. **Provision of Materials, Labour and Constructional Plant**

No amendment

Add new subclauses:

"

29.1A **Training Policy**

(a) For the purposes of Clause 29.1A:

'Aboriginal or Torres Strait Islander' means a person of Aboriginal or Torres Strait Islander descent who identifies as an Aboriginal or Torres Strait Islander and is accepted as such by the community in which he or she lives;

'Apprentice' and 'Trainee' have the same meaning as in the *Further Education and Training Act 2014* (Qld);

'Compliance Plan' means the plan submitted electronically by the Contractor in TPAS demonstrating how the Contractor will comply with its obligations under this Clause and the Training Policy;

'DWATSIPM' means the Department of Women, Aboriginal and Torres Strait Islander Partnerships and Multiculturalism;

'Deemed Hours' means the number of on-the-job training hours required under this Clause and the Training Policy, and are calculated using the following formula:

(i) for building projects, except for Major building projects – Contract Sum (including GST) x 0.0006; and

(ii) for Major building projects – Contract Sum (including GST) x 0.0009;

'DTET' means the Department of Trade, Employment and Training;

'Eligible Project' means a contract where:

(i) the work under the Contract is carried out in Queensland; and

(ii) the Contract Sum is $500,000 or greater (including GST);

'IEO Plan' means the Indigenous Economic Opportunities Plan developed by the Contractor that complies with the requirements of the Training Policy and is agreed to and signed by:

(i) the Contractor;

(ii) the Principal; and

(iii) the relevant Aboriginal or Torres Strait Islander council or authority, or where there is no relevant Aboriginal and Torres Strait Islander council or authority, DWATSIPM;

'Indigenous Project' means an Eligible Project, located in:

(i) an Aboriginal or Torres Strait Islander community, or in the township of Weipa, as indicated in the Annexure; or

(ii) a part of Queensland not referred to in paragraph (i) of this definition that is selected as an Indigenous Project by Queensland Government agencies, government owned corporations or by the Director-General of DWATSIPM, as indicated in the Annexure;

'Major building project' means a project where the Contract Sum (including GST) is $100 million or greater;

'Practical Completion Report' means the report submitted electronically by the Contractor in TPAS demonstrating compliance by the Contractor with this Clause and the Training Policy;

'Training Policy' means the Queensland Government policy titled "Queensland Government Building and Construction Training Policy" or any policy which replaces that policy;

'TPAS' means the Training Policy Administration System being the electronic reporting system administered by DTET for contractor compliance reporting under the Training Policy.

(b) Clause 29.1A applies if the Contract is an Eligible Project.

(c) The Contractor must comply with the Training Policy and must:

(i) within 10 Working Days of the Date of Acceptance of Tender submit the Compliance Plan electronically in TPAS, and as soon as possible afterwards provide a copy of the TPAS email notification for the submitted Compliance Report to the Superintendent;

(ii) allocate a minimum of 60% of the Deemed Hours towards the employment of new entrant Apprentices and Trainees, as required by the Training Policy;

(iii) for the remaining Deemed Hours not allocated under Clause 29.1A(c)(ii), undertake other workforce training, as required by the Training Policy;

(iv) provide the privacy statement contained in the schedule attached to these Conditions to each Apprentice or Trainee regarding the collection and use of personal information; and

(v) within 15 Working Days of the date of Practical Completion, or, if there is more than one, the last occurring date of Practical Completion, submit the Practical Completion Report electronically in TPAS, and as soon as possible afterwards provide a copy of the TPAS email notification for the submitted Practical Completion Report to the Superintendent.

(d) If the Annexure indicates that the Contract is an Indigenous Project, the Contractor must also:

(i) within 10 Working Days of the Date of Acceptance of Tender submit the IEO Plan as part of the Compliance Plan electronically in TPAS, and as soon as possible afterwards provide a copy of the TPAS email notification for the submitted IEO Plan as part of the Compliance Plan to the Superintendent;

(ii) prioritise the employment of Aboriginal or Torres Strait Islander Apprentices and Trainees, and local Aboriginal and Torres Strait Islander workers to meet the Deemed Hours requirement under Clause 29.1A(c)(ii);

(iii) allocate an additional amount towards the IEO Plan, which must be a minimum of 3% of the Contract Sum including GST; and

(iv) within 15 Working Days of the Date of Practical Completion, or if there is more than one the last occurring Date of Practical Completion, submit the achievement of outcomes against the IEO Plan as part of the Practical Completion Report submitted electronically in TPAS, with a copy of the TPAS email notification to the Superintendent.

(e) For Major building projects, the Contractor must also:

(i) develop a skills development plan;

(ii) deliver training linked to occupational outcomes in applicable national accredited training packages; and

(iii) employ a training coordinator to ensure the implementation of the skills development plan.

(f) Nothing in Clauses 29.1A(c), 29.1A(d) or 29.1A(e) limits or alters the Contractor's obligation to comply with the Training Policy generally.

(g) The Contractor acknowledges that failure to comply in part or in whole with the requirements of Clause 29.1A and non-compliance with the Training Policy will be considered in any review of a contractor's eligibility to tender for future Queensland Government contracts in addition to any other sanctions that may apply.

29.1B **Queensland Charter for Local Content**

This Clause applies if specified in the Annexure.

The Contractor must, and must ensure its subcontractors, in carrying out the work under the Contract:

(a) comply with the principles of the Queensland Charter for Local Content (Charter) and any requirements under the Contract in this regard;

(b) comply with any Statement of Intent or equivalent local content statement under the Contract;

(c) complete and submit a Charter for Local Content – Project Outcome Report (available from www.dsdmip.qld.gov.au/charter) to the Principal at Practical Completion and at such other times as reasonably requested by the Principal, with a copy to qclc@qld.gov.au.

29.1C **Queensland Procurement Policy**

(a) The Contractor must, and must ensure its subcontractors:

(i) in carrying out the work under the Contract, comply with the principles of the Queensland Procurement Policy and any requirements under the Contract in this regard;

(ii) for the term of the Contract, comply with the Ethical Supplier Threshold, the Ethical Supplier Mandate and the Supplier Code of Conduct; and

(iii) if the Annexure indicates that the Best Practice Principles apply:

(A) comply with the Best Practice Principles when procuring or entering into subcontracts in relation to work under the Contract; and

(B) uphold any commitments made in the Contractor's tender or the subcontractors' tenders for work under the Contract in relation to the Best Practice Principles.

(b) The Contractor acknowledges that a failure to comply with government policies and legislation that apply to the work under the Contract or the Contractor's obligations under the Contract can result in

the imposition of a penalty under the Ethical Supplier Mandate, in addition to any other remedies available to the Principal under this Contract.

(c) The Contractor:

(i) consents to a relevant Government Department or Instrumentality providing information to the Principal and the QGP Compliance Branch; and

(ii) authorises the Principal and the QGP Compliance Branch to obtain information;

about the Contractor's compliance with government policies and legislation, including without limitation the Queensland Procurement Policy, the Local Benefits Test, the Ethical Supplier Threshold, the Ethical Supplier Mandate, the Supplier Code of Conduct, the Queensland Government Building and Construction Training Policy, the Best Practice Principles (if applicable), the *Work Health and Safety Act 2011* (Qld) and the *Electrical Safety Act 2002* (Qld).

(d) If the Annexure indicates that the Best Practice Principles apply, the Contractor:

(i) acknowledges that the Principal values a commitment to the Best Practice Principles; and

(ii) acknowledges and agrees that the Contractor's compliance with its obligations under this Clause 29.1C and the results of any audit under Clauses 9.2(j) or 49.4 in connection with the Best Practice Principles may be taken into account in any future tender process or similar procurement process undertaken by the Principal.

29.2. **Removal of Materials and Constructional Plant**

No amendment

29.3. **Manufacture and Supply of Materials**

No amendment

Add new subclause:

"

29.4. **Site Personnel Register**

(a) From the commencement of work under the Contract until Practical Completion, the Contractor must maintain a register in the form attached to these Conditions ('Site Personnel Register') of all individuals who carry out work under the Contract on the Site.

(b) The Site Personnel Register must be available for inspection at all times by the Superintendent.

(c) The Contractor must provide statistical information in the form attached to these Conditions ('Site Personal Register Summary') to the Superintendent every 13 weeks and at such other times as the Superintendent may direct."

30. MATERIALS AND WORK

30.1. **Quality of Material and Work**

No amendment

30.2. **Quality Assurance**

No amendment

30.3. **Defective Material or Work**

Delete "8 days" in the fourth line of the third paragraph and insert in its place "5 Working Days".

Add to the end of the subclause:

> "Until the cost of such work has been incurred by the Principal, the Principal may deduct the estimated cost of such work from payments to the Contractor as an amount due from the Contractor to the Principal."

30.4. **Variations due to Defective Material or Work**

No amendment

30.5. **Acceptance of Defective Material or Work**

No amendment

30.6. **Generally**

No amendment

31. EXAMINATION AND TESTING

No amendment

32. WORKING HOURS

Amend the Clause heading to "32 WORKING HOURS AND WORKING DAYS"

Delete/Insert:

> "The Working Hours and Working Days shall not be varied without the prior approval of the Superintendent except when in the interests of safety of the work under the Contract or to protect life or property the Contractor finds it necessary to carry out work outside the Working Hours or on other than the Working Days. In such cases the Contractor shall notify the Superintendent in writing of the circumstances as early as possible.
>
> In approving a variation to the Working Hours or Working Days the Superintendent may attach conditions. Such conditions may include but are not limited to a prohibition of or restriction on the performance of work which requires inspection and may also include a requirement that the Contractor meets the costs of contract administration including but not limited to costs of inspections by or on behalf of the Principal, of work during times approved by the Superintendent that are outside of the permitted Working Hours."

33. PROGRESS AND PROGRAMMING OF THE WORKS

No amendment

34. SUSPENSION OF THE WORKS

34.1. **Suspension by the Superintendent**

No amendment

34.2. **Suspension by the Contractor**

No amendment

34.3. **Recommencement of Work**

No amendment

34.4. **Cost of Suspension**

Add to the end of the subclause:

> "The amount to which the Contractor is entitled under this Clause 34.4 will be a limitation upon the Principal's liability to the Contractor arising out of, or in any way in connection with, a suspension under Clause 34.1 or 34.2, and the Contractor may not make any claim against the Principal arising out of, or in any way in

connection with, a suspension under Clause 34.1 or 34.2, other than for any amount payable under this Clause 34.4 and an extension of time under Clause 35.5."

34.5. **Effect of Suspension**

No amendment

35. TIMES FOR COMMENCEMENT AND PRACTICAL COMPLETION

35.1. **Commencement**

No amendment

35.2. **Time for Practical Completion**

No amendment

35.3. **Separable Portions**

In the first paragraph add "36," after the words "and Clauses 5.2, 5.5, 5.8 (if applicable), 5.9, 16, 35," in the fifth line.

Delete the second paragraph and insert in its place:

"The amount of security, retention moneys, liquidated damages, or delay costs applicable to a Separable Portion shall be the respective amounts applicable to such proportion of those items applicable to the whole of the work under the Contract as the value of the Separable Portion bears to the value of the whole of the work under the Contract, unless the Contract expressly nominates some other specific amount in respect of the particular Separable Portion."

35.4. **Use of Partly Completed Works**

No amendment

35.5. **Extension of Time for Practical Completion**

Delete "28 days" in the second line of the third paragraph and insert in its place "20 business days".

Delete subclause (b)(ii).

Delete "period of" in the third line of the eighth paragraph and insert in its place "number of Working Days".

Delete "28 days" in the second line of the ninth paragraph and insert in its place "20 business days".

Delete "number of days" in the second line of the ninth paragraph and insert in its place "number of Working Days".

Delete "28 days" in the third line of the ninth paragraph and insert in its place "20 business days".

Delete "28 days" in the fifth line of the ninth paragraph and insert in its place "20 business days".

Delete "28 days" in the second line of the twelfth paragraph and insert in its place "20 business days".

35.6. **Liquidated Damages for Delay in Reaching Practical Completion**

No amendment

35.7. **Limit on Liquidated Damages**

Delete

35.8. **Bonus for Early Practical Completion**

Delete

36. DELAY OR DISRUPTION COSTS

Amend the Clause heading to read “36. DELAY COSTS”.

Express the existing provisions as “Alternative 1”.

Delete the words “or disruption” in the second and third paragraphs.

Insert new paragraph after the second paragraph:

> “Notwithstanding the previous paragraph, the Contractor is not entitled to delay costs under this Clause 36 by reason of a suspension under Clause 34.1 or 34.2, but the Contractor may be entitled to costs for a suspension in accordance with Clause 34.4.”

Add new subclauses:

“

Alternative 2 (includes Clauses 36.1, 36.2 and 36.3)

36.1. **Definitions**

For the purposes of Clause 36:

‘Compensable Delay’ means a delay for which an extension of time has been granted or should properly have been allowed under Clause 35.5 as a result of an event described in Clause 35.5(b), but excluding an event described in Clause 35.5(a);

‘Delay Day’ means each Working Day for which the Contractor has been granted an extension of time in respect of a Compensable Delay;

‘Delay Rate’ means the rate set out in the Schedule of Agreed Damages for Delay contained in the Tender Form, or if no Delay Rate is set out, the rate calculated according to the formula set out in the Schedule of Agreed Damages for Delay contained in the Tender Form;

‘Provisional Number of Delay Days’ means the ‘Provisional Number of Delay Days’ set out in the Schedule of Agreed Damages for Delay contained in the Tender Form.

36.2. **Entitlement**

(a) Except as provided by this Clause or by Clause 40.5, the Contractor is not entitled to recover any additional payment for costs, losses or expenses or any damages or other compensation for delay or disruption in the execution or completion of the work under the Contract, however that delay or disruption may have been caused.

(b) Where the Contractor has been delayed in reaching Practical Completion by a Compensable Delay, the Contractor shall only be entitled to recover from the Principal the amounts payable by way of agreed damages determined in accordance with Clause 36.3.

(c) Notwithstanding Clause 36.2(b), the Contractor is not entitled to agreed damages under this Clause 36 by reason of a suspension under Clause 34.1 or 34.2, but the Contractor may be entitled to costs for a suspension in accordance with Clause 34.4.

36.3. **Amount Payable**

The agreed damages payable under Clause 36.2 shall be calculated as follows:

(a) for each Delay Day up to and including twice the Provisional Number of Delay Days stated in the Schedule of Agreed Damages for Delay contained in the Tender Form, the Delay Rate; and

(b) for each Delay Day in excess of twice the Provisional Number of Delay Days stated in the Schedule of Agreed Damages for Delay contained in the Tender Form, the higher of the Delay Rate and the rate calculated in accordance with the formula contained in that schedule.

The amount payable by the Principal to the Contractor under this Clause 36 is a limitation upon any liability which the Principal may have to the Contractor pursuant to the Contract, for breach of the Contract or otherwise according to law arising in connection with all and any delay howsoever caused or encountered by the Contractor in the execution of work under the Contract.

36.4. **Adjustment of Contract Sum**

If the total amount payable by the Principal to the Contractor pursuant to Clause 36.2 is greater or less than the Provisional Delay Allowance, the amount of such difference shall be added to or deducted from the Contract Sum, as the case may require and included in payment certificates issued by the Superintendent pursuant to Clause 42."

37. DEFECTS LIABILITY

Add to the end of the fourth paragraph:

"Until the cost of the work of rectification has been incurred by the Principal, the Principal may deduct the estimated cost of such work from payments to the Contractor as an amount due from the Contractor to the Principal."

38. CLEANING UP

Delete "14 days" in the first line of the second paragraph and insert in its place "10 business days".

39. URGENT PROTECTION

No amendment

40. VARIATIONS

40.1. **Variations to the Work under the Contract**

Add new paragraph at the end of Clause 40.1:

"Except where the Contractor has provided an offer under Clause 40.2, within a reasonable time the Contractor shall provide to the Superintendent a price, ascertained in accordance with Clauses 40.5 (a) to (h) and supported with measurements, rates and evidence of cost (including where applicable subcontractors' and suppliers' measurements, rates and evidence of cost) for the work the subject of a variation issued under this Clause 40.1. The Superintendent and Contractor shall endeavour to agree upon a price for the variation and any written agreement reached shall be binding upon the parties. If the Superintendent and Contractor fail to agree in writing upon a price for the variation or if the Contractor fails to provide a price to the Superintendent within a reasonable time, the variation shall be valued by the Superintendent under Clause 40.5."

40.2. **Proposed Variations**

Add the words "in writing" directly after the words "If the variation can be effected, the Contractor shall".

Delete paragraph (b) and replace with:

"

(b) provide to the Superintendent a price, ascertained in accordance with Clauses 40.5 (a) to (e) and supported with measurements, rates and evidence of cost (including where applicable subcontractors' and suppliers' measurements, rates and evidence of cost) for carrying out the proposed variation."

Delete the last sentence and replace with:

"The Contractor's written response to Clauses 40.2 (a) and (b) shall constitute the Contractor's offer under this Clause 40.2.

The Superintendent may, in writing and within a reasonable time, accept the Contractor's offer and issue a direction under Clause 40.1 to carry out the proposed variation, in which case the value of the variation and any extension of time as a result of the direction under Clause 40.1 shall be in accordance with the accepted offer, which shall be binding upon the parties.

If the Superintendent rejects the Contractor's offer, the Superintendent may nevertheless issue a direction under Clause 40.1 to carry out the proposed variation, and the variation shall be valued by the Superintendent under Clause 40.5 and any costs associated with delay shall be assessed in accordance with the requirements of Clause 36.

If the Superintendent does not issue a direction under Clause 40.1 to carry out the proposed variation, then the Principal shall reimburse the Contractor for the reasonable costs of preparing a price under this Clause 40.2."

40.3. **Pricing the Variation**

Delete/Insert:

"Not Used"

40.4. **Variations for the Convenience of the Contractor**

No amendment

Add new subclause:

"

40.4A **Innovation**

The Contractor may submit, in writing to the Superintendent, a detailed proposal prepared at its own cost for changes to the Works which are likely to be of value to the Principal. The proposal shall state that it is a proposal made pursuant to this Clause 40.4A and shall include:

(a) information sufficient to demonstrate that the proposed change and any consequential effects of the proposed change on the Works, meet all statutory requirements, are suitable, appropriate and adequate for the intended purpose and will have no further consequential effects on the Works that have not been addressed in the proposal;

(b) details of the effect, if any, that the proposed change will have on the construction program and the time for Practical Completion;

(c) an all-inclusive price for the performance of the work the subject of the change, which may involve a deduction to the Contract Sum and which includes without limitation any time related costs and the costs of designing, documenting, obtaining approval, constructing, installing and commissioning, to make the proposed change; and

(d) any other information reasonably required by the Superintendent to assess the value of the proposed change to the Principal.

By submitting the proposal to the Superintendent, the Contractor warrants to the Principal that the proposed change and any consequential effects of the proposed change on the Works, meet all statutory requirements, are suitable, appropriate and adequate for the intended purpose and will have no further consequential effects on the Works that have not been addressed in the proposal.

The Superintendent may, at its discretion, in writing and within a reasonable time, accept the Contractor's proposal and issue a direction under Clause 40.1 to carry out the proposed change, in which case the value of the variation and any agreed adjustment to the Date for Practical Completion shall be in accordance with the accepted proposal, which shall be binding upon the parties.

The Contractor shall have no claim against the Principal for the Superintendent's failure or refusal to accept the Contractor's proposal."

40.5. **Valuation**

Add, as the last sentence of paragraph (c):

"The valuation pursuant to subclause (c) shall include an amount for the Contractor's profit and overheads which shall be the greater of:

(i) $150.00 (excluding GST); or

(ii) 12½% of the value of work carried out by the Contractor's own workers and 7½% of the amount properly payable by the Contractor for work carried out by others"

Delete paragraph (ii) and replace with the following:

"

(ii) if the valuation relates to extra costs incurred by the Contractor for delay, excluding delay caused by suspension of the Works pursuant to Clauses 34.1 or 34.2, the costs shall be assessed in accordance with the requirements of Clause 36; and".

Delete/insert the last paragraph:

"The Superintendent may, in respect of a variation directed under Clause 40.1, in its sole discretion and without obligation to act reasonably, allow the Contractor the reasonable cost of preparing measurements, rates and evidence of cost that has been incurred over and above the reasonable overhead cost."

41. DAYWORK

No amendment

42. CERTIFICATES AND PAYMENTS

42.1. **Payment Claims, Certificates, Calculations and Time for Payment**

Delete "14 days" in the first line of the fourth paragraph and insert in its place "10 business days".

Delete "14 days" in the third line of the fifth paragraph and insert in its place "10 business days".

Delete "28 days" in the first line of the sixth paragraph and insert in its place "15 business days".

Delete "14 days" in the second line of the sixth paragraph and insert in its place "5 business days".

Delete "14 days" in the third line of the sixth paragraph and insert in its place "5 business days".

Add the following sentence to the end of the last paragraph of Clause 42.1:

"Nothing in this Contract shall oblige the Principal to pay for work that is not in accordance with the Contract."

42.2. **Unfixed Plant and Material**

No amendment

42.3. **Certificate of Practical Completion**

Delete "14 days" in the first line of the first paragraph and insert in its place "10 business days".

Delete "14 days" in the third line of the second paragraph and insert in its place "10 business days".

42.4. **Effect of Certificates**

No amendment

42.5. **Final Payment Claim**

Delete "28 days" in the first line of the first paragraph and insert in its place "20 business days".

42.6. **Final Certificate**

Delete “14 days” in the first line of the first paragraph and insert in its place “10 business days”.

Add in the first paragraph at the end of the first sentence:

> “or give the Contractor in writing the reasons for not issuing the certificate.”

Delete “21 days” in the second line of the second paragraph and insert in its place “15 business days”.

Delete the final paragraph and insert:

> “Subject to the Principal’s rights to set-off pursuant to Clause 42.8 and to have recourse to security and retention pursuant to Clause 5.6, within 20 business days of the issuance of a Final Certificate which certifies a balance owing by the Principal to the Contractor, and later of:
>
> (i) the finalisation of any dispute that has been commenced in accordance with Clause 47; and
>
> (ii) the finalisation of any claim, adjudication or proceeding commenced pursuant to or in connection with the BIF Act, including proceedings commenced by the Principal to recover an amount the subject of a payment claim pursuant to the BIF Act,
>
> the Principal shall release to the Contractor any retention moneys or security then held by the Principal.”

42.7. **Interest on Overdue Payments**

No amendment

42.8. **Set Offs by the Principal**

Amend the subclause heading to “General Right of Set Off”

Delete/Insert:

> “Without limiting the Principal’s rights under any other provision in the Contract and notwithstanding the provisions of or the issue of a certificate by the Superintendent under Clause 42.1 and 44.6, the Principal may deduct from any moneys due to the Contractor any sum which is payable by the Contractor to the Principal whether or not the Principal’s right to payment arises by way of damages, debt, restitution or otherwise and whether or not the factual basis giving rise to the Principal’s right to payment arises out of this Contract, any other contract, or is independent of any contract. If the moneys payable to the Contractor are insufficient to discharge the liability of the Contractor to pay such sum to the Principal, the Principal may have recourse to retention moneys (whether or not these are held by the Principal in alternative form pursuant to Clause 42.1, and if they are insufficient, to security provided under Clause 5.2 of the Contract. Nothing in this Clause shall affect the right of the Principal to recover from the Contractor the whole of such moneys or any balance that remains owing.”

42.9. **Recourse for Unpaid Moneys**

No amendment

43. PAYMENT OF WORKERS AND SUBCONTRACTORS

Delete/Insert:

“

43.1. **Payment Claim requirements**

The Contractor must deliver to the Superintendent, with each payment claim:

(a) a statutory declaration, in the form attached to these Conditions, signed by the Contractor, or where the Contractor is a corporation, by a representative of the Contractor who is in a position to know the facts, attesting that:

(i) all subcontractors and any sub subcontractors performing work under the Contract have been engaged in accordance with Clause 9.2;

(ii) the Site Personnel Register is current and correct, maintained in accordance with Clause 29.4;

(iii) the Contractor has fulfilled or complied with any commitments made in the Contractor’s tender for the work under the Contract relating to:

(A) the Local Benefits Test; and

(B) if the Annexure indicates that the Best Practice Principles apply, the Best Practice Principles;

(iv) all the Contractor’s workers who at any time have been engaged on work under the Contract by the Contractor have been paid, in accordance with the relevant award or industrial instrument, all moneys due and payable to them up to the date of submission by the Contractor of a payment claim, in respect of their engagement on the work under the Contract;

(v) if a project trust account is required for the Contract under the BIF Act, all subcontractors have been paid via the project trust account to the extent required by the BIF Act, and all withdrawals from the project trust account have been made in accordance with the BIF Act; and

(vi) if required by the BIF Act, all retention moneys in relation to subcontractors have been paid into the Contractor’s retention trust account and all withdrawals from the retention trust account have been made in accordance with the BIF Act; and

if requested in writing, reasonable supporting documentary evidence thereof;

(b) either in the statutory declaration required by Clause 43.1(a) or by separate document, a supporting statement for the payment claim required by the BIF Act; and

(c) if previously requested by the Superintendent, a signed statutory declaration in the form attached to these Conditions completed by any subcontractor, or where the subcontractor is a corporation, by a representative of the subcontractor who is in a position to know the facts, attesting that:

(i) all workers who have been engaged by a subcontractor of the Contractor have been paid, in accordance with the relevant award or industrial instrument, all moneys due and payable to them up to the date of submission by the Contractor of a payment claim in respect of their engagement on the work under the Contract;

(ii) all subcontractors of the subcontractor have been paid all that is due and payable to such subcontractors up to the date of submission by the Contractor of a payment claim in respect of the work under the Contract; and

(iii) the subcontractor has fulfilled or complied with any commitments made in its tender for the subcontract works relating to:

(A) the Local Benefits Test; and

(B) if the Annexure indicates that the Best Practice Principles apply, the Best Practice Principles; and

if requested in writing, reasonable supporting documentary evidence thereof.

43.2. **Provision of information to subcontractor**

The Contractor acknowledges that the Principal may release to a subcontractor, details of payments in percentage terms made by the Principal to the Contractor in respect of the Works or any part thereof unless the Contractor shows reasonable grounds why such details should not be released or satisfies the Principal that all payments due and payable to the subcontractor by the Contractor have been paid.

43.3. **Principal payment to worker or subcontractor**

(a) Unless under the BIF Act a project trust account is required for the Contract, at the request of the Contractor and out of moneys payable to the Contractor, the Principal may on behalf of the Contractor make payment directly to a worker or subcontractor.

(b) Unless under the BIF Act a project trust is required for the Contract, if a worker or subcontractor obtains a court order in respect of moneys unpaid and the subject of a statutory declaration under Clause 43.1, and produces to the Principal the court order and a statutory declaration that it remains unpaid, the Principal may pay the amount of the order, and costs included in the order, to the worker or subcontractor and the amount paid shall be a debt due from the Contractor to the Principal.

43.4. **Project Trusts**

(a) Terms defined by the BIF Act as relevant to the operation of Chapter 2 of the BIF Act and used (without separate definition) in this Clause 43.4, shall have the meaning given to them by the BIF Act.

(b) If:

(i) at the time of entry into this Contract, a project trust is not required; and

(ii) the Contract later becomes a contract for which a project trust is required,

the Contractor must give the Superintendent and Principal written notice of that change promptly (and within 5 business days) of the date on which the Contract becomes a contract for which a project trust is required.

(c) If a project trust is required for the Contract:

(i) the Contractor must open and maintain a project trust account and retention trust account in accordance with the BIF Act; and

(ii) if a notice is required by the BIF Act to be given to the Principal in respect of or relating to the project trust or project trust account, the Contractor shall give that notice in writing to the Superintendent and Principal at the address stated in the Contract or last communicated in writing to the Contractor.

(d) Nothing in this Clause affects the requirements of Clause 9.2.

(e) The Contractor must ensure that it does not do anything or fail to do anything that would cause the Principal to be in breach of the BIF Act."

44. DEFAULT OR INSOLVENCY

44.1. **Preservation of Other Rights**

No amendment

44.2. **Default by the Contractor**

Delete "and" at the end of paragraph (g).

Delete paragraph (h).

Add the following paragraphs:

"

(h) failing to lodge a Deed of Guarantee Undertaking and Substitution in breach of Clause 5.11;

(i) failing to comply with or breaching in any respect the requirements of Clause 6.3;

(j) failing to comply in any respect with the requirements of Clause 9.2;

(k) failing to maintain all necessary licences that are required for the Contractor to perform all of its obligations under the Contract, in breach of Clause 14.1;

(l) failing to establish a project trust account as required by the BIF Act, in breach of Clause 14.1 and Clause 43.4;

(m) failing to establish a retention trust account as required by the BIF Act, in breach of Clause 14.1;

(n) failing to comply with an obligation of the Contractor set out in Part 2, Divisions 4 and 5 of Chapter 2 of the BIF Act, in breach of Clause 14.1;

(o) failing to comply with an obligation of the Contractor set out in Part 3, Divisions 4 and 5 of Chapter 2 of the BIF Act, in breach of Clause 14.1;

(p) providing with a payment claim a supporting statement required by the BIF Act, which is false or misleading, in breach of Clause 14.1;

(q) failing to comply in any respect with the requirements of Clause 15.2;

(r) failing to comply in any respect with the requirements of Clause 3.5, Clause 29.1A or Clause 29.1C;

(s) failing to comply in any respect with the requirements of Clause 29.4;

(t) failing to comply with any requirement or request made pursuant to the requirements of Clause 43;

(u) providing a statutory declaration pursuant to Clause 43 which is false, misleading, or deceptive in any respect; and/or

(v) committing an act of insolvency as defined by Clause 44.11."

44.3. **Requirements of a Notice by the Principal to Show Cause**

Delete from subclause (d) the words and punctuation:

"(which time shall not be less than 7 clear days after the notice is given to the Contractor)"

44.4. **Rights of the Principal**

Replace the second paragraph with the following:

"Notwithstanding any other provision of this Contract, upon the giving of a notice under Clause 44.2:

(c) the Contractor is not entitled to make a claim for payment; and

(d) the Principal may suspend payments to the Contractor

until the earlier of:

(i) the date upon which the Contractor shows reasonable cause;

(ii) the date upon which the Principal takes action under Clause 44.4(a) or (b); or

(iii) the date which is 5 business days after the last day for showing cause in the notice under Clause 44.2."

44.5. **Procedure when the Principal Takes Over Work**

Delete/Insert:

"If the Principal takes work out of the hands of the Contractor under Clause 44.4(a) the Principal shall complete that work and the Principal may without payment of compensation take possession of such of the Constructional Plant and other things on or in the vicinity of the Site or on or in the vicinity of any land in addition to the site procured by the Contractor pursuant to Clause 27.6 as are owned by the Contractor and are reasonably required by the Principal to facilitate completion of the Works.

If the Principal takes possession of Constructional Plant or other things, the Principal shall maintain the Constructional Plant, and subject to Clause 44.6, on completion of the Works the Principal shall return to the Contractor the Constructional Plant and any things taken under this Clause which are surplus."

44.6. **Adjustment on Completion of the Work Taken Out of the Hands of the Contractor**

No amendment

44.7. **Default of the Principal**

Delete "14 days" in the third line of paragraph (f) and insert in its place "10 business days".

44.8. **Requirements of a Notice by the Contractor to Show Cause**

Delete "7 clear days" in the second line of paragraph (d) and insert in its place "5 business days".

44.9. **Rights of the Contractor**

Delete "28 days" in the second line of the second paragraph and insert in its place "20 business days".

44.10. **Rights of the Parties on Termination**

No amendment

44.11. **Insolvency**

Delete/Insert:

"If:

(a) the Contractor informs the other party in writing or creditors generally that the Contractor is insolvent, or it is financially unable to proceed with the Contract;

(b) execution is levied against the Contractor by a creditor;

(c) the Contractor, being an individual person, or a partnership including an individual person, and that person;

(i) commits an act of bankruptcy;

(ii) has a bankruptcy petition presented against it;

(iii) presents a debtor's petition or a declaration of an intention to present a debtor's petition to the Official Receiver;

(iv) is made bankrupt;

(v) under Part IX of the *Bankruptcy Act 1966* (Cth):

(A) makes a written proposal for a debt agreement; and

(B) the proposal becomes a debt agreement; or

(vi) makes a proposal for a deed of assignment, deed of arrangement or a composition; or

(vii) under Part X of the *Bankruptcy Act 1966* (Cth):

(A) has a deed of assignment or deed of arrangement made;

(B) accepts a composition;

(C) is required to present a debtor's petition, or

(D) has a sequestration order made; or

(d) the Contractor is a corporation and:

(i) a notice is given of a meeting of creditors with a view to the corporation entering a deed of company arrangement;

(ii) the Contractor enters a deed of company arrangement with creditors;

(iii) a controller or administrator is appointed;

(iv) a meeting of creditors is called with a view to:

(A) entering a scheme of arrangement or composition with creditors; or

(B) appointing a controller or administrator to the party;

(v) a receiver of the property or part of the property of the Contractor is appointed;

(vi) the Contractor takes or commences or has taken, commenced or instituted against it any process, action or proceeding, whether voluntary or compulsory, which has an object or may result in the winding up of the company, other than a voluntary winding up by members for the purpose of reconstruction or amalgamation, or a controller or administrator is appointed or enters into a compromise or other arrangement with its creditors or a receiver or receiver and manager is appointed to carry on the Contractor's business for the benefit of the creditors or any of them;

(vii) a winding up order is made; or

(viii) execution is levied by creditors, debenture holders or trustees or under a floating charge;

then the Principal may, without giving a notice to show cause, exercise the rights under Clause 44.4(a) or 44.4(b).

The rights given by this Clause 44.11 are in addition to any other rights and may be exercised notwithstanding that there has been no breach of Contract."

Add new subclause:

"

44.12. **Stay on Rights**

The rights given by this Clause 44 are subject to any restrictions on their enforcement under Part 5.1, Part 5.2, or Division 17 of Part 5.3A *Corporations Act 2001* (Cth)."

45. TERMINATION BY FRUSTRATION

No amendment

46. NOTIFICATION OF CLAIMS

46.1. **Communication of Claims**

No amendment

46.2. **Liability for Failure to Communicate**

No amendment

46.3. **The Prescribed Notice**

No amendment

46.4. **Superintendent's Decision**

Delete "28 days" in the first line of the first paragraph and insert in its place "20 business days".

Delete "56 days" in the first line of the second paragraph and insert in its place "40 business days".

Delete "28 days" in the third line of the second paragraph and insert in its place "20 business days".

46.5. **Time for Disputing Superintendent's Direction**

Delete "28 days" in the last line of the paragraph and insert in its place "20 business days".

47. DISPUTE RESOLUTION

47.1. **Notice of Dispute**

No amendment

47.2. **Further Steps Required Before Proceeding**

Alternative 1

Delete "14 days" in the first line of the first paragraph and insert in its place "10 business days".

Delete "28 days" in the first line of the second paragraph and insert in its place "20 business days".

Alternative 2

Delete "28 days" in the second line of the first paragraph and insert in its place "20 business days".

Delete "42 days" in the first line of the second paragraph and insert in its place "30 business days".

Delete "14 days" in the first line of the second paragraph and insert in its place "10 business days".

Delete "14 days" in the third line of the third paragraph and insert in its place "10 business days".

Delete "14 days" in the fourth line of the third paragraph and insert in its place "10 business days".

Delete "28 days" in the first line of the fourth paragraph and insert in its place "20 business days".

47.3. **Arbitration**

No amendment

47.4. **Summary Relief**

No amendment

48. WAIVER OF CONDITIONS

No amendment

Add new Clauses:

“

49. RECORDS AND ACCESS TO RECORDS

49.1. The Contractor shall make and keep and shall ensure that every subcontractor makes and keeps accurate and complete records of:

(a) the Contractor’s or a subcontractor’s tender, including without limitation the preparation and submission of that tender;

(b) tenders received by it, whether accepted or not;

(c) the execution and completion of the work under the Contract or of the work under the subcontract; and

(d) compliance with commitments made in the Contractor’s tender or a subcontractor’s tender relating to or required by government policies including but not limited to the Queensland Procurement Policy, the Local Benefits Test, the Ethical Supplier Threshold, the Ethical Supplier Mandate, the Supplier Code of Conduct, the Queensland Government Building and Construction Training Policy and, where the Annexure indicates that the Best Practice Principles apply, the Best Practice Principles.

49.2. The records referred to in Clause 49.1 shall include records that are required to be created or provided, or that are otherwise referred to, under the Contract or under the subcontract, as well as other records including but not limited to those that:

(a) relate to the Contractor’s tender or a subcontractor’s tender, including tender preparation, submission, negotiation, evaluation, estimates and calculations;

(b) relate to design, including design calculations, option studies, opinions, reviews, and reports;

(c) relate to the execution and completion of the work under the Contract or a subcontract, including without limitation labour, subcontracts, subcontractors, consultants, materials, equipment, resourcing, planning, progress, delay, inspection, examination, testing, compliance, approval, safety, risk, variations, claims, payment, cost and cost to complete;

(d) are required to demonstrate compliance with the matters referred to in Clause 49.1(d) including without limitation payroll records, management records, time recordings and records of project-specific training; and

(e) are in a format or stored on any medium, including without limitation photographs, electronic files, telecommunications, or social media.

49.3. The records referred to in Clause 49.1 shall not be destroyed without the prior written approval of the Principal.

49.4. Without limiting any other rights or obligations under this Clause 49, the Principal and the QGP Compliance Branch may, at any time after giving written notice to the Contractor that an audit shall be undertaken pursuant to this Clause, undertake an audit in respect of the Contractor’s compliance with Clause 9.2. In undertaking the audit, the Principal and the QGP Compliance Branch, shall have the right to inspect and copy any record referred to in Clause 49.1 and to access any of the Contractor’s systems and processes which are in any way connected with subcontracting. Upon receipt of written notice of the audit pursuant to this Clause 49.4, the Contractor shall promptly and at its own cost provide the Principal and the QGP Compliance Branch with every reasonable facility necessary to undertake the audit, including but not limited to:

(a) providing to the Principal and the QGP Compliance Branch any record requested for inspection or copying pursuant to Clause 49.5;

(b) making staff available to the Principal and the QGP Compliance Branch to access or explain systems, processes or any record referred to in Clause 49.1; and

(c) arranging and providing access to the Contractor's or subcontractor's workplaces, sites, premises, or facilities.

49.5. Subject to the Contractor's right to claim legal professional privilege in respect of any record, which is hereby maintained, the Principal and the QGP Compliance Branch shall have the right to inspect and to copy at any time any record referred to in Clause 49.1. In the case of any records referred to in Clause 49.1 stored on a medium other than in writing, the Contractor shall make available forthwith upon request such facilities as may be necessary to enable a legible reproduction thereof to be provided to the Principal and the QGP Compliance Branch.

49.6. Where a record referred to in Clause 49.1 is created, maintained or stored by the Contractor or a subcontractor in an electronic format, it shall be provided to the Principal in its native, operable form or such other format as may be reasonably required by or acceptable to the Principal.

49.7. Where a record referred to in Clause 49.1 is stored on a medium licensed from a third party, where the Principal is a party to the communication, the Contractor must provide the Principal with a copy of such records in an external electronic storage device, readable on the Principal's information technology system, or such other format as may be reasonably required by the Principal, each month until the issuance of the Final Certificate.

49.8. The Contractor shall comply in all respects with any request made pursuant to Clause 49.5 to inspect or copy records referred to in Clause 49.1, or any audit undertaken pursuant to Clause 49.4, and shall not be entitled to refuse audit, inspection or copying of any record referred to in Clause 49.1 on any basis whatsoever other than on the basis that legal professional privilege attaches to the record.

49.9. Records accessed under Clause 49.4 or 49.5 may be used to assess the Contractor's or its subcontractors' compliance with the Contract, the subcontract, the Queensland Procurement Policy, the Local Benefits Test, the Ethical Supplier Threshold, the Ethical Supplier Mandate, the Supplier Code of Conduct, the Queensland Government Building and Construction Training Policy and the Best Practice Principles (if applicable) and may be shared with relevant Government Departments or Instrumentalities for the purposes of the making of a recommendation about compliance with the Queensland Procurement Policy, the Local Benefits Test, the Ethical Supplier Threshold, the Ethical Supplier Mandate, the Supplier Code of Conduct, the Queensland Government Building and Construction Training Policy and the Best Practice Principles (if applicable).

49.10. The Principal and the QGP Compliance Branch may in their absolute discretion, publish information about the Contractor's or a subcontractor's compliance with the Ethical Supplier Mandate, including but not limited to any sanctions or penalties imposed, and the parties acknowledge and agree that to do so will not constitute a breach of this Contract by the Principal nor give rise to any other right or remedy of the Contractor at law or in equity against the Principal or the QGP Compliance Branch.

50. INFORMATION PRIVACY

50.1. For the purposes of this Clause:

'Personal Information' means information or an opinion, including information or an opinion forming part of a database, whether true or not and whether recorded in a material form or not, about an individual whose identity is apparent or can reasonably be ascertained, from the information or opinion.

50.2. If the Contractor collects or has access to Personal Information in order to carry out work under the Contract, the Contractor must:

(a) if the Principal is an 'agency' within the meaning of the *Information Privacy Act 2009* (Qld) ("IPA"), comply with Parts 1 and 3 of Chapter 2 of the IPA in relation to the discharge of its obligations under the Contract as if the Contractor was the Principal;

(b) not use Personal Information other than in connection with carrying out work under the Contract, unless required or authorised by law;

(c) not disclose, or transfer outside of Australia, Personal Information without the prior written consent of the Principal, unless required or authorised by law;

(d) ensure that its officers, employees, agents, and subcontractors do not access, use, or disclose Personal Information other than in connection with carrying out work under the Contract;

(e) ensure that its subcontractors who have access to Personal Information comply with obligations the same as those imposed on the Contractor under this Clause;

(f) fully co-operate with the Principal to enable the Principal to respond to applications for access to, or amendment of a document containing an individual's Personal Information and to privacy complaints; and

(g) comply with such other privacy and security measures as the Principal may reasonably require from time to time.

50.3. On request by the Principal, the Contractor must obtain from its employees, officers, agents, or subcontractors carrying out work under the Contract, an executed deed of privacy in a form acceptable to the Principal.

50.4. The Contractor must immediately notify the Principal on becoming aware of any breach of Clause 50.

50.5. The Contractor acknowledges that in accordance with the Contract, the Superintendent, the Principal and the QGP Compliance Branch:

(a) will collect information for the purposes of administering the Contract that may contain Personal Information, which will be used in accordance with the Contract and may be disclosed to the Superintendent, the Principal, the QGP Compliance Branch and agents, consultants, or other contractors engaged by the Principal, but will not be disclosed to any other third party without the Contractor's consent unless authorised or required by law or the Contract; and

(b) may collect information containing Personal Information for the purposes of determining the Contractor's compliance with the Ethical Supplier Threshold and the Ethical Supplier Mandate which may be disclosed to the Tripartite Procurement Advisory Panel for compliance purposes, but will not be disclosed to any other third party without the Contractor's consent unless authorised or required by law or the Contract.

50.6. Personal Information will be handled in accordance with the IPA.

50.7. This Clause will survive the termination or expiry of the Contract.

51. GOODS AND SERVICES TAX (GST) AND PAY AS YOU GO (PAYG)

51.1. **Definitions**

For the purposes of this Clause:

'ABN', 'adjustment event', 'adjustment note', 'amount', 'Australian resident', 'consideration', 'GST', 'GST Law', 'input tax credit', 'recipient created tax invoice', 'registered', 'tax invoice', 'taxable supply' have the same meanings as in the *A New Tax System (Goods and Services Tax) Act 1999* (Cth);

'PAYG Law' means any Act dealing with or relating to the PAYG system referred to in Schedule 1 of the *Taxation Administration Act 1953* (Cth).

51.2. **Payment of GST**

Where a party is obliged to provide consideration to another party for a taxable supply made under or in connection with the Contract:

(a) any amount which the Contract provides:

(i) is to be the amount of the consideration;

(ii) is to (or may) be used to calculate the amount of the consideration (and the amount of the consideration so calculated); or

(iii) is included (provisionally or otherwise) in the consideration,

shall be taken to include GST payable in connection with the taxable supply unless the amount is specifically stated to exclude GST;

(b) where, despite Clause 51.2(a), any consideration to be provided for a taxable supply is exclusive of GST, the party providing the consideration must also pay the GST payable in respect of the taxable supply, when the consideration is provided; and

(c) no other provision of the Contract shall apply to give the Contractor any claim in connection with GST.

51.3. **Liability Net of GST**

Where under or in connection with the Contract a party is required to pay an amount which is (or is to be calculated by reference to) any cost, expense, loss or other liability suffered or incurred by another party that amount shall be (or be calculated by reference to) the cost, expense, loss or other liability net of any input tax credits available to the other party or the representative member of its GST Group.

51.4. **Notification of GST Registration Status**

(a) The Contractor warrants to the Principal that:

(i) the Contractor is registered for GST; and

(ii) the Contractor's ABN stated in the Contract (or otherwise notified by the Contractor to the Principal) is correct.

(b) The Contractor must notify the Principal immediately if it ceases to be registered for GST at any time.

51.5. **Tax Withholding**

(a) Whenever the Contractor does not have an ABN or the Principal becomes aware that the Contractor's ABN notified to it is incorrect or the Principal otherwise reasonably considers itself bound by PAYG Law to do so, the Principal shall be entitled to withhold from any payment otherwise due to the Contractor under or in connection with the Contract, amounts calculated and to be withheld in accordance with the PAYG Law.

(b) Subject to Clause 51.5(c), each time the Contractor makes a claim for any payment under or in connection with the Contract, the Contractor shall be taken to warrant to the Principal that it is an Australian resident for the purposes of the foreign resident withholding provisions in Subdivision 12-FB of the *Taxation Administration Act 1953* (Cth).

(c) The warranty in Clause 51.5(b) shall not apply to the extent the Contractor has notified the Principal in writing that it is not an Australian resident before any claim for payment is made.

51.6. **Principal Created Tax Invoices**

Except to the extent the Principal at any time gives to the Contractor written notice that it does not intend issuing recipient created tax invoices for any taxable supplies to the Principal by the Contractor under or in connection with the Contract:

(a) the Principal shall issue tax invoices and adjustment notes in respect of those supplies;

(b) the Contractor shall not issue tax invoices or adjustment notes in respect of those supplies;

(c) the Principal acknowledges that it was registered for GST when it entered into the Contract and that it will notify the Contractor if it ceases to be registered; and

(d) the Contractor must notify the Principal immediately it becomes aware of an adjustment event occurring in respect of those supplies.

51.7. **Tax Invoices**

If the Principal gives a written notice that it does not intend issuing recipient created tax invoices for a taxable supply to the Principal by the Contractor under or in connection with the Contract:

(a) A party making a taxable supply the subject of the notice must issue to the other a tax invoice or adjustment note (as the case may require) within 3 business days after each of the following occurring in relation to that taxable supply:

(i) the party submitting a claim for payment;

(ii) the Superintendent certifying an amount for payment different to the amount claimed;

(iii) the amount for payment being otherwise determined to be different to the amount claimed or (if applicable) certified.

(b) For the purposes of GST Law, upon the occurrence of each of the events specified in Clause 51.7(a), the Principal shall be taken to have requested the Contractor to provide to the Principal the tax invoice or adjustment note referred to in Clause 51.7(a).

(c) Until the Principal notifies the Contractor otherwise, the Superintendent is authorised to provide to or receive from the Contractor tax invoices or adjustment notes (as the case may be) on the Principal's behalf.

52. MODERN SLAVERY

52.1 For the purpose of this Clause:

'Modern Slavery' has the meaning given to it in the *Modern Slavery Act 2018* (Cth) and includes any form of slavery, servitude, debt bondage, deceptive recruitment practices, or forced labour to exploit children or other persons;

'Modern Slavery Laws' means the *Modern Slavery Act 2018* (Cth) and any other applicable legislation addressing similar subject matter.

52.2 The Contractor warrants that:

(a) it complies with and will continue to comply with all applicable Modern Slavery Laws;

(b) it has thoroughly investigated its labour practices, and those of its subcontractors in respect of any Modern Slavery used anywhere in its operations or supply chain or in the operations or supply chain of any of its subcontractors (to the extent reasonably possible);

(c) it has put in place all necessary processes, procedures, investigations and compliance systems to ensure that it can provide the warranties under this Clause at all relevant times; and

(d) it has taken, and will take in the future, all necessary actions and investigations to validate the warranties provided under this Clause.

52.3 Should the Contractor become aware of any:

(a) Modern Slavery risks in its supply chain or operations, it must notify the Principal of those risks and advise the Principal of the steps it is taking to eliminate or minimise those risks; or

(b) Modern Slavery practices being carried out within its operations or supply chain, it must:

(i) in writing, immediately notify the Principal of those practices and of the remediation action it proposes to take; and

(ii) at its cost, take any such additional remediation action required by the Principal (acting reasonably and after due consultation with the Contractor).

52.4 If the Contractor is a 'reporting entity' for the purposes of any state or federal Modern Slavery Laws, including the *Modern Slavery Act 2018* (Cth), it must provide the Principal with a copy of any report it is required to prepare under that legislation at the Principal's request."

ANNEXURE

This Annexure takes the place of Annexure Part A to the General conditions of contract for design and construct (AS4300-1995)

Item		
1	Law applicable is that of the State or Territory of (Clause 1):	Queensland
2	Payments under the Contract shall be made at (Clause 1):	Brisbane
3	Name of the Principal (Clause 2):	The State of Queensland through the Director General, Department of Housing, and Public Works
4	Address of the Principal:	C-/ Deputy Director General Department of Housing, and Public Works Public Works Division Level 3, AM60, 42-60 Albert Street Brisbane, QLD 4000, Australia
5	Name of the Superintendent (Clause 2):	As per Letter of Acceptance
6	Address of the Superintendent:	As per Letter of Acceptance
7	Address of the Site (Clause 2):	8 Miles Ave &1265 Riverway Drive, Kelso 4815
8	The Date for Practical Completion (Clause 2):	66 weeks from Letter of Acceptance
9	The Dates for Practical Completion of each Separable Portion (Clause 2):	N/A
10	Preliminary Design (Clause 2):	Approved Schematic Design (SD) is included in the tender documents, together with all Housing Design Standards and Guidelines
11	The Principal's Project Requirements are described in the following documents (additional to those listed in the Annexure item for Preliminary Design) (Clause 2):	As Above
12	Limits of accuracy applying to quantities for which the Principal accepted a rate or rates (Clause 3.3(b)):	25%
13	The amount of security (Clause 5.2):	Nil
14	Retention moneys shall be deducted progressively as follows (Clauses 5.5 and 42.1):	10% of the value of work incorporated in the Works (excluding GST) until 5% of the Contract Sum, minus GST, is held
15	The percentage to which the entitlement to security and retention moneys is reduced (Clause 5.8):	Security - Nil Retention - 50%
16	Holding of and interest on cash security and retention moneys - the alternative applying (Clause 5.10):	Alternative 2

17 Execution of a Formal Instrument of Agreement required (Clause 6.2): No
(If nothing stated – No)

18 Number of copies to be supplied by the Principal (Clause 8.3): 1 electronic format PDF

19 Documents, number of copies, and the times or design stages at which they are to be supplied by the Contractor (Clause 8.4):

DOCUMENTS	NO. OF COPIES	TIME/DESIGN STAGE
Refer Principal's Project Requirements		

20 The time within which the Superintendent must give a direction as to the suitability and return the Contractor's copies (Clause 8.4): 10 business days

21 Subcontractors or Selected Subcontractors whose contracts the Principal may direct be novated (Clause 10): Not Applicable

22 Percentage for profit and attendance (Clause 11(b)): 7½%

23 Intellectual property rights granted to the Principal – the alternative applying (Clause 13.2): Alternative 2

24 Legislative Requirements not required to be satisfied by Contractor (Clause 14.1): Not Applicable

25 Occupational Health and Safety Audit (Clause 15.2):

Applicable

26 Work Health and Safety Accreditation Scheme (Clause 15.3 and Conditions of Tender clause 21): Applicable

27 Application of the Best Practice Principles to the Contract (Clauses 3.1, 9.2(b)(v), 9.2(e), 29.1C, 43.1, 49.1): Not applicable

28 Weightings for subcontractor non-price criteria, if Best Practice Principles are applicable (Clause 9.2(e)(i)): Best Practice Principles: ……%
Local Benefits: ……%
(If nothing stated – Contractor to determine weightings)

29 Insurance of the work under the Contract – the alternative applying (Clause 18): Alternative 1

If Alternative 1 applies: 2½% of the Contract Sum

(a) The assessment for insurance purposes of the costs of demolition and removal of debris (Clause 18(ii)):

(b) The assessment for insurance purposes of consultants' fees (Clause 18(iii)): 5% of the Contract Sum

(c) The value of materials to be supplied by the Principal (Clause 18(iv)): N/A

	(d) The additional amount or percentage (Clause 18(v)):	Nil
30	Public Liability Insurance – the alternative applying (Clause 19):	Alternative 1
31	The amount of Public Liability Insurance shall be not less than (Clause 19):	$20 million *(If nothing stated – $20 million)*
32	Amount of Contractor's professional indemnity insurance shall be not less than (Clause 21):	$2 million *(If nothing stated – $1,000,000)*
33	Period for which Contractor's professional indemnity insurance shall be maintained after issue of the Final Certificate (Clause 21):	5 years after Defects Liability Period *(If nothing stated – 5 years after Defects Liability Period)*
34	Categories of Consultants and amounts of Consultants' professional indemnity insurance (Clause 21):	N/A
35	Period for which each Consultant's professional indemnity insurance shall be maintained after issue of the Final Certificate (Clause 21):	5 years after Defects Liability Period *(If nothing stated – 5 years after Defects Liability Period)*
36	The time by which access to the Site shall be given (Clause 27.1):	Upon acceptance of tender
37	The time for giving possession of the Site to enable commencement of further work (Clause 27.1):	Upon issuance Letter of Possession of Site by Superintendent Representative
38	Indigenous Project (Clause 29.1A):	No
39	Queensland Charter for Local Content (Clause 29.1B):	Applicable
40	Working Hours and Working Days (Clause 32):	Working Hours' include 9 hours per day worked between the hours of 6:00 am and 6:00 pm on Working Days and 'Working Days' are Monday to Friday inclusive, excluding public holidays and industry rostered days off) *(If nothing stated – 'Working Hours' include 9 hours per day worked between the hours of 6:00 am and 6:00 pm on Working Days and 'Working Days' are Monday to Friday inclusive, excluding public holidays and industry rostered days off)*
41	The times by, or periods within which the Superintendent is to furnish information, materials, documents, or instructions to the Contractor (Clause 33.1):	INFORMATION, MATERIALS DOCUMENTS OR INSTRUCTIONS — TIME/PERIOD Within 14 days
42	Events causing delay: Industrial conditions (Clause 35.5(a)(i)): Inclement weather (Clause 35.5(a)(ii)):	 Applicable Applicable
43	Rate of liquidated damages (Clause 35.6):	$ 100 per unit / per day (GST not applicable)
44	Rate of liquidated damages per day for each Separable Portion (Clause 35.6):	$ N/A / per day (GST not applicable)
45	Delay Costs – the alternative applying (Clause 36):	Alternative 2) *(If nothing stated – Alternative 2)*

46	Defects Liability Period (Clause 37):	12 Months *(If nothing stated – 12 months)*
47	Charge for overheads, profit, etc. for Daywork (Clause 41(f)):	12½%
48	Times for Payment Claims (Clause 42.1):	15th day of every month *(If nothing stated – Monthly)*
49	Unfixed Plant or Materials for which payment claims may be made notwithstanding that they are not incorporated in the Works (Clause 42.2):	N/A
50	The amount of additional security for unfixed plant and materials (Clause 42.2):	N/A..... $ .....
51	Rate of interest on overdue payments (Clause 42.7):	10% per annum + the rate comprising the annual rate, as published from time to time by the Reserve Bank of Australia for 90-day bills current at the date the payment became due.
52	The delay in giving access to the Site which shall be a substantial breach (Clause 44.7(c)):	13 weeks
53	The delay in giving possession of the Site which shall be a substantial breach (Clause 44.7(d)):	13 weeks
54	Further steps required before proceedings (dispute resolution) – the alternative applying (Clause 47.2):	Alternative 2
55	The person to nominate an arbitrator (Clause 47.3):	The Chair of the Queensland Building & Construction Board *(If nothing stated – the Chair of the Resolution Institute)*
56	Location of arbitration (Clause 47.3):	Brisbane

SCHEDULES

SCHEDULE 1 – VARIATIONS IN RATES OF EXCHANGE AND DUTY

Clause 3.4

Costs inserted in the Schedule are costs 14 days prior to the closing of tenders.

A	**B**	**C**	**D**	**E**
Description of goods obtained from overseas	**Cost free on board at overseas port from which despatched $AUD**	**Duty payable expressed as a percentage of the Column B cost**	**Duty Payable (Column B multiplied by Column C percentage) $AUD**	**Total included in Tender (Column B + Column D) $AUD**
	$	%	$	$

Signed: .....

Date ……/……/……

EXAMPLE CALCULATION

A	***B***	***C***	***D***	***E***
Description of goods obtained from overseas	***Cost free on board at overseas port from which despatched $AUD***	***Duty payable expressed as a percentage of the Column B cost***	***Duty Payable (Column B multiplied by Column C percentage) $AUD***	***Total included in Tender (Column B + Column D) $AUD***
Chiller	*$100,000*	*10%*	*$10,000*	*$110,000*

Exchange rate 14 days prior to closing of tenders AUD$1 = £0.3800

Exchange rate as applied at the time of payment of the invoice by the Contractor AUD$1 = £0.4200.

Duty paid at the time of payment of the invoice by the Contractor = 15%

The Calculation

1. *Adjustment to Contract Sum for variation in rates of exchange for and the goods* = $\frac{0.3800 - 0.4200}{0.4200} \times \$100{,}000$ = *($9,523.81)*
2. *Adjustment to Contract Sum for variation in duty* = *(($100,000 - $9,523.81) x 15%) - $10,000* = *$3,571.43*
3. *Hence the total adjustment to Contract Sum in relation to the Chiller* = *($9,523.81) + $3,571.43* = *($5,952.38)*

SCHEDULE 2 – FORM OF UNDERTAKING

Clauses 5.3, 5.7 and 42.2

CONTRACT for *[insert description as per letter of acceptance]* ..... (the "Contract") at the request of *[insert Contractor as per letter of acceptance]* ..... ACN ……. (the "Contractor") and in consideration of *[insert Principal as per annexure]* ..... (the "Principal") accepting this undertaking *[insert the financial institution's details]* ..... ACN ……. (the "Financial Institution") unconditionally undertakes to pay on demand any sum or sums which may from time to time be demanded by the Principal to a maximum aggregate of $ ..... (.....) (the "Sum").

The undertaking is to continue:

1. until notification has been received from the Principal that the Sum is no longer required by the Principal; or
2. until this undertaking is returned to the Financial Institution; or
3. until payment to the Principal by the Financial Institution of the whole of the Sum.

Should the Financial Institution be notified in writing, purportedly signed by or on behalf of the Principal that the Principal desires payment to be made of the whole or any part or parts of the Sum, such notification to be delivered to any branch of the Financial Institution located within Australia, it is unconditionally agreed that the Financial Institution will make payment or payments to the Principal forthwith without reference to the Contractor and notwithstanding any notice given by the Contractor not to pay same.

Provided always that the Financial Institution may at any time without being required so to do pay to the Principal the Sum less any amount or amounts it may previously have paid under this undertaking or such lesser sum as may be required and specified by the Principal and thereupon the liability of the Financial Institution hereunder shall immediately cease.

The Principal shall not assign or transfer its rights under this undertaking.

Dated at ……this……day of ……. 20……

SIGNED for and on behalf of .....
Financial Institution

By its Attorney(s) .....
.....
Names of Attorney(s)

Pursuant to Power of Attorney No ..... who hereby warrant that he/she/they has/have not received notification of revocation of his/her/their appointment. .....
Signature of Attorney

In the presence of:

....
Name of Witness *Signature of Witness*

Branch of Issue: ..... Telephone: .....

SCHEDULE 3 – FORMAL INSTRUMENT OF AGREEMENT

Clause 6.2

Drafting note: The date of the FIA is to be completed by the Principal.

THIS DEED is made on the …… day of …… 20……

BETWEEN insert name, ABN insert of insert address ("**Principal**")

AND insert name, ACN insert of insert address ("**Contractor**")

RECITALS

A. Tenders were invited by the Principal for the Works.

B. The Contractor submitted its tender for the Works which was accepted by the Principal in the Principal's Letter of Acceptance.

C. The Contractor has, in lodging its tender, represented to the Principal that it has the skill and expertise necessary to perform the work under the Contract and deliver the Works and acknowledges that in entering into this agreement the Principal has relied upon these representations.

D. The Principal has engaged the Contractor to perform the work under the Contract and deliver the Works.

E. The Contractor agrees to perform the work under the Contract and deliver the Works in accordance with the terms of the Contract.

OPERATIVE PROVISIONS

1. By executing this Formal Instrument of Agreement, the Contractor warrants that each of the recitals is true and correct and acknowledges that the Principal has entered into the Contract in reliance on those warranties.

2. The documents listed in clause (3) below constitutes the entire agreement between the parties in respect of the Works and this Contract supersedes all previous agreements, undertakings, and communications, whether written or oral, relating to the subject matter of the Contract.

   For the avoidance of doubt, the Contract was initially formed upon the Principal issuing the Letter of Acceptance dated …… and this Formal Instrument of Agreement is intended to formalise the Contract.

3. Notwithstanding any other provision of the Contract, should there be any actual discrepancy or inconsistency between the documents which constitute the Contract, the following order of precedence will apply to resolve the same:

   a. this Formal Instrument of Agreement (excluding attachments);

   b. Principal's Letter of Acceptance dated [insert] (**Attachment A**);

   c. Special Conditions of Contract and Annexures (**Attachment B**);

   Drafting note: If any of the following documents are to be delivered electronically (as opposed to being printed when this FIA is executed), complete the following information (as applicable) to clearly identify the documents being referenced.

   d. Australian Standard General conditions of contract for design and construct (AS4300-1995);

   e. Principal's Project Requirements dated [insert] by [insert author] (version: [insert], file format: [insert]) (**Attachment C**);

[Drafting note: If the technical requirements have not been confirmed based on agreed amendments / departures from the Contractor's tender, then you may need to consider whether the Contractor's Tender (or certain parts) should be given higher priority than the PPR to capture such amendments / departures]

f. Drawings listed in the Register of Drawings dated [insert] by [insert author] (version: [insert], file format: [insert]) (**Attachment D**); and

g. Contractor's Tender as clarified by the Contractor and accepted by the Principal dated [insert] by [insert author] (version: [insert], file format: [insert]) (**Attachment E**).

4. The parties agree that they will do everything reasonably necessary to give effect to the Contract.

EXECUTED AS A DEED

Drafting note: Please select and date one of the below execution options:]

Option 1: Corporations Act

SIGNED

on the ……..…day of ……..…….…. 20…..… by

.....	.....
Name of Company – Contractor	*ACN*

in accordance with s.127 of the *Corporations Act 2001*

.....	.....
Name of Director	*Signature of Director*
.....	.....
Name of Director / Secretary	*Signature of Director / Secretary*

OR

Option 2: Representative

SIGNED

on the ……..…day of ……..…….…. 20…..… by

.....	.....
Name of Person – Contractor	*Signature of Person – Contractor*

in the presence of:

.....	.....
Name of Witness	*Signature of Witness*

OR

Option 3: Power of Attorney

SIGNED SEALED AND DELIVERED

on the ……day of ……..… 20…… by

…… ……

Name of Company – Contractor *ACN*

by its attorneys who declare that they have received no notice of revocation of the Power of Attorney dated insert under which this document is signed:

…… ……

Name of Attorney *Signature of Attorney*

…… ……

Name of Attorney *Signature of Attorney*

In the presence of:

…… ……

Name of Witness *Signature of Witness*

SIGNED, SEALED AND DELIVERED

on the ……..…day of ……..……..…… 20……..…

for and on behalf of the Principal by an authorised officer:

…… ……

Name of authorised officer *Signature of authorised officer*

In the presence of:

…… ……

Name of Witness *Signature of Witness*

SCHEDULE 4 – REQUEST FOR APPROVAL TO SUBCONTRACT

Clause 9.2

Contract Name: .....

Project Number: .....

Pursuant to Clause 9.2(h) of the Conditions of Contract I request approval to enter into a subcontract for the following part of the works under the Contract: .....
.....

Proposed subcontractor: .....

ACN: ..... ABN: .....

Address: .....

Licence No: ..... Category: .....

Trade: ..... Restrictions (if any): .....

Total value of proposed subcontract: $ .....

I confirm that:

1. the Contractor has complied with the requirements of Clause 9.2 of the Conditions of Contract including, without limitation, the Contractor's obligations to procure the subcontract in accordance with the requirements of the Queensland Procurement Policy, including the Best Practice Principles (if applicable);
2. the Contractor has provided an original version of the Deed Poll executed by the proposed subcontractor; and
3. the proposed subcontractor:
   a. for the purposes of the Queensland Procurement Policy:
      i. is:
         ☐ a local supplier as described by the Queensland Procurement Policy; or
         ☐ not a local supplier as described by the Queensland Procurement Policy and evidence is attached demonstrating the Contractors efforts to source a local supplier;
      ii. is compliant with the Ethical Supplier Threshold; and
      iii. is not subject to a current sanction under the Ethical Supplier Mandate;
   b. has been informed of the existence of the *Building Industry Fairness (Security of Payment) Act 2017* (Qld) (BIF Act);
   c. if a project trust is required at the time of this request, has been given a notice of project trust as required by the BIF Act;
   d. for the purposes of the BIF Act:
      ☐ IS a related entity, as defined by section 10A of the BIF Act, or
      ☐ IS NOT a related entity, as defined by section 10A of the BIF Act; and
   e. either:
      i. has a personal services business determination in effect from the Australian Taxation Office under the *Income Tax Assessment Act 1997* (Cth); or
      ii. in relation to the work to be performed under the subcontract:
         A. will be paid to achieve a specified result or outcome;
         B. is required to supply the plant and equipment or tools of trade needed to perform the work; and
         C. will be liable for the cost of rectifying any defect in the work performed.

I warrant that if approval is granted, the subcontract will be entered into in accordance with the above.

Signed ..... Date …/…/……
Contractor

SCHEDULE 5 – SUBCONTRACTOR DEED POLL

Clause 9.2

FORM OF DEED POLL

THIS DEED POLL is made at …… on the …… day of …… 20……

BY ……..…… (ABN ……)
of …… (the "Subcontractor").

IN FAVOUR OF: The State of Queensland through ……
……..
(hereinafter with its successors in office, nominated agents and the Queensland Government Procurement Compliance Branch ('QGP Compliance Branch') called the "Principal").

RECITALS

A. The Principal has entered into an agreement with: …… (the "Contractor") for the …… (the "Project").

B. The Subcontractor has or will have an agreement (the "Subcontract") with the Contractor or a subcontractor of the Contractor for the execution and completion and/or supply of the …… (the "Subcontract Works") for the Project.

C. It is or will be a condition of the Subcontract that the Subcontractor executes this Deed Poll.

This Deed Poll provides as follows:

1. The Subcontractor warrants that:

   a. it will make and keep accurate and complete records of:

      i. its tender, including without limitation the preparation and submission of that tender;

      ii. tenders received by it, whether accepted or not;

      iii. the execution and completion of the work under the Subcontract; and

      iv. its compliance with commitments made in the Subcontractor's tender and its obligations under the Subcontract relating to compliance with government policies including but not limited to the Queensland Procurement Policy, the Local Benefits Test contained in the Queensland Procurement Policy, the Ethical Supplier Mandate, the Ethical Supplier Threshold, the Queensland Government Building and Construction Training Policy and the Best Practice Principles (if applicable);

   b. the records referred to in Clause 1.a. above shall include records that are required to be created or provided, or that are otherwise referred to, under the Subcontract, as well as other records including but not limited to those that:

      i. relate to the Subcontractor's tender, including tender preparation, submission, negotiation, evaluation, estimates and calculations;

      ii. relate to design, including design calculations, option studies, opinions, reviews, and reports;

      iii. relate to the execution and completion of the work under the Subcontract, including without limitation labour, subcontracts, subcontractors, consultants, materials, equipment, resourcing, planning, progress, delay, inspection, examination, testing, compliance, approval, safety, risk, variations, claims, payment, cost and cost to complete;

      iv. are required to demonstrate compliance with the matters referred to in 1.a.iv above, including without limitation payroll records, management records, time recordings and records of project-specific training; and

      v. are in a format or stored on any medium, including without limitation photographs, electronic files, telecommunications, or social media;

c. subject to the Subcontractor's right to claim legal professional privilege in respect of any record, which is hereby maintained, permit the Principal and the QGP Compliance Branch to inspect and to copy at any time any records referred to in Clause 1.a. or 1.b. above, provide electronic copies of such records in native format and provide any access to the Subcontractor's sites, premises or facilities necessary for an inspection referred to in this paragraph; and

d. without limiting the previous paragraphs, the Subcontractor shall permit the Principal and the QGP Compliance Branch to undertake an audit of the records referred to in Clause 1.a. and 1.b. above for the purposes of verifying the Subcontractor's compliance with any commitments made in the Subcontractor's tender and its obligations relating to compliance with government policies including but not limited to the Queensland Procurement Policy, the Local Benefits Test contained in the Queensland Procurement Policy, the Ethical Supplier Mandate, the Ethical Supplier Threshold, the Queensland Government Building and Construction Training Policy and the Best Practice Principles (if applicable).

2. The Subcontractor consents to the Principal and the QGP Compliance Branch disclosing or providing copies of any records which the Principal and the QGP Compliance Branch inspects or copies in accordance with Clause 1 of this Deed Poll to the Contractor.

3. The Subcontractor consents to the Principal and the QGP Compliance Branch, in its absolute discretion, publishing information about the Subcontractor's compliance with the Ethical Supplier Mandate, including but not limited to any sanctions or penalties imposed, and warrants that it will not exercise any right at law, including in contract, at common law or in equity, against the Principal, including the QGP Compliance Branch, in relation to that publication.

4. This Deed Poll is governed by and construed in accordance with the laws of Queensland. The Subcontractor hereby submits to the non-exclusive jurisdiction of the courts of Queensland and any courts that may hear appeals from any of those courts, for any proceedings in connection with this Deed Poll, and waives any right it might have to claim that those courts are an inconvenient forum.

5. This Deed Poll may not be revoked or otherwise modified without the prior written consent of the Principal.

EXECUTED as a **DEED POLL**

on the ……day of …… 20…… by

.....	.....
Name of Company – Subcontractor	*ACN*

in accordance with s.127 of the *Corporations Act 2001*

.....	.....
Name of Director	*Signature of Director*
.....	.....
Name of Director / Secretary	*Signature of Director / Secretary*

OR

.....	.....
Name of Person – Subcontractor	*Signature of Person – Subcontractor*

In the presence of:

.....	.....
Name of Witness	*Signature of Witness*

SCHEDULE 6 – REQUEST FOR APPROVAL TO SUB SUBCONTRACT

Clause 9.2

Contract Name: .....

Project Number: .....

Subcontract: .....

Subcontractor: .....

Pursuant to Clause 9.2(h) of the Conditions of Contract I request approval to allow the above subcontractor to enter into a sub subcontract for the following part of the works under the Contract: .....
.....

Proposed sub subcontractor: .....

ACN: ..... ABN: .....

Address: .....

Licence No: ..... Category: .....

Trade: ..... Restrictions (if any): .....

Total value of proposed subcontract: $ .....

I confirm that:

1. the subcontractor has complied and will continue to comply with the requirements of Clause 9.2 of the Conditions of Contract when procuring and entering into the sub subcontract;
2. if the Best Practice Principles (as that term is defined in the Contract) apply, the subcontractor has complied and will continue to comply with Clause 9.2 of the Conditions of Contract when procuring and entering into the sub subcontract; and
3. the proposed sub subcontractor:
    a. for the purposes of the Queensland Procurement Policy,
        i. is:
            ☐ a local supplier as described by the Queensland Procurement Policy, or
            ☐ not a local supplier as described by the Queensland Procurement Policy and evidence is attached demonstrating the Contractors efforts to source a local supplier;
        ii. is compliant with the Ethical Supplier Threshold; and
        iii. is not subject to a current sanction under the Ethical Supplier Mandate;
    b. has been informed of the existence of the *Building Industry Fairness (Security of Payment) Act 2017* (Qld); and
    c. either:
        i. has a personal services business determination in effect from the Australian Taxation Office under the *Income Tax Assessment Act 1997* (Cth); or
        ii. in relation to the work to be performed under the subcontract:
            A. will be paid to achieve a specified result or outcome;
            B. is required to supply the plant and equipment or tools of trade needed to perform the work; and
            C. will be liable for the cost of rectifying any defect in the work performed.

I warrant that if approval is granted, the sub subcontract will be entered into in accordance with the above.

Signed ....

Contractor *Subcontractor*

Date …/…/……

SCHEDULE 7 – TRAINING POLICY PRIVACY STATEMENT

Clauses 29.1A

Privacy Statement – The Queensland Government Building and Construction Training Policy

This Privacy Statement is to be provided to each participant on an eligible Queensland Government funded Building and Civil Construction project to comply with the *Information Privacy Act 2009* (Qld).

The Queensland Government Building and Construction Training Policy (the Training Policy) requires that a minimum of 10 per cent of the total labour hours on eligible Queensland Government building projects be undertaken by apprentices and/or trainees and through other workforce training. For eligible major building projects, a minimum 15 per cent of the total labour hours is required.

Compliance and reporting requirements under the Training Policy are conditions of contract for contractors and compliance is measured using data recorded in the Training Policy Administration System (TPAS). This information will ultimately be considered in any review of contractors' eligibility to tender for future government work.

The Queensland Government requires that contracted organisations collect personal information from participants including:

Apprentice or Trainee	Registration ID Name Engaged as Apprentice or Trainee Employer Indigenous status Total hours
Cadet Undergraduate Employee Student Indigenous Employee	First & surname name Engaged as Cadet/Undergraduate/ Tradesperson/ Non-Tradesperson/ Prevocational Student (SWL) Indigenous status Total Hours

Contracted organisations must report this information to the Queensland Government in TPAS. The Department of Trade, Employment and Training (DTET) administers contractor compliance data through TPAS on behalf of the Queensland Government.

In addition to any contractual provisions, performance reports regarding a contractor's compliance with the policy will be provided by DTET to the Director-General or Chief Executive Officer of each Queensland Government agency or Government Owned Corporation as required.

Records collected will be treated as a public record and will be retained as required by the *Public Records Act 2002* (Qld). For the term that the record is maintained, the Queensland Government will only use this information to administer the Training Policy and report on contractor compliance.

Only authorised officers will have access to this information and personal information will not be disclosed to any other third party without consent unless authorised or required under law.

A person may apply to access their personal information stored. Should a person have any queries regarding the information held about themselves, including if they think that the personal information held is incorrect in any way, or is out of date, please contact DTET on 1300 369 935 or TrainingPolicy@desbt.qld.gov.au.

SCHEDULE 8 – SITE PERSONNEL REGISTER

Clause 29.4

Project Name: ..... Project Location: .....

Contractor's Name: ..... Project Registration Number: .....

Name	Is this person an owner/partner of an approved subcontractor/ sub subcontractor? Y or N (if N please complete the rest of the table as applicable)	Is this person remunerated in accordance with an award or industrial instrument? Y or N (if Y please complete column (d) and (e) only; if N complete columns (e) to (i) only)	Name of award or industrial instrument? (if applicable)	Name of this person's Employer?	Is a WorkCover premium paid in respect of this person? Y or N	Are superannuation contributions made in respect of this person? Y or N	Is tax withheld from payments made to this person? Y or N	Is Payroll tax paid in respect of this person where applicable? Y or N or N/A
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)

Note: If the answer to the question in column (b) is NO, the individual concerned will be considered to be a 'worker' as that term is defined in the *Work Health and Safety Act 2011* (Qld) and the *Workers' Compensation and Rehabilitation Act 2003* (Qld) unless evidence can be provided to the contrary.

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SCHEDULE 8 (cont'd) – SITE PERSONNEL REGISTER SUMMARY

Clause 29.4

Project Name: ..... Project Location: .....

Contractor's Name: ..... Project Registration Number: .....

Response		Total
1.	Total number that responded **Y** to the question in column (b)?	
2.	Total number that responded **N** to the question in column (b) and **Y** to the question in column (c)?	
3.	Total number that responded **N** to the question in column (b) and **N** to the question in column (c)?	
4.	Total number that responded **N** to the question in column (f)	
5.	Total number that responded **N** to the question in column (g)	
6.	Total number that responded **N** to the question in column (h)	
7.	Total number that responded **N** to the question in column (i)	

Signed .....

Date …/…/……

SCHEDULE 9 – STATUTORY DECLARATION BY CONTRACTOR

Clause 43.1

Oaths Act 1867

Queensland
To Wit

I, ... of .....

.....

in the State of Queensland, do solemnly and sincerely declare that, in relation to the Contract between the State of Queensland through .....

..... (the "Principal") and

..... (the "Contractor") for

..... (the "Contract"),

1. I hold the position of ..... . I am in a position to know the facts contained herein and to bind the Contractor by the terms of this declaration, and I am duly authorised by the Contractor to make this declaration on its/their behalf;

2. this statutory declaration is made in support of the Contractor's Payment Claim No. ….. ("Payment Claim");

3. in this declaration, the words "project trust account", "retention trust account" and "subcontractor" have the meaning given to them in the *Building Industry Fairness (Security of Payment) Act 2017* ("BIF Act");

4. all subcontractors and sub subcontractors performing work under the Contract have been engaged in accordance with Clause 9.2 of the Contract;

5. the Site Personnel Register is current and correct maintained in accordance with Clause 29.4 of the Contract;

6. the Contractor has fulfilled or complied with any commitments made in its tender for the work under the Contract relating to:

    a. the Local Benefits Test contained in the Queensland Procurement Policy; and

    b. the Best Practice Principles (as that term is defined in the Contract) (if applicable);

7. all the Contractor's workers who at any time have been engaged on work under the Contract by the Contractor have been paid, in accordance with the relevant award or industrial instrument, all moneys due and payable to them up to the date of submission of the Payment Claim;

8. except for those subcontractors listed in the Schedule below (if any), all subcontractors of the Contractor in respect of work under the Contract have been paid the full amount owed to them by the Contractor at the date of the Contractor's submission of the Payment Claim. If no subcontractors are listed in the Schedule, all subcontractors of the Contractor in respect of work under the Contract have been paid all amounts owed to them by the Contractor at the date of the Contractor's submission of the Payment Claim;

9. where required by the BIF Act, all subcontractors of the Contractor have been paid via the project trust account in respect of the work under the Contract;

10. where required by the BIF Act, all retention moneys in relation to subcontractors of the Contractor have been paid into the retention trust account in respect of the work under the Contract; and

11. where required by the BIF Act, all withdrawals from the project trust account and the retention trust account have been in accordance with the BIF Act.

And I make this solemn declaration conscientiously believing the same to be true and by virtue of the provisions of the ***Oaths Act 1867***.

I declare that the contents of this statutory declaration are true and correct. Where the contents of this declaration are based on information and belief, the contents are true to the best of my knowledge and I have stated the source of that information and grounds for the belief.

I understand that it is a criminal offence to provide a false matter in a declaration, for example, the offence of perjury under section 123 of the *Criminal Code Act 1899* (Qld).

Signed and declared by:

.....	.....
Full name of declarant	*Signature of declarant*
.....	.....
Place where declarant is located	*Date*

In the presence of:

.....	.....
Full name of witness	*Signature of witness*
.....	.....
Type of witness	*Date*

.....

Name of law practice/ witness's place of employment (cross out if not applicable)

SUPPORTING STATEMENT SCHEDULE

Payment Claim No. ……..

The following subcontractor(s) have not been paid the full amount that is owed to them by the Contractor at the date of the Contractor's submission of the Payment Claim

Subcontractor Name	**Amount still unpaid**	**Details of the unpaid payment claim for the subcontractor**	**Date(s) the subcontractor carried out the construction work or supplied the related goods and services**	**Reasons the amount owed to the subcontractor was not paid in full**

SCHEDULE 10 – STATUTORY DECLARATION BY SUBCONTRACTOR

Clause 43.1

Oaths Act 1867

Queensland
To Wit

I, ... of .....
.....
in the State of Queensland, do solemnly and sincerely declare that, in relation to the Contract between the State of Queensland through .....
..... (the "Principal") and
..... (the "Contractor") for
..... (the "Contract"),
..... (the "Subcontractor")
is a Subcontractor to the Contractor for part of the work under the Contract, namely: .....;

1. I hold the position of …… I am in a position to know the facts contained herein and to bind the Subcontractor by the terms of this declaration, and I am duly authorised by the Subcontractor to make this declaration on its/their behalf;
2. all the Subcontractor's workers who at any time have been engaged on work under the Contract by the Subcontractor have been paid in accordance with the relevant award or industrial instrument, all moneys due and payable to them up to the date of submission by the Contractor of Payment Claim No …….;
3. all subcontractors of the Subcontractor have been paid all that is due and payable to them up to the date of submission by the Contractor of Payment Claim No …… in respect of their part of the work under the Contract; and
4. the Subcontractor has fulfilled or complied with any commitments made in its tender for the subcontract works relating to:
    a. the Local Benefits Test contained in the Queensland Procurement Policy; and
    b. the best practice principles contained in the Queensland Government guidelines document titled "Best Practice Principles; - Quality, safe workplaces" (if applicable).

And I make this solemn declaration conscientiously believing the same to be true and by virtue of the provisions of the ***Oaths Act 1867***.

I declare that the contents of this statutory declaration are true and correct. Where the contents of this declaration are based on information and belief, the contents are true to the best of my knowledge and I have stated the source of that information and grounds for the belief.

I understand that it is a criminal offence to provide a false matter in a declaration, for example, the offence of perjury under section 123 of the *Criminal Code Act 1899* (Qld).

Signed and declared by:

.....	.....
Full name of declarant	*Signature of declarant*
.....	.....
Place where declarant is located	*Date*

In the presence of:

.....	.....
Full name of witness	*Signature of witness*
.....	.....
Type of witness	*Date*

.....
Name of law practice/ witness's place of employment (cross out if not applicable)

Tender Information Guidance and Checklist

AS4300; AS2124

Overview

QBuild has prepared this 'Tender Information Guidance and Checklist' to assist tenderers in understanding the tender documents. This document is not exhaustive, and tenderers need to ensure that they have fully read and comply with all requirements and documentation included with the tender package. Tenderers will not be excused from any specified requirements on the basis of reliance on this document's contents including the checklist.

Documents and Systems definition

Tender package documentation and other associated documents

- **Notice to Tenderers** – The Notice to Tenderers is used to introduce the tender package and considerations relevant to the tender package.
- **Conditions of Tender** – This outlines the standard conditions that must be adhered to when submitting a tender including what comprises the tender documents, tender requirements, general information, evaluation process and other sections for review when submitting a tender. The Conditions of Tender also contain any Non-Price Criteria that are being used as part of the tender process and the relative weighting of each.
- **Conditions of Contract** – This relates to the general conditions of contract that must be adhered to (AS4300 or AS2124 dependent on contract type for tender). These conditions are not included in the tender documentation suite however they are available through the SAI Global Webshop via https://www.saiglobal.com/. The Conditions of Contract must be read in conjunction with the Special Conditions of Contract and Annexure – see below.
- **Special Conditions of Contract and Annexure** – These are to be read in conjunction with the relevant Australian Standard General Conditions of Contract (AS4300 or AS2124 dependent on contract type for tender). They detail any changes to the general conditions of contract and also set out any specific Government policy requirements for the tender e.g. training policy.
- **Specification documentation and Drawings (where included)** – The specification document and drawings set out the technical requirements for the works for which the tender is being called.
- **Addenda** – Addenda may be issued during the tender period if an amendment is made to the tender package. This may include for example the amendment of a clause, specification, drawing or other details or a change to the tender closing date. Any addenda released must be reviewed, adhered to, allowed for in the tender submitted and acknowledged in the tender form.
- **Returnable Schedules** – Depending on the tender package, returnable schedules will be included for price and non-price requirements. Any returnable schedules included must be completed and included with the tender response.
- **Electronic Tender Form** – The form is used for submission with the tender and requires a number of details to be filled out including business information, tender price and signatures.

Queensland Government

Tendering systems and their role

- **QTenders** – QTenders is the Queensland Government tendering system used by a number of agencies to list their tenders. QBuild use QTenders to publicly advertise its higher value tender packages and to issue Forward Procurement Schedules detailing advanced notice of upcoming projects and programs. QBuild does not utilise the QTenders system for issuing tender documentation or accepting tender responses as these are handled through the QBuild eTender system. The QTenders website is available via https://qtenders.epw.qld.gov.au

  Please Note: The existing QTenders system is being replaced by the VendorPanel system in a phased implementation. As agencies are transitioned their tender documents will only be available from VendorPanel. QTender will continue to advertise all public tenders on the QTenders site, however you will need to register your business with VendorPanel to access tender documents and respond to tenders.

- **Vendor Panel** – The Vendor Panel system is a tendering system utilised by QBuild and other agencies when engaging with Consultants under the Engineering Consultants Scheme (ECS). If you have been engaged by QBuild through the Vendor Panel system, then you are required to submit your tender in line with the requirements of the system and as per the instructions provided. The Vendor panel website is available via www.vendorpanel.com.au

- **QBuild eTender** – QBuild eTender is the electronic tender system utilised by QBuild for accessing the suite of tender documentation and for submitting responses. It is imperative that only QBuild eTender is used to access or submit documentation for QBuild' tenders. The QBuild eTender website is available via https://etender.hpw.qld.gov.au/

  Please Note: When preparing your document/s for submission ensure that the document names **do not** contain any special characters at all, only letters and numbers. Including special characters in your document names can cause issues with the documents uploading successfully.

Registrations process

- **QBuild registration** – QBuild requires that suppliers, contractors and consultants register and comply with the conditions of *Working with QBuild*. Further information on this process can be obtained by contacting (07) 3008 3392 or registrations@epw.qld.gov.au or via www.business.qld.gov.au/qbuild

- **PQC registration** – The Prequalification (PQC) System is the Whole-of-Government central register of prequalified building consultants and contractors. This is a separate registration process to the QBuild. The PQC tenderers eligibility for projects is determined based on a combination of factors including the projects category, value and risk. Further information can be obtained by contacting 1800 072 621 or PQCRegistrar@epw.qld.gov.au or via https://www.business.qld.gov.au/industries/building-property-development/building-construction/supply-queensland-government/prequalifying-major-projects

Further assistance

QBuild has included a checklist to assist tenderers when preparing to submit their tender on page 3 of this document.

After reviewing this document's details and accompanying checklist, should you require further assistance with submitting your tender, you can contact the nominated QBuild officer. The officers contact details are available through the 'Tender Details' section on QBuild eTender.

Tenderers Checklist

- ☐ Reviewed the Notice to Tenderers document.
- ☐ Reviewed the Conditions of Tender and understood the requirements of the Price and Non-Price criteria (if applicable) to be submitted.
- ☐ Noted that the General Conditions of Contract are not including with the Invitation to Tender document but do form part of the contract and are available as stated in the documents – reviewed Conditions of Contract.
- ☐ Reviewed the Special Conditions of Contract and Annexure.
- ☐ Prepared and included any responses needed against Non-Price Criteria where included in the tender documents (Conditions of Tender).
- ☐ Reviewed the specification and drawings included (if applicable).
- ☐ Read and considered the inclusion of any Addenda issued during the tender period (if applicable) and stated this acknowledgement on the tender form.
- ☐ Reviewed and completed all returnable schedules and other information required to be submitted by the tender documents. **Please Note**: Ensure that the document names **do not** contain any special characters at all, only letters and numbers.
- ☐ Completed the online tender form including uploading completed returnable schedules and any other required files or forms.
- ☐ Submitted response through QBuild eTender by 2:00pm on the date of tender close as detailed in the Tender package / QBuild eTender website (or if applicable, amended through any Addenda issued).