

Documentation of design and construction (suitability or evidence of suitability)

Project name: Project Drake	
Project address: Drake street, west end	Site plans attached: (refer to the attached)
Prepared by: Noreen Abu-obeid (strictly confidential - All documentation here has been used for the purpose of the training only. Thank you)	
Date: 25/11/2023	
Description of project: Raise/build and renovation of the home including demolition, house raising, earthworks, termite protection, concrete works, painting, masonry, structural steel works, carpentry, roof/fascia and gutter works, joinery to include all windows and doors, plastering, waterproofing, floor and wall coverings, stairs/balustrades, metalworks, glazing, plumbing and drainage, electrical and communication, air conditioning, painting, fittings/fixtures/carpentry fit offs scopes of works.	
Site classification/s, class and climate zone compliance (ncc bushfire, high wind, earthquake and alpine environment requirements.) Site classification – ph(1) Building regulatory legislation as per the queensland 'building act 1975'. 5.6.1 as 2870 'residential slabs and footings' In assessing the site classification, the following has been considered:- • the subsurface profile (as per borehole records). • laboratory test results. • geotechnical data held by soil surveys engineering. • that the site is considered to be a reactive site (as per as 2870-2011).	

- that the site is subject to abnormal moisture conditions due to the presence of trees (on The building site and adjacent sites) and or proposed removal of trees (as per clause 1.3.3 of as 2870-2011).
 - that the site is subject to abnormal moisture conditions due to the presence of an Existing building and proposed removal of the existing building (as per clause 1.3.3 of As 2870-2011).
 - likely future development.
- Considering the above, and other factors, the site is classified class 'p'.

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Site preparation

Site preparation	NCC / Australian standards requirements	Compliant performance solution
Earthworks	The building platform area shall be stripped of loose topsoil and any organic matter, tree roots etc. The design of the footing and slab system assumes uncontrolled platform filling which is to be placed in layers not greater than 200 mm thick and rolled by the excavating machinery to create a firm level platform. Unless otherwise approved, platform fill shall be won from the site. The use of unapproved imported fill may affect the site classification and the footing and slab design. Prior to any excavation or construction on the site, the relevant authority should be contacted for possible location of Further underground services.	If excavations for any purpose, such as service trenches, retaining wall Construction, etc, extend within a 1 in 1 influence line from the bottom corner Of the edge beam or footing, provide piers in accordance with the pier details For services and adjacent structures. The contractor is responsible for maintaining the stability of excavation by providing temporary shoring as required, designed and certified by an appropriately Qualified rpeq.

	Cut and fill batters not to exceed a maximum slope of 1 vertical to 2 horizontal.	
Site preparation		
Site preparation	NCC / Australian standards requirements	Compliant performance solution
Earth retaining structures	Surface water to be drained away from dwelling (provide a 1:20 min. Fall) unless noted otherwise, removal of existing Trees and construction of retaining walls, Where required, shall be provided by the owner Maximum batters shall occur as follows:- (i) cut - 1:1 (ii) fill - 1:2 (iii) vehicular access - 1:4 The working pad r.l. Noted on the site plan shall have a tolerance of up to +/- 100mm 1000 maximum high timber retaining wall with 90ø slotted ag. Drain (discharging to storm Water drain) and granular backfill behind to Be wholly contained within the site, only if Indicated on the plan. • height of fence, including the height of a Retaining wall are not to exceed 1.8m above Finished ground level, only if indicated on the site plan. Contractor to refer to the local 'good neighbour fencing requirements'	The building platform area shall be stripped of loose topsoil and any organic Matter, tree roots etc. The design of the footing and slab system assumes uncontrolled platform Filling which is to be placed in layers not greater than 200 mm thick and rolled By the excavating machinery to create a firm level platform. Unless otherwise approved, platform fill shall be won from the site. The use Of unapproved imported fill may affect the site classification and the footing And slab design. If excavations for any purpose, such as service trenches, retaining wall Construction, etc, extend within a 1 in 1 influence line from the bottom corner Of the edge beam or footing, provide piers in accordance with the pier details

		For services and adjacent structures. Piers to found 600 below 1:1 line from bottom of backfilled excavation or founded as specified in pier notes on slab plan, whichever is the deeper. Knockout blocks with 1/n12 horizontal to top course Clean coarse granular backfill Sl82 mesh, 40 top cover N16 at 400 horizontal N16 at 400 vertical 60 cover to soil side of blockwork Provide clenout blocks to bottom course Ag drain with gravel surround V bars 70 cover to soil side of blockworkk Block wall reinforcement - all non-retaining 190 block walls are to Be reinforced thus: - n12 at corners, sides of openings and At 400 max. Crs. Between. Vertically - n12 at 400 crs. Horizontally - n12 at 400 crs. Vertically - lap 600 with starter bars from slab. - concrete fill all cores. - provide 2/n16 horizontal bars in lintel blocks Over all openings greater than 1200. Temporary excavation to be cut at suitable batter. Excavation not to be left unretained for extended period. For waterproofing requirements refer to architects details. Backfill retaining walls with clean, coarse granular material free from clay or organic material unless noted otherwise.
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		Maximum downhill slope 1 max (vertical) to 4 (horizontal) for distance of 2h from base of wall. Maximum uphill slope 1 max (vertical) to 4 (horizontal) for a distance of h from top of wall. Builder to ensure construction does not adversely affect existing structures or services. Retaining wall not to be surcharged by any permanent structures nor surcharge any other structure. Refer architect for extent of retaining walls
Drainage	The design of the footing system relies on the proper performance of the Plumbing and drainage systems. All works shall be carried out in accordance With as3500. Where the depth of uncontrolled platform fill exceeds 300mm, the plumbing Shall be constructed in accordance with the requirements for class 'p' - Uncontrolled fill sites in accordance with as3500. Sewer line strapping for uncontrolled fill - stainless steel hangers in Accordance with as3500. Support from slab mesh as shown Gutters and downpipes to comply with ncc vol.2 part 3.5. All downpipe locations, underground services (stormwater, etc.) To be located before construction commences. Fire safety in accordance with ncc vol.2 part 3.7.	Provide appropriate flexible connections to all plumbing and drainage pipes To suit the building form, taking into account site conditions, soil reactivity, Fill, etc. Where the depth of uncontrolled platform fill exceeds 300mm, the plumbing Shall be constructed in accordance with the requirements for class 'p' - Uncontrolled fill sites in accordance with as3500. Overland and subsurface flow from the high side of the site, and the Surroundings, shall be intercepted by means of a permanent drainage System. Roof water and collected surface runoff shall be discharged well Clear of the house on the downhill side, in such a manner as to avoid Concentrated flow across any site boundary. The owner is responsible for ongoing plumbing, building and site maintenance, and observing precautions

	Downpipes to connect to stormwater lines or to street. Builder/roof plumber is ensure that all gutters/downpipes comply with ncc vol. 1 part 3.5. Roofwater drainage - roofwater shall be Conveyed to the kerb and channel or an interallotment drainage system in accordance with as/nz3500.3.2:2018 where an inter-allotment drainage is not available or it is not possible to convey the roof and surface water to the kerb and channel, absorption trenches shall be installed at least 5m from any building or downstream boundary. • platform immediately surrounding the Building is to fall away from the building at a Slope of 1 in 20 minimum to an earth drain on The site plan. • the surface drainage to discharge evenly Within the site and without nuisance to the Adjoining properties.	regarding the effect of garden development on the structure of the house. Structural damage to the residence can arise in the event of abnormal moisture conditions which can occur due to inappropriate site and garden Development, poor site drainage, leaking taps and damaged plumbing. The owner shall ensure that the site drainage, together with roof water, water supply, and sewerage pipes, are maintained in good operating condition and free of leaks, during the life of the house. It is important that the site stormwater drainage be installed in a manner to prevent ponding of water against the edge of the slab. The owner is Responsible for ensuring any surface stormwater drainage pits are installed with the inlet below the underside of the waffle slab. Where adjacent ground levels are higher than the underside of the residence slab, the use of subsoil "ag drains" are highly recommended in addition to the surface drainage. Articulation joint assembly e.g. Storm plastics "swivel joint" (or other approved flexible fitting installed to manufacturer's recommendations) Piers to found 600 below 1:1 line from bottom of ackfilled pool excavation or founded as specified in pier notes on slab plan, whichever is the deeper.
Site preparation	NCC / Australian standards requirements	Compliant performance solution

Termite risk management	NCC 3.1.4 and as3660.1:2014	The owner is responsible for ensuring continued compliance with the requirements for termite protection of the residence. The exposed concrete slab edge may form part of the termite protection system by acting as a “visual barrier” to allow inspection for the presence of termite activity. No Materials, structures or other elements such as pathways, landscaping mulch, garden beds and the like shall be placed against the exposed slab edge of the residence unless approved by a suitably qualified building certifier. Termite management system ncc 3.1.4 the Primary building element of this proposed Dwelling must be constructed of a material That comply with the ncc that are not Affected by termites. Any timber being used Must be naturally termite resistant timber or Preservative treated timber in accordance With as3660.1:2014. Provide a sticker to the Meter box and the kitchen cupboard stating The building elements are protected to comply With ncc 3.1.4 and as3660.1:2014
Materials		Unless appropriate termite barriers have been installed all internal above ground timber is to be treated to hazard level h2
Footings and slabs		
Site classification		

Footings and slabs	NCC / Australian standards requirements	Compliant performance solution
Footings and slabs	The design of footings and slab system has been based on the requirements of as 2870 “residential slabs and footings”. Construction practices and Standard of workmanship are to be strictly in accordance with the requirements of that standard.	Piers shall be provided in accordance with the pier details for services and Adjacent structures whether indicated on plan or not. Where notification and Details of such services and structures have been provided by others, the Design has been modified as required to maintain the structural integrity of The footing and slab system. The builder shall check for such services and adjacent structures, and Confirm the location and depth. If any part of the residence foundation system is founded on rock, all areas Of the footing and slab system supporting masonry or loadbearing elements Shall be pierced to rock to avoid problems associated with differential Settlement across the platform. Refer to the footing and slab plan and detail Drawings for the pier requirements. Any slabs constructed adjacent to the residence slab, such as water tank or Air conditioning equipment slabs, shall be structurally isolated from the Habitable slab. Any services connections such as downpipes, air conditioning Lines and water supply lines shall be installed to accommodate differential

		Movement between the residence and the external element. Provide formwork if required to ensure lagging extends Beyond edge of concrete If any part of the edge rib or footings found in weathered rock, then all of the Edge rib and footings are to extend into weathered rock or are to be piered 300 min. Into weathered rock. Refer pier notes for size and spacing Where edge footing is not found 100min into weathered rock, provide 300 dia. Bored piers at 2100 max. Crs. Piers to extend 300 min. Into weathered rock. Where internal footings do not found 100 min. Into natural firm material, provide 300 dia. Bored piers at 2100 max. Crs. Piers to extend 600 min. Into natural firm material. Where depth of uncontrolled fill under slab exceeds 300mm, (including slab bedding and any existing fill) provide 300 dia. Bored piers at 2300 max. Crs. Piers to extend 600 min. Into natural Firm material or 300 min. Into weathered rock. Where depth of bored piers exceeds 1500mm, bored piers to be reinforced with 4/n12 verticals and r6 ties at 500. Trench mesh to continue across full width of intersection Grade n25 concrete. F2 50mm clear concrete cover to reinforcement to be maintained.
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		F3 foundation material to be firm natural material or approved Compacted material with minimum allowable bearing capacity of 100 kpa.
Footings and slabs	NCC / Australian standards requirements	Compliant performance solution
Moisture barrier	300 max. Rolled fill including sand bedding. Fill to be placed in accordance with as2870	The owner is responsible for ensuring continued compliance with the Requirements for protection of the residence from the effects of rising Damp. If materials, structures or other elements such as pathways, Driveways, landscaping mulch, garden beds and the like are to be placed Against the residence, the slab shall be protected from the effects of Moisture. This can be achieved with a waterproofing membrane applied to the Exposed slab edge that is overlapped with the vapour barrier beneath the Slab. Vapour barrier on 25mm sand bedding

Materials	That the site is subject to abnormal moisture conditions due to the presence of trees (on the building site and adjacent sites) and or proposed removal of trees (as per clause 1.3.3 of as 2870-2011). That the site is subject to abnormal moisture conditions due to the presence of an existing building and proposed removal of the existing building (as per clause 1.3.3 of As 2870-2011).	For basement garage flush threshold drainage integrated With door systems - allowances to be made in concrete slab accordingly -
Concrete and reinforcement		
Concrete and reinforcement	NCC / Australian standards requirements	Compliant performance solution
Concrete and reinforcement	Reinforcement shall be installed in accordance with the design drawings. All reinforcement shall comply with as1304 and as1302.	Concrete used in the footing and slab system shall be grade n20, in accordance with as3600, with a maximum nominal aggregate size of 20mm and a slump of 80-100mm. For polished concrete and suspended slabs, refer to the drawings for concrete specification. No water shall be added to the concrete on site. In hot and windy conditions, the slab shall be cured with a spray on liquid membrane curing compound. Lap reinforcement as required. Unless noted on the drawings, lap lengths Shall be: Slab mesh - 2 transverse wires N12 - 500mm N16 - 600mm N20 - 700mm

		Unless noted on the drawings, cover to reinforcement shall be 50mm where The concrete is cast against ground, 40mm to exposed surfaces and 20mm to Interior surfaces.
Materials	Provide articulation joints in brickwork in Accordance with Australian standard AS4773-2010 Masonry in small buildings.	Concrete used in the footing and slab system shall be grade n20, in accordance with AS3600, with a maximum nominal aggregate size of 20mm and a slump of 80-100mm. For polished concrete and suspended slabs, refer to the drawings for concrete specification. No water shall be added to the concrete on site. In hot and windy conditions, the slab shall be cured with a spray on liquid membrane curing compound. Concrete grade - n20 Reinforce slab with S182 mesh in centre. Slab to be set out from building design drawings. 150 min. Concrete to concrete contact
Masonry		
Masonry	NCC / Australian standards requirements	Compliant performance solution

Masonry	Provide articulation joints in brickwork in accordance with Australian standard AS 4773-2010 masonry in small buildings. Workmanship is to be in accordance with AS 3700. bed units in freshly prepared mortar of classification type m3 conforming to AS 3700. Masonry construction to comply with NCC vol.2 part 3.3 and AS 3700. All masonry construction to AS 3700:2018. Refer to previous note regarding scaling dimensions off drawings.	Concrete masonry units shall have an unconfined compressive strength (f'_{uc}) = 15 MPa.
Moisture barrier	Workmanship is to be in accordance with AS 3700. bed units in freshly prepared mortar of classification type m3 conforming to AS 3700. Wet areas to comply with NCC vol.2. Part 3.8.1 and AS 3730. Floors to all wet areas to have adequate falls to a floor waste. • wc's to have a minimum clearance of 465mm from the centreline.	Vapour barrier on 25mm sand bedding

Materials	Provide any necessary temporary propping to blockwalls during construction as required by as 3700 to maintain the structure in a stable, not overstressed condition.	Masonry infill concrete used of 20 mpa, size 10 aggregate and max slump 250 Provide clean out opening at bottom course to all cores to be concrete filled. Fully bed face shells and vertical joints. (vertical joints are open at weep holes.) Clean out mortar protrusions in cores to be concrete filled, for full height after each days laying. Reinforcement is to have a minimum of 30mm clear cover to inside face of block core. Corefill mix to be placed in accordance with manufacturer's specifications. Stop pour 25mm below top of block where there is to be a subsequent pour. Infill concrete is to be compacted to ensure complete filling of all cores. Provide any necessary temporary propping to blockwalls during construction as required by as 3700 to maintain the structure in a stable, not overstressed condition. Provide vertical control joints at 10m maximum centres. Deformed bar reinforcement to conform to as 4671 and to Be tied to starter bars. N denotes 500n grade deformed bar SI denotes hard drawn wire reinforcing fabric The number immediately following the bar grade symbol Represents the nominal bar diameter in millimetres Reinforcement laps: N12 bars = 500mm N16 bars = 600mm N20 bars = 700mm
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		N24 bars = 850mm
Framing/structure		
Framing/structure	NCC / Australian standards requirements	Compliant performance solution
Framing	Fixings to be in accordance with as1684.2-2010 and good building practice. Timber framing shall be designed and constructed in accordance with as1684.2 and as1684.4 - non-cyclonic areas and as1684.3 cyclonic areas. All timber framed wall to wet areas to be Lined with waterproof cladding with a Waterproofing works to be carried out by a Qualified professional and compliance Certificates supplied upon completion.	Joint group jd5 Ceiling height varies Roof sheeting metal roof sheeting pitch varies Truss/rafter spacing 600 Batten spacing 900 Lower storey of two storey Nominal fixings - refer table 9.4 of as1684.2 - 2010. Single storey Roof batten to Truss/rafter 1/75 no.14 type 17 screw. Truss/rafter to top Plate 1 framing anchor with 4/2.8mm dia. Nails each leg. Top plate to floor M12 anchor rods at corners, Sides of openings, and at 1800 max. Crs. Between.

		Top plate to lower Level top plate M12 anchor rods at corners, Sides of openings, and at 1800 max. Crs. Between. Balcony bearer to shs Post 2/m12 bolts through post. Lintel to shs post 8 cap plate. 2/m12 bolts. Shs post to Footings/slab 8 base plate. 2/m12 bolts in Chemical anchors. Shs post to bearer 8 base plate. 2/m12 bolts. Ground floor bracing resistance required 164.9kn in direction a and 45.2kn in direction b Upper floor bracing resistance required is 72.2kn for direction a and 19.6kn for direction b Maximum 25 dia hole in vertical Legs only for electrical conduit, located just above horizontal member in top half of frame only. Pre engineered fixed anchor positions - 12mm thick (minimum) steel block washers welded to inside of vertical members (beneath bottom horizontal Member) Ensure that any existing bracing removed with demolition of internal walls is replaced with same capacity bracing in similar locations.
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Materials	As1684.2-2010	Floor joist layout to avoid plumbing wastes. All lvl framing shown on this drawing to be grade "lvl15" u.n.o. All external steel work is to be hot dipped galvanised. All external above ground timber to be durability class 1 or 2 or treated to hazard level h3 Unless appropriate termite barriers have been installed all internal above ground timber is to be treated to hazard level h2 Provide 35x70 mgp12 nailing plate to top flange of steel beams as required. Fix with m12 bolts at 900 crs. Load bearing walls Top plate 2/35x70 mgp12 Studs 90x35 mgp12 at 300 crs. Where shown on plan. 2/90x35 mgp12 at 450 crs. 3000 to 3300mm high. 90x35 mgp12 at 450 crs. (generally) Bottom plate 2/35x90 mgp12 or 35x90 mgp10 where continuously supported Partition walls Top plate 35x70 mgp10 Studs 70x35 mgp10 at 450 crs. Bottom plate 35x70 mgp10 Studs at sides of openings Opening width up to 1200 studs 2+2 1500-2100 3=3 >3600 4+5 Roof framing
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		Prefabricated timber roof trusses at 600 crs. To be engineer designed and fixed in accordance with manufacturer's specifications. Girder trusses to be supported on 3 studs. Roof battens 38x50 f11 at 900 crs. Standard m16 threaded rod cut to length, (or suitable length bolt) Maximum 8 dia hole in each bay for stud fixing 75x75 square hollow section with hardwood timber laminated – mitred at edges 50mm thick or similar to eng. Details
Roof and wall cladding		
Roof and wall cladding	NCC / Australian standards requirements	Compliant performance solution

Roof and wall cladding	External walls to achieve r2.0, roofs to achieve r2.5. Roof and wall cladding to comply with ncc vol.2 part 3.5.	Parapet roof flashing to be installed Brick cladding to concrete block wall Proposed new timber joists and waterproofed tiled flooring system to eng. Details - to fall away from dwelling
Materials	All cladding to be fixed as per manufacturers details	Custom orb roof system @ 5° pitch For rafters / trusses at > 600 ctrs fixed to battens @ 600 ctrs. 32x45 mgp10 or stramit 22x34 ceiling batten or equivalent. For rafters / trusses < 600 ctrs fixed directly to u/s rafters / truss Timber framed awning with concrete-look rendered fc cladding finish Water to fall away from dwelling Awning depth = 300mm Awning level = 520mm below level 1 ffl
Glazing		
Glazing	NCC / Australian standards requirements	Compliant performance solution

Glazing	Glazing to be in accordance with as1288 and as2047 and bca vol. 2 part 3.6. Sound insulation in accordance with bca vol.2 part 3.8.6 and external consultant where applicable.	All doors and windows are: - clear glass unless stated otherwise on the plans or noted in the energy efficiency report - aluminium frame doors and windows to be powder coated to owners selection - timber framed doors or windows to be stained or painted to owners selection - all windows and doors are nominal only and all sizes and tolerances are to be confirmed by the selected window and door manufacture. - all windows and doors are to be site measured and any conflicts between the plan/elevations and the schedule special requirements are to be confirmed between the construction manager and the client prior to ordering. - all commercial doors to comply with ncc requirements and disability (access to premisesbuildings) standards code
Materials	Door to sanitarities compartments on the ground floor to be readily openable from the outside. Door handles to required exits to be lever action complying with the requirements of ncc vol.1 part d2.21. Windows must be compliant with: current ncc - 3.9.2.6 "protection of openable windows"	(a) a window opening must be provided with protection, if the floor below the window in a bedroom is 2 m or more above the surface beneath. (b) where the lowest level of the window opening is less than 1.7 m above the floor, a window opening covered by (a) must comply with the following: (i) the openable portion of the window must be protected with— (a) a device capable of restricting the window Opening; or (b) a screen with secure fittings. (ii) a device or screen required by (i) must— (a) not permit a 125 mm sphere to pass through the window opening or screen; and (b) resist an outward horizontal action of 250 n Against the (aa) window restrained by a device; or (bb) screen protecting the opening; and

		(c) have a child resistant release mechanism if the screen or device is able to be removed, unlocked or overridden. (c) where a device of screen provided in accordance with (b)(i) is able to be removed, unlocked, or overridden, a barrier with a Height not less than 865mm above the floor is required to the openable window in addition to window protection (d) a barrier covered by (c) must not— (i) permit a 125 mm sphere to pass through it; and (ii) have any horizontal or near horizontal elements between 150mm and 760 mm above the floor that facilitate climbing.
Fire safety		
Fire safety	NCC / Australian standards requirements	Compliant performance solution
Fire safety	Provision of fire protection to penetrations for services to comply with ncc vol.1 part c3.12 to c3.16. Provision of fire extinguishers to comply with the requirements of as2444. Position of smoke alarms within units to comply with ncc vol.2 part 3.7.2	Light switches to be mounted at 1200h above finished floor (unless to match existing / client requirements) Electrical layout supplied for guide only – electrical layout to be confirmed in writing by client / consultant / builder, prior to order + fitoff Provide isolation switch to electric hot plates where required Provide booster switch including indicator light for solar hot water in visible location Led strip lighting installed to join between driveway and block wall - refer to client for details - installed to Manuf. Specs

	As 3786:2014 and ncc part 3.7.5 Smoke alarm detectors to be installed in accordance with as 3786 and ncc part 3.7.5	Smoke alarms in the dwelling must: I) be photoelectric (as 3786:2014); and li) not also contain an ionisation sensor; and lii) be hardwired to the mains power supply with A secondary power source (i.e. Battery); and lv) be interconnected with every other smoke Alarm in the dwelling so all activated together. Smoke alarms must be installed on each storey: I) in each bedroom; and li) in hallways which connect bedrooms and the Rest of the dwelling; or lii) if there is no hallway, between the bedrooms And other parts of the storey; and lv) if there are no bedrooms on a storey at least One smoke alarm must be installed in the most Likely path of travel to exit the dwelling.
Access/stairs/lifts/ramps		
Access/stairs/lifts/ramps	NCC / Australian standards requirements	Compliant performance solution

Access	Internal stair construction and balustrades in accordance with ncc vol.2 part 3.9. Balustrade to clients selection – to ncc 3.9.2	Internal stairs - open tread max 125mm gaps to ncc 3.9.1
Materials	Balustrade to clients selection – to ncc 3.9.2	10mm x 40mm verticals @ 100mm centres - max 125mm gaps where performing as balustrade - 10mm side of vertical elements to be orientated to the face of the dwelling
Ancillary provisions		
Ancillary provisions	NCC / Australian standards requirements	Compliant performance solution
Energy Efficiency	Energy efficiency report requirements of energy Efficiency of this development must be carried Out as part of the proposed development to Comply with the QDC mp 4.1, the NCC 3.12 and a form 16 - aspect certificate to confirm compliance with The energy requirements is to be provided at final Inspection.	Energy efficiency report requirements of energy Efficiency of this development . The energy requirements is to be provided at final Inspection.

Electrical/Plant/Noise	All electrical work should be carried out in accordance with Code of Practice: Managing Electrical Risks at the Workplace, AS/NZ 3012:2019 and all licensing requirements.	All work using Plant should be carried out in accordance with Code of Practice: Managing Risks of Plant at the Workplace. All work should be carried out in accordance with Code of Practice: Managing Noise and Preventing Hearing Loss at Work. Due to the history of serious incidents it is recommended that particular care be exercised when undertaking work involving steel construction and concrete placement.
Effect of Trees	AS 2870-2011 includes an informative section (refer Appendix H) on the design of footings for trees Where existing trees are to remain on the allotment (or on adjacent properties) and lie within the zone of influence when at full mature height, or the removal of large trees prior to construction is to occur, measures must be taken to reduce the possibility of damage. It is considered prudent that the client obtain professional advice from an arborist with regard to the behaviour of particular tree species.	If this office has been advised of trees which have the potential to adversely affect the future performance of the footing / slab system, these have been referenced on the drawings and considered in the design process
Plumbing/Drainage	The soil classification to AS 2870 for the purpose of design of plumbing, drainage and onsite sewerage works (Form 1 Section 5 - Permit Work Application) is Class 'M'. However, this reactive site has been assessed to be subject to abnormal moisture conditions and the site is classified Class 'P'.	The foundation system for any features supported on natural clay material should be designed and constructed to accommodate the potential ground movement resulting from the volume instability of the reactive clay soils.
Energy efficiency		

Energy efficiency	NCC / Australian standards requirements	Compliant performance solution
	Vol.2 part 3.12 and external consultants report where applicable. Light and ventilation in accordance with bca parts 3.8.4 and 3.8.5	Energy efficiency report requirements of energy efficiency of this development must be carried out as part of the proposed development to comply with the qdc mp 4.1, the ncc 3.12 and a form 16 - aspect certificate to confirm compliance with the energy requirements is to be provided at final Inspection.
Health and safety		

The contractor shall ensure that all construction activities are performed to the relevant workplace health and safety requirements and any other relevant statutory requirements.

All excavations shall be carried out in a safe manner in accordance with workplace health and safety code of practice for excavation works.

It is the contractors responsibility to check for the presence of asbestos or other hazardous materials and, if necessary, take appropriate action before demolishing, cutting, sanding, drilling or otherwise disturbing the existing structure or service.

1. Falls, slips, trips

A) working at heights

During construction

Wherever possible, components for this building should be prefabricated off-site or at ground level to minimise the risk of workers falling more than two metres. However, construction of this building will require workers to be working at heights where a fall in excess of two metres is possible and injury is likely to result from such a fall. The builder should provide a suitable barrier wherever a person is required to work in a situation where falling more than

Two metres is a possibility.

During operation or maintenance

For houses or other low-rise buildings where scaffolding is appropriate:

Cleaning and maintenance of windows, walls, roof or other components of this building will require persons to be situated where a fall from a height in excess of two metres is possible. Where this type of activity is required, scaffolding, ladders or trestles should be used in accordance with relevant codes of practice, regulations or legislation.

For buildings where scaffold, ladders, trestles are not appropriate:

Cleaning and maintenance of windows, walls, roof or other components of this building will require persons to be situated where a fall from a height in excess of two metres is possible. Where this type of activity is required, scaffolding, fall barriers or personal protective equipment (ppe) should be used in accordance with relevant codes of practice, regulations or legislation.

Anchorage points

Anchorage points for portable scaffold or fall arrest devices have been included in the design for use by maintenance workers. Any persons engaged to work on the building after completion of construction work should be informed about the anchorage points

B) slippery or uneven surfaces

Floor finishes specified

If finishes have been specified by designer, these have been selected to minimise the risk of floors and paved areas becoming slippery when wet or when walked on with wet shoes/feet. Any changes to the specified finish should be made in consultation with the designer or, if this is not practical, surfaces with an equivalent or better slip resistance should be chosen.

Floor finishes by owner

If designer has not been involved in the selection of surface finishes, the owner is responsible for the selection of surface finishes in the pedestrian trafficable areas of this building. Surfaces should be selected in accordance with AS 197:1999 and AS 4586:2013.

Steps, loose objects and uneven surfaces

Due to design restrictions for this building, steps and/or ramps are included in the building which may be a hazard to workers carrying objects or otherwise occupied. Steps should be clearly marked with both visual and tactile warning during construction, maintenance, demolition and at all times when the building operates as a workplace.

Building owners and occupiers should monitor the pedestrian access ways and in particular access to areas where maintenance is routinely carried out to ensure that surfaces have not moved or cracked so that they become uneven and present a trip hazard.

Spills, loose material, stray objects or any other matter that may cause a slip or trip hazard should be cleaned or removed from access ways.

Contractors should be required to maintain a tidy work site during construction, maintenance or demolition to reduce the risk of trips and falls in the workplace. Materials for construction or maintenance should be stored in designated areas away from

Access ways and work areas.

2. Falling objects

Loose materials or small objects

Construction, maintenance or demolition work on or around this building is likely to involve persons working above ground level or above floor levels. Where this occurs one or more of the following measures should be taken to avoid objects falling from the area where the work is being carried out onto persons below.

1 prevent or restrict access to areas below where the work is being carried out.

2 provide toeboards to scaffolding or work platforms.

3 provide protective structure below the work area.

4 ensure that all persons below the work area have personal

Protective equipment (PPE).

Building components

During construction, renovation or demolition of this building, parts of the structure including fabricated steelwork, heavy panels and many other components will remain standing prior to or after supporting parts are in place. Contractors should ensure that temporary bracing or other required support is in place at all times when collapse which may injure persons in the area is a possibility.

Mechanical lifting of materials and components during construction, maintenance or demolition presents a risk of falling objects.

Contractors should ensure that appropriate lifting devices are used, that loads are properly secured and that access to areas below the load is prevented or restricted.

3. Traffic management

For building on a major road, narrow road or steeply sloping road:

Parking of vehicles or loading/unloading of vehicles on this roadway may cause a traffic hazard. During construction, maintenance or demolition of this building designated parking for workers and loading areas should be provided. Trained traffic management personnel should be responsible for the supervision of these areas.

For building where on-site loading/unloading is restricted:

Construction of this building will require loading and unloading of materials on the roadway. Deliveries should be well planned to avoid congestion of loading areas and trained traffic management personnel should be used to supervise loading/unloading areas.

For all buildings:

Busy construction and demolition sites present a risk of collision where deliveries and other traffic are moving within the site. A traffic management plan supervised by trained traffic management personnel should be adopted for the work site.

4. Services

General

Rupture of services during excavation or other activity creates a variety of risks including release of hazardous material. Existing services are located on or around this site. Where known, these are identified on the plans but the exact location and extent of services may vary from that indicated. Services should be located using an appropriate service (such as dial before you dig), appropriate excavation practice should be used and, where necessary, specialist contractors should be used.

Locations with underground power:

Underground power lines may be located in or around this site. All underground power lines must be disconnected or carefully located and adequate warning signs used prior to any construction, maintenance or demolition commencing.

Locations with overhead power lines:

Overhead power lines may be near or on this site. These pose a risk of electrocution if struck or approached by lifting devices or other plant and persons working above ground level. Where there is a danger of this occurring, power lines should be, where practical, disconnected or relocated. Where this is not practical adequate warning in the form of bright coloured tape or signage should be used or a protective barrier provided.

5. Manual tasks

Components within this design with a mass in excess of 25kg should be lifted by two or more workers or by mechanical lifting device. Where this is not practical, suppliers or fabricators should be required to limit the component mass.

All material packaging, building and maintenance components should clearly show the total mass of packages and where

practical all items should be stored on site in a way which

minimises bending before lifting. Advice should be provided on safe lifting methods in all areas where lifting may occur.

Construction, maintenance and demolition of this building will require the use of portable tools and equipment. These should be Fully maintained in accordance with manufacturer's specifications and not used where faulty or (in the case of Electrical equipment) not carrying a current electrical safety tag.

All safety guards or devices should be regularly checked and personal protective equipment should be used in accordance With manufacturer's specification.

6. Hazardous substances

Asbestos

For alterations to a building constructed prior to 1990:

If this existing building was constructed prior to:

1990 - it therefore may contain asbestos

1986 - it therefore is likely to contain asbestos

Either in cladding material or in fire retardant insulation material. In either case, the builder should check and, if necessary, take Appropriate action before demolishing, cutting, sanding, drilling or otherwise disturbing the existing structure.

Powdered materials many materials used in the construction of this building can cause harm if inhaled in powdered form. Persons working on or in the building during construction, operational maintenance or demolition should ensure good ventilation and wear personal protective Equipment including protection against inhalation while using powdered material or when sanding, drilling, cutting or otherwise Disturbing or creating powdered material.

Volatile organic compounds

Many types of glue, solvents, spray packs, paints, varnishes and some cleaning materials and disinfectants have dangerous Emissions. Areas where these are used should be kept well ventilated while the material is being used and for a period after Installation. Personal protective equipment may also be required.

The manufacturer's recommendations for use must be carefully considered at all times.

Synthetic mineral fibre

Fibreglass, rockwool, ceramic and other material used for thermal or sound insulation may contain synthetic mineral fibre which may be Harmful if inhaled or if it comes in contact with the skin, eyes or other sensitive parts or the body. Personal protective equipment including Protection against inhalation of harmful material should be used when installing, removing or working near bulk insulation material.

Timber floors

This building may contain timber floors which have an applied finish. Areas where finishes are applied should be kept well ventilated during Sanding and application and for a period after installation. Personal protective equipment may also be required. The manufacturer's

Recommendations for use must be carefully considered at all times.

7. Confined spaces

Excavation

Construction of this building and some maintenance on the building will require excavation and installation of items within Excavations. Where practical, installation should be carried out using methods which do not require workers to enter the Excavation. Where this is not practical, adequate support for the excavated area should be provided to prevent collapse. Warning Signs and barriers to prevent accidental or unauthorised access to all excavations should be provided.

Enclosed spaces

For buildings with enclosed spaces where maintenance or other access may be required:

Enclosed spaces within this building may present a risk to persons entering for construction, maintenance or any other purpose. The Design documentation calls for warning signs and barriers to unauthorised access. These should be maintained throughout the Life of the building. Where workers are required to enter enclosed spaces, air testing equipment and personal protective equipment Should be provided.

Small spaces

For buildings with small spaces where maintenance or other access may be required:

Some small spaces within this building will require access by construction or maintenance workers. The design documentation Calls for warning signs and barriers to unauthorised access. These should be maintained throughout the life of the building. Where Workers are required to enter small spaces they should be scheduled so that access is for short periods. Manual lifting and Other manual activity should be restricted in small spaces.

8. Public access

Public access to construction and demolition sites and to areas under maintenance causes risk to workers and public. Warning Signs and secure barriers to unauthorised access should be provided. Where electrical installations, excavations, plant or loose Materials are present they should be secured when not fully supervised.

9. Operational use of building

Residential buildings

This building has been designed as a residential building. If it, at a later date, it is used or intended to be used as a workplace, the Provisions of the work health and safety act 2011 or subsequent replacement act should be applied to the new use.

Non-residential buildings for non-residential buildings where the end-use has not been identified:

This building has been designed to requirements of the classification identified on the drawings. The specific use of the building is not Known at the time of the design and a further assessment of the workplace health and safety issues should be undertaken at the Time of fit-out for the end-user.

For non-residential buildings where the end-use is known:

This building has been designed for the specific use as identified on the drawings. Where a change of use occurs at a later date A further assessment of the workplace health and safety issues should be undertaken.

10.other high risk activity

All electrical work should be carried out in accordance with code of practice: managing electrical risks at the workplace, as/nz 3012:2019 and all licensing requirements.

All work using plant should be carried out in accordance with code of practice: managing risks of plant at the workplace.

All work should be carried out in accordance with code of practice: managing noise and preventing hearing loss at work.

Due to the history of serious incidents it is recommended that particular care be exercised when undertaking work involving steel Construction and concrete placement. All the above applies.

Issues to be addressed and consultation				
Issue	Who to consult	Improvements for consideration	Feedback following consideration	Supporting resources
Groundwater was not encountered at borehole locations at the time of the investigation. Whilst groundwater was not encountered in the boreholes, it should be noted that groundwater may be present	Engineers	Seepage may be encountered, particularly within the fill material and at the fill/natural and soil/rock interfaces, following rain. It should also be noted that groundwater levels can vary both seasonally and with prevailing weather conditions and, if construction is to be undertaken at a “significant” time following this investigation, or following ‘wet’ weather.	It would be prudent to confirm groundwater levels prior to construction	Geotech report and plumbing/drainage drawings
Trafficability - some problems may be anticipated during wet weather for even light weight 4WD vehicles. The soils on site are sensitive to repetitive vehicle loading and water (i.e. they will lose strength	Project Manager and Management	Trafficability conditions were considered to be fair during the investigation however the fieldwork	Maintaining adequate drainage conditions is essential. It should be ensured that runoff is diverted away from the construction area to prevent ponding of water.	Geo report and Management

through repetitive vehicle loading or if they become overly moist or wet). Further, seepage may also result in a subsequent loss of strength. This may limit trafficability and create difficulties for earthworks operations. This situation would be more pronounced if rainfall followed initial clearing, stripping and grubbing.		for this investigation was carried out following dry weather conditions with a 4WD mounted drilling rig. It is recommended that after stripping, clearing and grubbing, the exposed surface in the construction area be proof rolled (where appropriate) to assist in identifying weak areas and to improve trafficability	The contractor should fully inform themselves of the ground conditions on site prior to commencement of earthworks. This requirement should be explicit in any earthworks specifications or contract.	
Deep Foundations	Engineer and Project Manager	Bored piers do be considered	It is recommended that the deep foundation system on this project be designed in accordance with AS 2159-2009 'Piling - Design and Installation'. This code uses the limit state design method.	Geo Report and Structural drawings