

CPCBC4004

IDENTIFY AND PRODUCE ESTIMATED COSTS FOR BUILDING AND CONSTRUCTION PROJECTS

ASSESSMENT SUMMARY

The assessment activities for *CPCBC4004 Identify and produce estimated costs for building and construction projects* cover all aspects of the unit of competency. For Apprentices/Trainees, this includes supervisor completion of the Apprentice/Trainee Record (ATR).

Participants must read all the information given before starting any assessment task. The assessment tasks are intended to be fair, flexible, valid and reliable. If a Participant has any questions or requires alternative arrangements to be made such requests should be directed to their Trainer/Assessor, who should note such arrangements in the 'Assessor Comments' on the affected assessment. If a Participant feels they are not yet ready to be assessed, they should discuss their options with their Trainer/Assessor.

To satisfactorily complete the assessment, the Participant is required to answer all questions correctly and demonstrate their skills to industry standards. If a Participant does not answer all questions or perform all tasks, they will be deemed 'Not Satisfactory' for the task and 'Not Yet Competent' for the unit of competency.

The Trainer/Assessor can provide the Participant with additional information on interpreting the assessment outcomes and guide the Participant's options. If a Participant is still deemed 'Not Satisfactory' they will have the opportunity to undertake a supplementary assessment or appeal the result as per the process in the Student Handbook.

By signing below, the Participant acknowledges:

- They understand the assessment instructions and requirements, and consent to being assessed.
- The work submitted is to be their own work – with the work of/with others needing to be clearly acknowledged and documented.
- They consent to any photo/video recording of their work that occurs during assessment.

Participant name	Leah Hellewell
Participant signature	

Pre-requisite unit(s) to be achieved and authenticated prior to undertaking assessment

☒ Not applicable

Task	Date completed	Assessment Results	
Theory Exam	2/09/2024	☐ Satisfactory	☐ Not Satisfactory
Workbook	2/09/2024	☐ Satisfactory	☐ Not Satisfactory
Practical Assessment	Select Date.	☐ Satisfactory	☐ Not Satisfactory
Outcome for CPCBC4004	Select Date.	☐ Competent	☐ Not Yet Competent

Evidence requirements checklist (ticked by assessor and evidence supplied to RTO)

- | | |
|---|--|
| ☐ Theory Exam
☐ Workbook
☐ Practical Assessment
☐ Compliance sheet (HO1)
☐ Project Details (HO2)
☐ Materials and consumables costing (HO3) | ☐ Off-site production cost estimation (HO4)
☐ Labour cost estimation (HO5)
☐ Physical resources cost estimation (HO6)
☐ Risk mitigation sheet (HO7)
☐ Costings estimate spreadsheet template (HO8)
☐ Building Construction estimate spreadsheet (HO9) |
|---|--|

Assessor name	
Assessor signature	

CPCCBC4004

IDENTIFY AND PRODUCE ESTIMATED COSTS FOR BUILDING AND CONSTRUCTION PROJECTS

THEORY EXAM

Participant name	Leah Hellewell
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FOR THE PARTICIPANT

Instructions

- You will complete written questions as outlined on the following pages. You must attempt all questions and provide enough detail in your responses to demonstrate your knowledge.
- It is anticipated that you should complete this assessment within two (2) hours, but additional time may be allowed upon negotiation with the Assessor.
- You must complete all questions unassisted by the Assessor or other personnel but may refer to reference material as needed. All questions must be answered correctly for a 'Satisfactory' assessment outcome to be awarded.
 - An oral examination may be allowed under certain circumstances, whereby your answers will be documented by another party.
 - Any written questions that are incomplete, or not answered satisfactorily will need to be completed again after further training support.
 - If you answer a question incorrectly but modify your response, put your initials next to the written change (or the Assessor must initial a verbal change).

Resources required

Pen

FOR THE ASSESSOR

Instructions

- Where oral examination has occurred, ensure that this is acknowledged in writing (e.g. FT001 and Assessor Comments)
- All questions must be satisfactorily demonstrated by the Participant for a Satisfactory determination (indicated by an Assessor tick to the right of the question).
- Assessors are to complete marking in pen of a different colour to the Participant.
- If the Participant verbally modifies their response, write in the modified response verbatim and put your initials next to the written change.

ASSESSOR COMMENTS**As necessary, outline:**

- Details on reattempts, alternative arrangements or reasonable adjustments made.
- Where a Participant is deemed 'Not Satisfactory', provide recommendations for future training.

Q1. How is the construction industry in Australia regulated?

Answer

It is regulated by the use of the National Construction Code (NCC) and the use of the Building Code of Australia (BCA).



Q2. How do you determine which Australian Standards are mandatory and therefore enforceable?

Answer

Australian Standards become mandatory and enforceable when they are enforced by legislation or in the NCC.



Q3. Discuss how builders and others on construction sites ensure the safety of all on site.

Answer By Complying with Work Health and Safety Act (WHS).

This act mandates safety plans, risk assessments and the use of PPE.



Q4. Why do construction projects have to abide by environmental protection legislation and regulations?

Answer They have to abide by environmental legislation and regulations to minimise the impact the project has on the environment and ensure public health and safety.



Q5. Describe the Environmental Protection Authority (EPA) and how environmental protection is monitored in the state/territory you work.

Answer The EPA is there to prevent and protect the environment and prevent environmental harm.

In QLD the department of Environmental Sciences (DES) monitors Environmental protection by completing inspections, issuing permits and assessing impacts.



Q6. Explain why workplace policies and procedures are important in relation to legislation.

Answer

Workplace policies and procedures are important as they help to ensure a business/company is in compliance with any laws and regulations.



Q7. Why should you understand the 'scope' of the workplace when producing estimated costs for building and construction projects?

Answer

Understanding the scope of the workplace is important for producing accurate cost estimates. It ensure that every is considered to help avoid any unexpected expenses and ensure an accurate budget.



Q8. Explain the importance of construction schedules in relation to contracting tradespeople, material resourcing and inspections.

Answer Construction schedules are important as it keeps the project on track, prevents delays and ensure compliance and quality.



Q9. Discuss why builders should keep and maintain records of subcontractors, site supervisors and workers qualifications, competencies and licences.

Answer To ensure compliance with legal and safety standards. Having this documented also verifies that all are licenced and qualified for their roles, reducing risks of accidents and liability.



Q10. Why is it important to identify the site conditions during planning?

Answer It's important as it allows to identify any potential impacts that could affect the project costs, timeline and design.



Q11. The 'Managing the work environment and facilities Code of Practice' states that a PCBU must so far as reasonably practicable provide adequate and accessible facilities for the welfare of workers. Discuss what must be organised to meet this requirement.

Answer

To meet the requirements for the code the PCBU must:

- Provide a safe work environment
- Provide adequate facilities
- Have emergency plans in place
- Provide current training and information
- Have First Aid on site
-

☐

Q12. Why should you determine the temporary boundary fencing requirements for the site?

Answer

To ensure security, safety and compliance for the site

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Q13. Why is it important to establish communication protocols for the site?

Answer

To ensure clear, consistent and effective communication among the site and personnel

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Q14. Discuss what must be determined when identifying waste removal requirements.

Answer The types and volume of waste disposal methods and frequency of removal.

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Q15. What are the different costs to be considered when determining waste removal requirements for the site?

Answer Collection costs, transportation, disposal fees, on-site storage, permits and compliance costs.

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Q16. Discuss additional project-specific statutory, approvals or compliance costs that must be met.

Answer Additional project specific costs could include permits, insurances/bonds, safety compliance and zoning approvals.

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Q17. Discuss what a quantity take off is.

Answer Quantity take off is the process of estimating materials needed for a project.

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Q18. How can you make use of modern technology when producing a take off?

Answer Making use of Modern technology enhances a take off. By using BIM / AutoCAD , you can se up auto calculations and helps to improve accuracy. Certain platforms can also allow many people to access current data from anywhere and reduces the risk for error. Can also be a big time saver.



Q19. Discuss how you would estimate the cost of precast concrete components.

Answer Review design and specifications to understand requirements.

Produce a takeoff, measure dimensions and quantities to workout how much is required.

Calculate costs: (materials, labour, transporting etc...)

Account for any overhead costs and profit margin

Review costs and ensure everything has been accounted for.



Q20. Briefly discuss what is needed for the safe operation of the following physical resources at a current and active worksite in your state or territory.

Answer

Physical resource	Requirement for operation
Bulldozer	Must hold the correct and current licencing, have completed appropriate training, prestart checks and using the correct PPE. In Queensland, must hold a High-Risk work licence specific to Bulldozers.
Excavator	Must hold the correct and current licencing, have completed appropriate training, prestart checks and using the correct PPE. In Queensland, must hold a High-Risk work licence specific to Excavators
Hoist	Must hold the correct and current licencing, have completed appropriate training, prestart checks and using the correct PPE. In Queensland, must hold a High-Risk work licence specific to Hoists
Forklift	Must hold the correct and current licencing, have completed appropriate training, prestart checks and using the correct PPE. In Queensland, must hold a High-Risk work licence specific to Forklifts
Mobile Crane	Must hold the correct and current licencing, have completed appropriate training, prestart checks and using the correct PPE. In Queensland, must hold a High-Risk work licence specific to Mobile Cranes



Q21. Discuss what you need for the safe and effective operation of a compressor, generator or a pump at the work site.

Answer For the safe and effective operation of a compressor, pump or Generator those operating the equipment, staff should be Trained where required. Regular servicing/maintenance on the equipment, having the correct site preparations, correct PPE and having adequate power supply.



Q22. Describe how you can obtain the supplier prices for physical resources such as the hire of earthmoving equipment or smaller equipment such as generators.

Answer You can request quotes from suppliers via Phone, email or in person. Providing them detail on what you require, duration etc...



Q23. Discuss how you confirm additional transport costs that may apply to the hire of plant and equipment.

Answer To confirm if there is any transport costs, communicate with the supplier if there is any delivery/pick up fees. Review any contracts that may have been set up as this could also specify any transport costs.



Q24. Discuss what is meant by 'overhead costs' and why these must be included when calculating and estimating costs for a job.

Answer Overhead costs are costs that you have to consider when running a business. These include rent, supplies, utilities, software, etc... things that can't be directly added to a bill.



They must be included when calculating/estimating costs as if they aren't accounted for, the job may be underpriced leading to lower or no profit margins.

Q25. How is an overhead margin calculated?

Answer It can be applied as a set markup or percentage to the quoted price.



It can also be calculated by dividing the overhead costs by the gross revenue then multiplying 100 to get this as a percentage.

Q26. Discuss risks associated with estimating project costs that you must manage and mitigate.

Answer Risks Include: vendor issues, cost fluctuation, inaccurate estimates etc...
To manage and Mitigate these risks you can use historical data, allocate contingency budgets, evaluate vendors and monitor market trends. ☐

Q27. Describe how you manage and mitigate the risks associated with estimating costs?

Answer To manage and mitigate any risks associated with estimating costs you can: ☐

- Use previous data and compare
- Include a contingency allowance
- Review and update estimates regularly
- Perform risk assessments
- Consult with experts

CPCCBBC4004

IDENTIFY AND PRODUCE ESTIMATED COSTS FOR BUILDING AND CONSTRUCTION PROJECTS

WORKBOOK

Participant name	Leah Hellewell I
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FOR THE PARTICIPANT	
Instructions	
• You will complete written activities as outlined on the following pages. You must attempt all questions and provide enough detail in your responses to demonstrate your knowledge. • The timeframe for these tasks will be established by your Assessor or Training Plan, but additional time may be allowed upon negotiation with the Assessor. • You must complete all questions unassisted by the Assessor or other personnel but may refer to reference material as needed. All questions must be answered correctly for a 'Satisfactory' assessment outcome to be awarded. ◦ An oral examination may be allowed under certain circumstances, whereby your answers will be documented by another party. ◦ Any written questions that are incomplete, or not answered satisfactorily will need to be completed again after further training support. ▪ If you answer a question incorrectly but modify your response, put your initials next to the written change (or the Assessor must initial a verbal change).	
Resources required	
Pen	

FOR THE ASSESSOR	
Instructions	
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ASSESSOR COMMENTS

As necessary, outline:

- Details on reattempts, alternative arrangements or reasonable adjustments made.
- Where a Participant is deemed 'Not Satisfactory', provide recommendations for future training.

NOTE

At times, you will be provided with a specific business context to which you must respond, otherwise it is anticipated that you will use a workplace of your choosing (your own, or hypothetical) to provide the context to the task.

At all times, the responses in your assessment must reference **Australian** (State/ Territory or Federal) documentation, including legislation, regulations, codes of practice, standards and guidance publications when required.

ACTIVITY 1

Access the internet and locate the project plan below:

Case Study: Caloundra, Queensland

After reviewing the project plan, answer the following questions:

- What is the size of the land?
- Based on the floor plan, how many bedrooms does the house have?
- In which cardinal direction is the living room oriented?
- What type of slab is required?
- What type of building is shown for this project?
- Specify the materials used to support the sustainability of this construction.

a) What is the size of the land?
320 m2
b) Based on the floor plan, how many bedrooms does the house have?
3 bedrooms
c) In which cardinal direction is the living room oriented?
North
d) What type of slab is required?
Concrete Slab
e) What type of building is shown for this project?
Residential House
f) Specify the materials used to support the sustainability of this construction
Concrete slab, Reverse brick veneer, Lightweight construction, Insulation, Energy saving windows, Energy-efficient appliances, Solar photovoltaic system and Rainwater tank

Satisfactory
Outcome



ACTIVITY 2

Following organisational procedure, you have contacted the appropriate supplier to enquire about the price to hire a bulldozer and an excavator for a construction project across a 30 day period.

You have clarified workplace requirements that the supplier transport the plant from the supplier to the construction site and collect after use. The supplier has responded to with the following quote:

Plant Hire	Cost /per day	Transport cost (Combined delivery and pick-up)
1 x Track-mounted excavator	\$120.60	\$234.50
1 x Track-mounted bulldozer	\$131.70	

Complete the costing sheets below for each item.

Plant for hire:	Track-mounted Excavator	
Timeframe:	30 Days	
Operational Costs:		
Associated Costs:	Cost per day of use	Total
Fuel	42.60	1278.00
Operator's wage	84.20	2526.00
Maintenance	18	540.00
Hire costs	120.60	3618.00
Transport cost	234.50	234.50
Total cost	8196.50	

Plant for hire:	Track-Mounted Bulldozer	
Timeframe:	30 Days	
Operational Costs:		
Associated Costs:	Cost per day of use	Total
Fuel	42.60	1278.00
Operator's wage	84.20	2526.00
Maintenance	18.00	540.00
Hire costs	131.70	3951.00
Transport cost	234.50	234.50
Total cost	8529.50	

**Satisfactory
Outcome**



ACTIVITY 3

Swayze Construction recently built a new bedroom as an extension to an already-existing bungalow. These are the specifications and features of the new room:

- The room has a mat foundation that is 2 m deep.
- The room has four masonry walls:
 - Two walls are 4 m wide and 3.5 m tall.
 - Two walls are 3 m wide and 3.5 m tall.
- All walls are painted eggshell white.
- The steel tray roofing is 20 m² large.

Laying the mat foundation cost \$30,000.00. This includes labour and materials.

Putting up all the masonry walls cost \$3,500.00. This includes labour and materials.

Laying the steel tray roofing cost \$5,000.00. This includes labour and materials.

Painting the masonry walls cost \$2,000.00. This includes labour and materials.

Given the information above, calculate for the following:

- a) Cost of laying the foundation per metre of depth.
- b) Cost of building the masonry walls per square metre.
- c) Cost of laying the steel tray roofing per square metre.
- d) Cost of painting the masonry walls per square metre.

You must show the calculations to your answers.

Round up your answers to the nearest dollar.

a) Cost of laying the foundation per metre of depth

Total Sum, divided by the depth in meters.

\$30,000 divided by 2 meters
= \$15,000.00 per meter

b) Cost of building the masonry walls per square metre

Total Sum, divided by total area in m².

\$3,500 divided by 12 m²
= \$292.00 per M²

c) Cost of laying the steel tray roofing per square metre.

Total Sum, divided by area in m2

\$5,000 divided by 20m2
= \$250 per m2

d) Cost of painting the masonry walls per square metre.

Total sum, divided by sum of area m2

\$2,000 divided by 12 m2
= \$167 per m2

**Satisfactory
Outcome**



ACTIVITY 4

Swayze Construction recently built a new bathroom as an extension to an already existing bungalow. These are the specifications and features of the new bathroom:

- The foundation slabs cover an area of 12 m²
- A total of 20 m of pipes were installed as part of the bathroom's plumbing.
- There are eight new pieces of sanitary ware in the bathroom:
 - One toilet
 - Two washbasins
 - Two sink taps
 - Two shower taps
 - One shower outlet
- The floor area of the bathroom is 9 m². All of the bathroom floor is tiled.
- The bathroom has four walls.
 - Each wall is 3 m wide and 3 m tall.
 - Only half the height of the wall is tiled.
- Laying the slabs cost \$3,000.00. This includes labour and materials.
- Installing the pipes cost \$6,000.00. This includes labour and materials.
- Installing all the sanitary ware cost \$18,000.00. This includes labour and materials.
- Tiling the tiled sections of the bathroom (i.e. all of the bathroom floor and half the height of each wall) cost \$1,000.00. This includes labour and materials.

Given the information above, calculate for the following:

- a) Cost of laying of the slabs per square metre.
- b) Cost of installing the pipes per square metre.
- c) Cost of installing sanitary ware per unit.
- d) Cost of tiling per square metre.

*You must show the calculations to your answers.
Round up your answers to the nearest dollar.*

a) Cost of laying of the slabs per square metre

Total sum, divided by area in m²

\$3000.00, divided by 12m²
= \$250.00 per m²

b) Cost of installing the pipes per square metre. Total Sum, divided by length in meters \$6000 divided by 20 m = \$300.00 per m
c) Cost of installing sanitary ware per unit. Total Sum, divided by number of units \$18000 divided by 8 = \$2250.00 per unit
d) Cost of tiling per square metre. Total sum, divided by tiled area in M2 \$1000 divided by 9 m2 =\$111 per m2

Satisfactory
Outcome



