



**SUCCESSION
TRAINING**

BSB51415 Diploma of Project Management



Constraint Management

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ASSESSMENT WORKBOOK COVERSHEET

WORKBOOK:	Workbook 2
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Please read the Candidate Declaration below and if you agree to the terms of the declaration sign and date in the space provided.

By submitting this work, I declare that:

- I have been advised of the assessment requirements, have been made aware of my rights and responsibilities as an assessment candidate, and choose to be assessed at this time.
- I am aware that there is a limit to the number of submissions that I can make for each assessment and I am submitting all documents required to complete this Assessment Workbook.
- I have organised and named the files I am submitting according to the instructions provided and I am aware that my assessor will not assess work that cannot be clearly identified and may request the work be resubmitted according to the correct process.
- This work is my own and contains no material written by another person except where due reference is made. I am aware that a false declaration may lead to the withdrawal of a qualification or statement of attainment.
- I am aware that there is a policy of checking the validity of qualifications that I submit as evidence as well as the qualifications/evidence of parties who verify my performance or observable skills. I give my consent to contact these parties for verification purposes.

Name: Andrew Carpenter

Signature: 

Date: 29/09/20

WRITTEN QUESTIONS

Part 1 – Project Scope

1. Which of the following are project initiation documentation required at the start of the project?

Select all that apply.

☐	a. Communications log
☒	b. Project plan
☐	c. Work Breakdown Structure (WBS)
☐	d. Gantt Chart
☒	e. Project charter
☐	f. Risk management

2. Which of the following are components of a project scope-management plan?

Select all that apply.

☒	a. Project deliverables
☐	b. Project staff assignments
☐	c. Change request
☒	d. Project justification
☒	e. Product description
☐	f. Performance reports
☒	g. Project objectives
☐	h. Project funding requirements
☐	i. Quality metrics
☐	j. Budget forecasts

3. In your own words, discuss how project time and cost affect the project scope. Do not exceed 100 words.

Project time often helps to dictate the project cost. For example, the same building project running for 6 months will cost less than if the project is running for 12 months duration as preliminary costs would be greater. Project scope is affected by time and cost as they are constraints to what can be achieved for the set budget and time frame. The scope of a project can be altered to affect the time and cost, an example is a 7 storey building becoming 5 storeys to save time and cost. Project time cost and scope are fully interrelated so changes to one will affect the others. If time is constrained, additional resource or more specialised resource could be brought in to meet the time constraint. Equally, with a time constraint, the scope requirement (quality) could be reduced to meet critical objectives. For example; the customer requirement is to build 400 houses in 6 months to service 300 buyers who have placed deposits; the Project could employ more staff to achieve the 400 houses – or – focus on building 300 houses to service the paying customers

4. Which of the following are events or problem areas relating to project scope that could trigger the need for a formal change request?

Select all that apply.

☒	a. The deliverables may not meet quality requirements.
☐	b. Grammatical and typo errors are found in the project initiation documents.
☒	c. The deliverables may not be what the client wanted, even though they were covered in the project plan.
☐	d. The stakeholder considers the change request and advises the project manager.
☐	e. Observance of non-working holidays affecting project time.
☒	f. Additional quality requirements (such as new legislation or changes in standards) will render the deliverables non-compliant.
☒	g. Failure of equipment needed to produce the deliverables.
☐	h. Missing documentations in the project's information system.
☒	i. Raw materials are no longer available.
☒	j. Supplier or contractor closing business.

5. Which of the following are procedures that typically must be followed under change control processes?

Select all that apply.

☐	a. Project manager seeks advice from supervisor regarding changes in cost.
☐	b. Project manager assigns a project team member to recalculate for the critical path.
☒	c. Project manager provides the change request to the appropriate stakeholder for approval.
☒	d. The stakeholder considers the change request and advises the project manager.
☒	e. The project manager updates the project plan and other documentation where required.
☒	f. Project manager drafts the change request.
☐	g. Project manager delegates the authority to the project team members in advising other stakeholders of the changes.
☒	h. The project manager advises relevant stakeholders (sponsor, team members, etc.) of the changes.
☒	i. Details of the proposed change to be communicated to the project manager.
☐	j. The project sponsor and owner may automatically terminate the project contract.

6. The following are methods of measuring work outcomes and progress against plans. Match each method to its correct description.

Write the letters that correspond to your answers in the spaces provided.

	Method	Description
c	Units completed	a. Also known as the 'steps' method, this is used for projects that involve subtasks that need to be completed in an orderly fashion.
a	Incremental milestones	b. In this method, tasks that are being calculated tend to occur over a longer duration time and include multiple subtasks, where subtasks can have different units of measurements.
d	Start / finish	c. This method is used when project tasks are done repeatedly. Assuming that each task is completed at the same amount of time, resources and effort, each task is counted and totaled.
b	Weighted or equivalent units	d. This method is used to determine the percentage of the work completed and the percentage of the work that is still yet to be completed.

7. Which of the following are activities involved in decomposition of the total work project?

Select all that apply.

☐	a. Summarise project tasks in the form of a written report.
☒	b. Identify and analyse the deliverables and related work.
☒	c. Structure and organise the work breakdown structure (WBS).
☐	d. Arrange the smallest project tasks to form an aggregate representation of the total project task
☒	e. Decompose the upper work breakdown structure (WBS) levels into lower level detailed components.
☐	f. Calculate duration and resource effort for each project task.
☒	g. Develop and assign identification codes to the WBS components.
☐	h. Inspect whether work and deliverables meet requirements and product acceptance criteria.
☐	i. List resources required for each project task.
☒	j. Verify that the degree of decomposition of the work is necessary and sufficient.

8. List three (3) ways in which the Work Breakdown Structure (WBS) can be created.

- a. A WBS can be created by using phases of the project lifecycle as the first level of decomposition. With the product and project deliverables inserted at the second level
- b. A WBS can be created by inserting major deliverables as the first level of decomposition
- c. A WBS can be created by using subprojects which may be developed by organisations outside the project team such as the contracted work

9. The following are some problem areas in scope management. In your own words, briefly discuss each problem area.

Do not exceed 100 words for each discussion.

Problem areas	Discussion
Scope creep	This is where small incremental changes to scope occur throughout the project, and often the project manager isn't even aware of it until the changes become quite substantial. This is the reason a robust change management process is required. An example could be <i>Design</i> – during the design stage, a validation / realisation of the scope may lead to additional scope and requirements not anticipated in original scope.
Sponsor / project owner approval	At the planning stage the project manager would seek approval from the project owner/ sponsor to proceed with the project. The details that went into the project charter would be high level aimed at the project stakeholders and now that the scope management plan is detailing the scope the project owner/ sponsor may have the perception that is a misalignment between what he/ she thought they were getting to the actual project deliverables as detailed in the scope management plan. Change requests would be sent to the project owner/ sponsor for approval. Requirements – Initial requirements, when analysed in detail to create the Requirements Tractability Matrix (RTM) may far exceed the expectations with the Project Mandate. This is a key area to ensure Scope is maintained within the original Vision.
Project team accountability	For scope management to be effective the project team members need to fully understand the scope of the project whilst agreeing on how the project goals will be met. The scope statement goes into more detail and is geared more for the project manager and project team members. As the project deliverables are split into more detail the project team may treat these as independent units for the purposes of delivery. It is critical that the all members of the Project Team are briefed and understand the scope of delivery. Any side conversations or “small requests” must be communicated to the PM to ensure impact can be assessed and Change Management be initiated

10. In your own words, discuss the significance of scope management.

Do not exceed 150 words.

The success of the project is bound by the requirements with which it is to deliver. Additional, unplanned scope increases Risk against Time, Cost and Quality. Any adjustment or Change to the original agreed scope must be governed by the agreed Change Management process to ensure:

1. The additional scope request is understood (rationale)
2. A Change Request is always initiated for additional scope
3. Impact Assessment is provided to the Project Sponsor to gain approval of the Change to the Project outcomes.

11. The *PMBOK Guide* outlines the following processes in project scope management. List one (1) tool or technique used in each process.

Project Scope Management	Tool or technique
Collect requirements	Focus groups
Define scope	Product analysis
Create WBS	Decomposition
Verify scope	Inspection
Control scope	Variance analysis

12. Consider the roles and responsibilities of the project manager in project planning. List five (5) roles of the project manager in project planning and list at least one responsibility for each of these roles.

Roles (list five (5))	Responsibilities (List at least one (1) for each role)
Understanding the project	The project manager must fully understand and know the reason why the project is initiated.
Scope management	The project manager must ensure that he/she had taken down all the requirements and turned them into work packages that will soon be deliverables.
Time management	The project manager is responsible for scheduling the project and coming up with the schedule baseline.
Cost management	The project manager is responsible for coming up with the cost baseline
Quality management	The project manager must define what good quality means in your project from your stakeholders and plan the Quality Assurance and Quality Control activities to achieve them.

Part 2 – Project Time

- The following are estimation tools and techniques used in determining duration. Match each tool and technique to its correct description.

Write the letters that correspond to your answers in the spaces provided.

	Estimation tools and techniques	Description
b	Analogous estimating	a. This technique uses a statistical relationship between historical data and other variables to calculate an estimate for activity duration.
a	Parametric estimating	b. This uses parameters such as duration, budget size, weight, and complexity, from a previous, similar project, as the basis for estimating the same parameter to measure for a future project. This technique relies on the actual duration of previous, similar projects as the basis for estimating the duration of the current project.
e	Three-point estimating	c. This is guided by historical information. It provides duration estimate information or recommended maximum activity durations from prior similar projects. This can also be used to determine whether to combine methods of estimating and how to reconcile differences between them.
c	Expert judgement estimating	d. Contingencies are accounted for into the overall project schedule to account for schedule uncertainties.
d	Reserve analysis	e. This technique uses a mathematical formula to determine a weighted average of estimates. It uses the formula: $Te = \frac{To + 4 \times Tm + Tp}{6}$.

2. The following are estimation tools techniques used in determining activity resource. Match each to its correct description.

Write the letters that correspond to your answers in the spaces provided.

	Estimation tools and techniques	Description
d	Expert judgment	a. Several companies or organisations routinely distribute updated production rates and unit costs of resources for an extensive array of labour trades, material, and equipment for different countries and geographical locations within countries.
e	Alternative analysis	b. In this technique, when an activity cannot be estimated with a reasonable degree of confidence, the work within the activity is decomposed into more detail. The resource needs are estimated. These estimates are then aggregated into a total quantity for each of the activity's resources.
a	Published estimating data	c. This tool has the capability to help plan, organise, and manage resource pools and develop resource estimates.
b	Bottom-Up estimating	d. This technique is often required to assess the resource-related inputs to this process. Any group or person specialised with knowledge in resource planning and estimating can provide such expertise.
c	Project management software	e. These include using various levels of resource capability or skills, different, size or type of machines, different tools (hand versus automated), and make-or-buy regarding the resource.

3. In identifying the critical path, the following parameters need to be determined for each task. Discuss each parameter.

Do not exceed fifty (50) words for each discussion.

Parameter	Discussion
ES	This refers to earliest start for an activity to determine the critical path by looking at dependencies and interrelated tasks or activities that must be completed before the activity in question can be commenced. The idea is to find the “best line” to finish the project in the minimum amount of time.
EF	This refers to earliest finish for an activity to determine the critical path by looking at dependencies and interrelated tasks or activities that must be completed before the next activity can commence.
LF	This refers to latest finish for an activity. If this date is not met then slippage occurs, and the critical path is lost putting in jeopardy the whole project’s completion date. Acceleration would be considered if this occurred and a reorganisation of the critical path activities to mitigate the issue.
LS	This refers to latest start for an activity so as to not impact on the other activities if the completion of this activity is delayed. The duration of the activity would need to be taken into account including any “float time” to make sure that if all the terminal float was used the completion date of the activity did not affect the critical path. It is crucial that this date is met to ensure no knock on effects elsewhere.

4. Which of the following statements accurately explain the process of developing the project schedule, including the schedule baseline?

Select all that apply.

☒	a. Developing the schedule is the process of analysing activity sequences, durations, resource, requirements, and schedule constraints to create the project schedule.
☒	b. The project schedule and schedule baseline are developed or established using the activity lists, activity attributes, project scope statement as the bases.
☒	c. Entering the activities, durations, and resources into the scheduling tool generates the schedule baseline.
☐	d. Tools and techniques used in developing the project schedule and schedule baseline include decomposition of the total project work.
☐	e. Developing the schedule baseline starts and ends in the planning phase of the project.

5. Schedule control is the process of monitoring the status of the project to update project progress and manage changes to the schedule baseline.

Which of the following are processes that are involved in schedule control?

Select all that apply.

☒	a. Determining the current status of the project schedule.
☐	b. Defining activities or specific actions to be performed to produce project deliverables
☒	c. Influencing the factors that create schedule changes
☐	d. Decomposing total project work into its lowest levels.
☒	e. Determining that the project schedule has changed
☐	f. Estimating duration and resource effort for the project.
☒	g. Managing the actual changes as they occur.

6. Consider the methods used in project time management.
 - a. In your own words, discuss the application/use of the Gantt Chart. Do not exceed fifty (50) words.
 - b. List three (3) project data generated from the Gantt Chart.
 - c. List three (2) limitations of the Gantt Chart.

- a. A Gantt Chart is used as a visual aid to display all the project activities with their start dates, durations and completion dates. It is used to help schedule and plan the works. The order that the tasks and activities must be completed in will be shown in the chart. Dates are listed on the X-axis with tasks on the Y-axis. The start date and completion date of the project will be shown, the relationship between tasks is shown. It can be used to show project progress by way of a “drop line”. Key milestones can be calculated and shown such as roof on for a domestic house or topping out for a commercial building. Resource allocation can be planned using the chart as an activity with a short timescale that is critical such as foundations or piles can be planned to utilise additional labour resource or increased number of piling rigs so that the activity is completed in the shortest possible timeframe.
- b. The Gantt Chart can show the start and end date of the project, its phases, stages and individual tasks. Project commencement, completion and duration will be shown.
The Gantt Chart will show the relationships between the tasks.
The Gantt Chart provides a visual display of the schedule.
- c. The format (MS Project/ Primavera) is not common, so the project manager often needs to PDF the Gantt chart to distribute it.
The area of the Gantt chart page is very large and often difficult to print.

7. Consider the methods used in project time management.
- In your own words, discuss the application/use of the Critical Path Method. Do not exceed fifty (50) words.
 - List three (3) project data generated from the Critical Path Method.
 - Discuss the limitation of the Critical Path Method. Do not exceed fifty (50) words.

- This is the process of looking at all of the activities that must be completed and calculating the 'best line' – or critical path – to take so that you'll complete the project in the minimum amount of time. The method calculates the earliest and latest possible start and finish times for project activities, and it estimates the dependencies among them to create a schedule of critical activities and dates.
- Parameters of each task: Earliest Start, Earliest Finish, Latest Start, Latest Finish.
Critical path
Critical elements in the project
- It is believed that the methodology was developed for routine and complex projects with the possibility of a minimum change in the completion time of tasks. CPM loses its usefulness in more chaotic projects. For bigger projects, CPM networks can be complicated too. It also does not handle the scheduling of the resource allocation.

8. The following are tools and techniques used in project scheduling. Match each tool and technique to its correct description.

Write the letters that correspond to your answers in the spaces provided.

	Project scheduling tools and techniques	Description
b	Schedule network analysis	a. This is the process of looking at all of the activities that must be completed, and calculating the 'best line' – or critical path – to take so that you'll complete the project in the minimum amount of time. The method calculates the earliest and latest possible start and finish times for project activities, and it estimates the dependencies among them to create a schedule of critical activities and dates.
a	Critical Path Analysis	b. This is a graphic representation of the project's activities, the time it takes to complete them, and the sequence in which they must be done. Project management software is typically used to create these analyses. Common formats for this include Gantt Charts and PERT Charts
d	Schedule compression	c. They expedite the scheduling process by generating start and finish dates based on the inputs of activities, network diagrams, resources, and activity durations.
c	Automated scheduling tools	d. This tool helps shorten the total duration of a project by decreasing the time allotted for certain activities. It's done so that you can meet time constraints, and still keep the original scope of the project.

9. Which of the following statements accurately explain the work breakdown structure (WBS) including its application in project schedules?

Select all that apply.

☒	a. Work breakdown structure (WBS) is the subdivision of project deliverables and project work into smaller, more manageable components.
☐	b. The work breakdown structure (WBS) identifies project personnel who are responsible for each project task.
☒	c. Work breakdown structure (WBS) helps define activities of the project which provide the basis for estimating, scheduling, executing, and monitoring and controlling the project work.
☐	d. The work breakdown structure (WBS) is used to represent the full project scope of the project.
☒	e. The work breakdown structure provides the relationships among all components of the project and the project deliverables.
☒	f. The work breakdown structure (WBS) is used as the basis for the scope baseline which is used in identifying activities or specific actions to be performed to produce of the project deliverables.
☐	g. Project work at lowest levels are not included in the work breakdown structure (WBS)

Part 3 – Project Cost

1. The following are processes involved in project cost management including budgeting the cost of the project. In your own words, discuss each.

Do not exceed fifty (50) words for each discussion.

Estimating costs	Estimating the costs is the process of developing an approximation of the monetary resources needed to complete the project activities. Cost estimates are a prediction that are based on the information known at a given point in time. It includes the identification and consideration costing alternatives to initiate and complete the project.
Determine budget	Determining the budget is the process of aggregating the estimated costs of individual activities or work packages to establish an authorised cost baseline, which includes all authorised budgets, but excludes management reserves.
Control cost	Controlling costs is the process of monitoring the status of the project to update the project budget and managing changes to the cost baseline. Updating the budget involves recording actual costs spent to date.

2. The following are different tools and techniques used in cost management. Match each to its correct description.

Write the letters that correspond in the spaces provided.

	Strategy	Description
b	Analogous estimating	a. This is used to establish both the contingency reserves and the management reserves for the project with regards to cost.
c	Parametric estimating	b. This strategy uses the values of costings from a previous, similar project as the basis for estimating the same parameter or measure for a current project. This is used when the current project is similar to a previous one in terms of defined parameters.
e	Cost aggregation	c. This uses a statistical relationship between historical data and other variables to calculate and estimate for cost. This technique is used to produce higher levels of accuracy depending upon the sophistication and underlying data built into the model. Estimates made through this project can be applied to the whole project or to segments of a project.
a	Reserve analysis	d. These are used to develop mathematical models to predict total project costs.
d	Historical relationships	e. Cost estimates are combined by work packages in accordance with the Work Breakdown Structure. The work package cost estimates are then combined for the higher component levels of the WBS and ultimately for the entire project.
g	Earned value management	f. In this technique cost performance measurements are used to assess the magnitude of variation to the original cost baseline.

f	Variance analysis	g. This is commonly used as a performance measurement. It integrates project scope, cost, and schedule measure to help the project management team assess and measure project performance and progress.
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3. List four (4) processes which are followed in monitoring the project costs against outcomes to ensure that additional expenses are not incurred.

- | |
|--|
| <ul style="list-style-type: none"> a. Using an effective tool for managing the project finances such as a spreadsheet or financial management software b. Sending invoices on a regular (or monthly) basis. c. Paying invoices promptly. d. Checking incoming invoices against contracts, quotes, agreements, etc. |
|--|

4. You are appointed as one of the Project Managers of Bigger than Big Corporation. As one of the Project Managers, it is essential that you have a full understanding of the organisation's policies and procedures relevant managing projects within Bigger than Big.

Review Bigger than Big Corporation's [Project Management Policy and Procedures](#) (*username: cstclearner password: CstcPty@123*).

- a. In your own words, discuss the organisation's Project Management Policy, including its background, purpose, and its scope.
- b. In your own words, discuss the organisation's Project Management Procedures including their purpose and scope.
- c. In your own words, list and discuss the Project Phases prescribed in the organisation's Project Management Procedures.

Do not exceed 100 words for each discussion.

- a. The policy reflects the Mission and Values of the company and the consistent use of project management procedures and templates to facilitate the implementation of strategic priorities. This policy is designed to specify the minimum essential elements in the management of projects to assist in articulating scope, involving stakeholders, managing risk and maximizing project benefits. The purpose of the policy is to establish a consistent approach within the company to initiation, planning, implementation and delivery of projects. It is designed to improve the way projects are managed by setting out guidelines that can be adopted and used for each project as it sees fit. Project objectives may be shared with the company's own vision and values, so the framework of policies and procedures are outlined for incorporation as necessary.
- b. Bigger than Big Corporation's Project Management Procedures articulate their management policy and project management lifecycle by defining the processes that are performed throughout the life of a project to ensure efficient and effective management of projects. A project is described as body of work with distinct start and end dates that progresses through defined phases and adheres to a formal project management methodology resulting in the transformation of a business function and /or delivery of one or more outcomes.
- c. **Pre-initiate Phase** – builds foundation of project, often identified when problem solving required, process improvement required or implementation of a new service is required. Defines what project will attempt to achieve once business justification approved. A business case will often be established at this stage.
- Initiate Phase** – Process of determining how the project will be executed. Preparation of detailed model of work required to achieve project objectives and confirmation of the in-principle funding decisions and project arrangements suggested in business case. The Project Initiation Document is prepared at this stage.
- Plan Phase** – Further detail about how the project will be conducted added at this stage including detailed schedule and budget information.
- Implement Phase** – Delivery Phase preparation and approval of a detailed implementation plan that is added to the Project Initiation Document. The implementation plan consists of all the activities related to systems, staff, processes and training that must be completed to achieve the intended project outputs.
- Close Phase** - The Close Phase is the formal closure of the delivery component of the project. It has two main outcomes which are;
The handover of project outputs to the operational areas responsible for ongoing support and maintenance (if applicable to the project);
The evaluation of the success of the project (also known as Benefits Realisation Analysis).

Part 4 – Project Quality

1. In your own words, discuss each of the following key concepts in Quality Management.

Do not exceed 100 words for each discussion.

Key Concepts in Quality Management	Discussion
Customer satisfaction	Customer satisfaction is a key measure and indicator of the project's quality. Keep in mind that project quality management is primarily concerned with the product of the project and the management of the project. If the customer is not satisfied with the product produced by the project or it did not meet their needs or if the way the project was run didn't meet their expectations, then the customer is very likely to consider the project quality as poor, regardless of what the project manager or team thinks. As a result, not only is it important to make sure the project requirements are met, managing customer expectations is also a critical activity that you need to handle well for your project to succeed.
Prevention over inspection	The Cost of Quality (COQ) includes money spent during the project to avoid failures and money spent during and after the project because of failures. These are known as the Cost of Conformance and the Cost of Nonconformance.
Continuous improvement	Continuous improvement is a concept that exists in all of the major quality management approaches such as Six Sigma and Total Quality Management (TQM). In fact, it is a key aspect of the last concept, prevention over inspection. Continuous improvement is simply the ongoing effort to improve your products, services, or processes over time. These improvements can be small, incremental changes or major, breakthrough type changes. From a project perspective, this concept can be applied by analysing the issues that were encountered during the project for any lessons learned that you can apply to future projects. The goal is to avoid repeating the same issues in other projects.

2. In your own words, discuss the difference between Quality Assurance and Quality Control.

Do not exceed 100 words.

Quality Assurance (QA) is process oriented. It is the demonstration that an entity meets all quality requirements. This is done through adopting a standard set of processes and techniques such as review, training, facilitation, etc. It is sometimes known as defect prevention. This is primarily an audit function.

Quality Assurance is the testing of processes in producing the product. The planned and systematic activities implemented in a quality system so that quality requirements for a product or service can be fulfilled.

Quality Control (QC) is product oriented. This is the testing and detection of defects. This is primarily an inspection function.

Quality Control is the testing of the end result products to uncover defects and reporting to management to make the decision to allow or deny product release

3. The following are standards that could apply in various projects. In your own words, discuss each standard. Do not exceed fifty (50) words for each discussion.

People standards	The requirements of the people working on the project. People standards include stating the qualifications and experience required for the specific tasks that need to be undertaken to deliver the project. Professional development and training of the staff may be a requirement. This would be the case for professional people like Doctors, Architects and Quantity Surveyors.
Process standards	These are the standards for the processes in delivering the project, involving quality assurance auditing. Specialist software could be used for this project controls function.
Product / service standards	These are the standards that look at the end product, involving quality control standards. For a major infrastructure project examples of this could be monitoring to ensure compliance with the Australian Standards, DMTR specifications, Heavy Vehicle National Law and National Rail Law

4. The following are quality assurance and control methods, techniques and tools. Match each to its correct description.

Write the letters that correspond to your answers in the spaces provided.

	Methods, tools, techniques	Description
h	Benchmarking standards	a. This is a distribution of dots comparing two variables. If the two variables are completely independent you would expect the dots to be evenly distributed randomly across the graph. If there is a strong relationship though, the graph will show a straight line or a mathematical curve going through it.
g	Brainstorming sessions	b. These are graphical representations showing a visual impression of the distribution of data. Usually it shows the frequency up the Y axis of the bar graph and the measuring variable along the X axis.
d	Control charts	c. It is a graph where the X axis is time dependent. This allows you to look for time-based cycles in processes.
f	Flowcharts	d. These are also known as Shewhart charts or process-behaviour charts. These charts are used to statistically measure the quality characteristics of a process are under control. This is based on a statistical analysis where a centre line is drawn for the mean of the output, then an upper control limit and a lower control limit is created either side of the centre line. The process is then measured over a period of time and the results plotted on the graph. Once the graph has been created, it can be analysed to test the stability of the process and also any cycles of errors.
b	Histograms	e. It is very similar to a histogram, but it includes a line over the graph indicating the cumulative distribution of the results.

e	Pareto charts	f. A diagram that represents a process. It shows the steps visually as a series of boxes with arrows in between them showing the work flow. Rectangular boxes represent tasks and diamond shaped boxes represent decision points, where the flow can split into two or more directions.
c	Run charts	g. It occurs when a group meets and is presented with a scenario where they creatively come up with a range of solutions.
a	Scatter grams	h. These may be dictated to by legislation through Federal, State or Local Government regulations, and may be dictated by industry bodies.

5. List five (5) responsibilities of the project manager in quality management.

- a. Determining the quality standards for the project deliverables. Planning
- b. Determining the quality standards for the project processes.
- c. Conducting, or coordinating, project audits.
- d. Reporting of quality outcomes to project sponsor (and other stakeholders if relevant).
- e. Leading, or at least coordinating, project QA and QC activities.

6. The following are methods used in managing continuous improvement. In your own words, discuss each method.

Do not exceed fifty (50) words for each discussion.

Six Sigma	Six Sigma is a set of techniques and tools for process improvement. It seeks to improve the quality of the output of a process by identifying and removing the causes of defects and minimising variability in manufacturing and business processes
Lean Six Sigma	Lean Six Sigma is a methodology that relies on a collaborative project team effort to improve performance by systematically removing waste; combining lean manufacturing/lean enterprise and Six Sigma to eliminate the eight kinds of waste Time, Inventory, Motion, Waiting, Overproduction, Over-processing, Defects, and Skills (abbreviated as 'TIMWOODS').
Total Quality Management	Total Quality Management is a comprehensive and structured approach to project management that seeks to improve the quality of products and services through ongoing refinements in response to continuous feedback.

CASE STUDY

Instructions to Student

These case studies are hypothetical situations which will not require you to have access to a workplace, although your past and present workplace experiences may help with the responses you provide. You will be expected to encounter similar situations to these in future as you work in a project team environment.

In the real world you are likely to encounter the situation where you enter a project, taking over from another project manager. The documentation that is handed over to you is not necessarily up to scratch, and there could be serious issues with the project. This assessment captures that real life scenario.

The case studies are the first part of dealing with “multiple complex projects” required in all the units of this subject. The other assessment covering this requirement is the practical assessment. When you have completed the case studies you will be able to commence the practical assessment which covers the generic skills needed to function as an effective project team member. This assessment on the other hand covers the application of the underpinning knowledge and background theory.

Introduction

You have been appointed as a project management consultant to the project team at Awesome Landscapes Pty Ltd. Specifically, you are required to provide independent advice on seeing their current project throughout its entire lifecycle.

You have already provided advice to Awesome Landscapes in the previous workbook.

Today is 24 July 2016. The project will shortly progress into the implementation stage. You have now been provided with up-to-date project documentation below, including an updated Project Plan. The project steering committee have reviewed the Project Plan, but they wish to have you conduct an independent evaluation of the project prior to signing it off.

As part of your consultancy services, you will be assisting the team in addressing issues around project constraints by answering the questions that follow this scenario.

The documents you need to complete the succeeding tasks can be accessed through the following links:

[Project Charter version 2 \(.pdf\)](#)

[Project Plan version 2 \(.pdf\)](#)

[Project Gantt Chart version 2 \(.mpp\)](#)

[Project Gantt Chart version 2 \(.pdf\)](#)

[Project Network Diagram version 2 \(.pdf\)](#)

(username: cstclearner password: CstcPty@123)

Note: These documents were generated in year 2016. For the purpose of this assessment, refer to ‘2016’ as the current year and ‘2017’ as the succeeding year.

1. List the three (3) project deliverables in Phase 1.

- a. Preparation for the construction of buildings by means of removal of vegetation in areas being cleared
- b. Retaining walls
- c. Access Roads

2. Discuss the project constraints in terms of scope, time, cost, and quality.

Scope	The project scope includes pre-building, building support and planting/ landscaping.
Time	The project commences Friday 27 th July 2020 with a completion date of Monday 11 th March 2021.
Cost	The total project budget is \$462,153.00 with a project value of \$550,000.00 excluding GST being paid by Massive Eco-Development Corporation for the works.
Quality	The quality requirements for the project include Cascade Peak Shire Council Regulations, General Building Regulations and Licences for Operation of Equipment

3. Review the project schedule as set out in the Project Plan and the Gantt Chart
Arrange the following tasks in the proper sequence as dictated in Phase 3 of the critical path.

Write 1 – 12 in the spaces provided; where 1 go first and 12 go last.

1	Remove weeds 15/9/20
11	Plant additional plants 3/3/21
3	Move gravel to car park 10/1/21
2	Expand car park 5/1/21
12	Remove greenhouses 8/3/21
9	Plant plants from greenhouses 23/2/21
4	Seal car park 13/1/21
7	Soil preparation 6/2/21

8	Add boulders 9/2/21
6	Construct stone paving pathway 24/1/21
10	Purchase additional plants 28/2/21
5	Landscape over old access roads 17/1/21

4. Review the Project Plan. The change request has outlined one change in the scope of the project.
- What is the change in scope?
 - How does this change in scope impact the overall duration of the project?
 - How does this change in scope impact the quality aspect of the project?

- Addition of three new retaining walls and services to additional units as per updated site plan. Increase in cost of road gravel by \$6,500
- The overall duration change is one week as the project has commenced a week earlier to allow for the scope change introduced by Change request 1. Additional 80 hours of resources, 40 hours of project management, 40 hours of project support, additional 40 hours for digging channels, additional 40 hours for filling and compacting channels, additional 40 hours for clear around surface infrastructure, additional 24 hours for excavate holes, additional 24 hours for excavate channel for pipes, additional 24 hours for fill channels and compact, additional 24 hours for clear around surface infrastructure. More equipment is required – additional 5 days duration for supply/ deliver equipment.
- More resources are needed therefore there will be more quality control paperwork to complete i.e. checking the additional resources have the competency paperwork such as earthmoving tickets etc

5. Why does the change request only list one change in project cost, yet when you look at the financial tables the costs seem to have increased in numerous parts of the project not even related to the item in the change request?

Do not exceed 100 words.

Although the change request only relates to additional retaining walls and services to additional units this has an affect on many other aspects of the project such as the labour, plant, material and resource requirements. This in turn has an affect on the quality requirements as there are more items to ensure quality on. All the support functions such as planning, project management and supervision are all increased due to the additional requirements.

6. Who is responsible for working out these impacts of what initially seemed to be such a simple change, and ensuring all affected stakeholders understand the impact of such a change?

The project manager.

7. Access and review the Gantt Chart version 2.
- What important tasks are not included in the project Gantt Chart?
 - Discuss why these tasks must be included in the Gantt Chart? Keep your discussion within 100 – 200 words in length.

- The quality assurance & control audits performed by the project manager and council.
- These tasks need to be included in the Gantt Chart because time needs to be allowed to conduct them and preceding tasks may not be able to commence until such time as the audits are completed to a satisfactory standard.

8. List the three (3) personnel who signed off on the change request.

- Susan Wills
- Stephen Lyons
- Kim Nguyen

9. What is the total increase in cost of the project as a result of this change request?

\$17,900.00

10. List five (5) exclusions under Stage 2 – Building Support of the Scope Management Plan.

- a. Monitoring and maintaining partially and fully constructed buildings.
- b. Monitoring and maintaining the main road.
- c. Creation of additional retaining walls.
- d. Onsite security (this is provided by the chalet development project).
- e. Any building, decorating or furnishing of the chalets.

11. Review the Project Plan. Does it follow the change management procedure? Explain your reasoning.

Do not exceed 50 words.

The Project Plan mostly follows the change request procedure by adhering to the following protocols: -

A change request form has been populated by the Project Manager using the template.

Although the change request does not appear to be signed, we must assume that it has gone to the Council Planning Manager as Council approval granted is noted on the change request.

We must also consider that the Massive Eco-Development Program Manager issued the change request to the Council for approval as would be their responsibility to do so in this instance.

The project plan has been modified to incorporate the change request.

The change register has not been updated so a failure in this instance.

The changes in project documentation have been highlighted in yellow as is the requirement for CR1.

The change request and all modified project documentation should have been tabled at a face to face meeting with the Massive Eco-Development Program Manager, Council Planning Manager and Director of Awesome Landscapes. We do not know that this has happened but may have been conducted via Teams due to Covid-19 restrictions.

The changes are then implemented by the Awesome Landscapes Project Manager.

12. Access and review the Gantt Chart version 2. It shows double bars for each task.
- What do the coloured bars  represent?
 - What do the grey bars  represent?
 - Why do the grey and coloured bars not match up in the Gantt chart?

-  Blue Bar : Progress ;
 Green : Manual Progress
- Grey Bar in the Gantt Chart Legend,  indicates the External Task.
-  As per the project plan provided, the Phase 1: Pre Building phase is to be completed on 21st Sep 2020. Whereas in the Gantt chart, finish date is provided as 22nd Sep 2020. The manual summary roll up bar (green) indicates end date as 23rd Sep 2020.
By using Microsoft project software, a potential scheduling problem is identified in activities 1 & 2 on Gantt chart due to manual scheduling. All other activities are auto scheduled. The actual finish date as per the Gantt chart should be 23rd Sept 2020.

13. Assuming the project runs on schedule, list two (2) tasks that should be in progress if Sam was to visit the site on Monday 22 August.

Do not include the task 'Project Management'.

- Install road gravel
- Delivery of granite borders

14. If Sam was to visit the site on Thursday, 22 September, he will see that two (2) tasks are in progress, namely:
- Construction of retaining walls.
 - Install and compact soil behind walls.

According to the procedure documents, these two activities cannot happen at the same time. The retaining wall has to be built first. Once construction is completed, the soil needs to be added behind. Why are these two tasks in progress on the same day?

The programme (Gantt Chart) does not make sense as the construction of retaining walls commences 5/9/20 and completes 23/9/20 yet the installation and compacting soil behind walls commences 25/8/20 and completes 15/9/20 which is before the walls are complete so physically impossible.

15. According to the Gantt Chart, if there is a delay in the completion of Task 57 'Construct stone paving walkway',
- Which tasks, if any, are immediately delayed?
 - Will this delay push out the completion of the project? Why or why not?
 - Discuss how this could affect the resourcing of the project.
 - List one (1) risk that could arise from this issue.

- Landscaping/ planting & erect signage
- Yes as its on critical path
- Additional resources would be required to complete the signage and landscaping in a faster duration
- This would negatively impact the budget

16. What is the total budget for the project expenditure?

The total project budget is \$462,153.00

17. Sam is very concerned about the cash flow of the project.
- What is the problem?
 - What would you suggest be done to rectify the cash flow issue?

- | |
|---|
| <ol style="list-style-type: none">Sam's cashflow is wrong because he has overestimated the costs for each stage.The cashflow should be recalculated to reflect the actual cost each stage. |
|---|

18. Discuss whether Awesome Landscapes should seek increased funding from Massive Eco-development Corporation to absorb some or all of these cost increases.

Your discussion must be 200 – 300 words in length.

Guidance:

The change requests have incurred extra expense, yet the funding to be paid by Massive Eco-development Corporation has not changed.

If you believe Awesome Landscapes should seek increase funding from Massive Eco-development Corporation, provide a strong argument for your case. If not, explain your reasoning.

We are only aware of one change request CR1 so if additional changes have been instructed by the Client why is the project plan/ change register not updated to reflect these changes.

In order to justify a case for asking Massive Eco-Development for additional funding to absorb the increased costs we need an understanding of what has caused the increased costs.

Sam as the PM needs to speak to his team of supervisors and project support staff to find out why the costs have increased.

The possible reasons for increases could be related to cost of raw materials being greater than budgeted for due to cost increases in the supply cost, presumably this would be Awesome Landscapes risk as they would be on a fixed price contract therefore no entitlement for additional costs.

Another reason for cost increases could be due to unproductivity of Awesome Landscapes resources, again no cost to the Client.

If Awesome Landscapes are late on an activity/ task and have impacted the critical path meaning they were required to bring in additional resources to try and recover the lost time this would be Awesome Landscapes cost.

If on the other hand the Client has introduced additional requirements without going through the formal change request procedure, then Sam needs to establish if this is the case, gather the substantiation and then raise the change requests retrospectively.

Sam must then go to the Client for additional funding.

19. Complete the following Audit Template with the standards determined in the previous question (Case Study Question 18). This will be given to an internal auditor to audit the financial processes at various points along the project.

Guidance: Complete only the fields highlighted in yellow. Do not complete the 'Assessment' and 'Comment' fields under 'Audit of Management of Project'.

Quality Audit Template

Project Name: *Cascade Peak Chalets Landscaping Project*

Prepared by: Sam Ng

Date:

Project Manager: *Sam Ng, Awesome Landscapes*

Project Phase:

Overall Project Status:

Audit Date:

Audit Number:

Audit Leader:

Audit Team:

Goal(s) of This Specific Audit: To establish if quality assurance and quality control measures in relation to Council & Building Regulations have been met.

Audit of Management of Project:

1. Did the Cascade Peak Shire Council sign off on all aspects of the development in a timely fashion with no recommendations?

Assessment:

Comment:

2. Was the preservation of removed vegetation signed off.

Assessment:

Comment:

3. Was erosion control and soil stability acceptable.

Assessment:

Comment:

4. Were Standards for human waste management in environmentally sensitive areas met.

Assessment:

Comment:

5. Was landscaping and plant selection on properties adjacent to national parks criteria satisfied.

Assessment:

Comment:

6. Were noxious weeds regulations followed.	Assessment:	Comment:
7. Did diversion of waterways meet the criteria.	Assessment:	Comment:
8. Were building regulations adhered to for construction of structural retaining walls.	Assessment:	Comment:
9. Were building regulations adhered to for standards for underground services and utilities.	Assessment:	Comment:
Overall Assessment of Management of Project:		
Recommended Action(s)/Lessons Learned Regarding Management of the Project:		
1. 2. 3.		
Additional Audit Comments:		
1. 2. 3.		
Have you attached additional material(s)?		☐ ye ☐ n
Name(s) of attachment(s):		
1. 2.		
Audit Report Submitted To:		Date:

20. Sam has provided you with the following audit from a previous project (landscaping the new Cascade Peak Shopping Centre). Evaluate the audit report below and answer the following questions:
- What was the cause of the unsatisfactory results?
 - What action would you recommend to prevent the issue coming up again in this project?

- Communication issues between the PM and Site Supervisor as not enough information is being provided to the Site Supervisor to explain the tasks that are in the Gantt Chart with the necessary supplementary information required such as site plans and specifications etc.
- Ensure Project Manager prepares detailed plans of work in advance of when they are required together with supplementary information and provide to Site Supervisor.

Quality Audit Template		
Project Name: <i>Cascade Peak Chalets Landscaping Project</i>		
Prepared by: <i>Sam Ng</i>		
Date: <i>17 August 2015</i>		
Project Manager: <i>Sam Ng, Awesome Landscapes</i>		
Project Phase: <i>Implementation</i>	Overall Project Status: <i>On schedule</i>	
Audit Date: <i>17 August 2011</i>	Audit Number: <i>26</i>	Audit Leader: <i>Sam Ng</i>
Audit Team: <i>Sam Ng, John Cowley, Ann Deak.</i>		
Goal(s) of This Specific Audit: <i>To evaluate the communication and reporting processes.</i>		
Audit of Management of Project:		

1. Are tasks being communicated to site supervisor in a reasonable amount of time?	Assessment: Satisfactory.	Comment:
2. Are tasks being communicated to site supervisor of sufficient detail?	Assessment: Not satisfactory.	Comment: Tasks only being communicated as per Gantt chart. Site supervisor having to seek clarification regularly on requirements of tasks.
3. Are tasks being communicated by the site supervisor to the team members and contractors done in a reasonable amount of time?	Assessment: Not satisfactory.	Comment: Timing of communication can be improved if there wasn't the need for clarification of the details of the tasks.
4. Are tasks being communicated by the site supervisor to the team members and contractors of sufficient detail?	Assessment: Satisfactory.	Comment:
Overall Assessment of Management of Project: Tasks being communicated to the supervisor do not have the level of detail required by the site supervisor. In particular detailed plans are not provided with the task briefs. Some delays in commencing tasks have been experienced as the site supervisor has awaited clarification from the project manager.		
Recommended Action(s)/Lessons Learned Regarding Management of the Project: 1. Project manager to prepare task briefs in enough time to add the required level of detail. 2. Task briefs are to be supplied with all relevant attachments such as detailed plans.		

Additional Audit Comments:

- 1.
- 2.
- 3.

Have you attached additional material(s)?☐ ye ☒ x ☐ n**Audit Report Submitted To: Kim Nguyen****Date:****24/08/2015**

21. The quality plan is very weak on cost management. Write a Cost Management Plan (of 200 – 300 words) for managing the quality of the financial processes while the project is in progress.

Guidance: Your Cost Management Plan must cover the following quality objectives and criteria.

- a. Meeting with contractual requirements.
 - b. Paying invoices on time.
 - c. Ensure invoices are sent out in time.
 - d. Ensuring financial reporting is done on time.
 - e. Include a calendar of when payments are likely to be due.
 - f. Comparison of actual cash flow against projected cash flow.
-

The budget for the project is \$462,153 which considers CR1.

The funding for the project is \$550,000.

The draw down procedure for payments is 50% at commencement, 20% at completion of Phase 1, 20% at completion of Phase 2 and 10% at completion of Phase 3.

Progress claims will be submitted on time in accordance with the contractual requirements.

Invoices will be raised on time in accordance with the contractual requirements.

Payment Schedule 1	Progress Claim due	Invoice Raised	Payment due	Amount exc GST
Commencement Phase 1	27/7/20	1/09/20	29/9/20	\$275,000
Completion Phase 1	22/9/20	1/10/20	29/10/20	\$110,000
Completion Phase 2	5/01/21	1/02/21	1/03/21	\$110,000
Completion Phase 3	10/03/21	1/04/21	29/04/21	\$55,000

The most important function for the project administrator is ensuring they adhere to the above schedule when raising claims and sending invoices to make sure the cash position is always positive.

The project administrator needs to ensure our liabilities are met in a timely manner.

All timesheets for direct employees to be submitted weekly no later than the Tuesday of the week following in which the work was carried out, these are to be processed ensuring that all employees are paid fortnightly. Tasks carried out by direct employees are to be coded and then analysed to ensure we are tracking actual costs for tasks against the budget and we know what we have spent on any task at any time.

Project Manager responsible for analysing actual costs and tracking costs against budget monthly as well as forecasting future liabilities.

Project administrator to arrange payment of all invoices as follows: -

For suppliers' invoices become due for payment in the final week of the stage they are performing the tasks in. Payment is due immediately upon completion. Retention /security should be held at a rate of 5-10% on each payment made to deal with any defective workmanship during the defects liability period. This money will then be paid 12 months after completion of the subcontract works.

For purchases the assumption is that all purchases occur during the first week of each stage and will become due for payment 30 days after receipt of invoice.

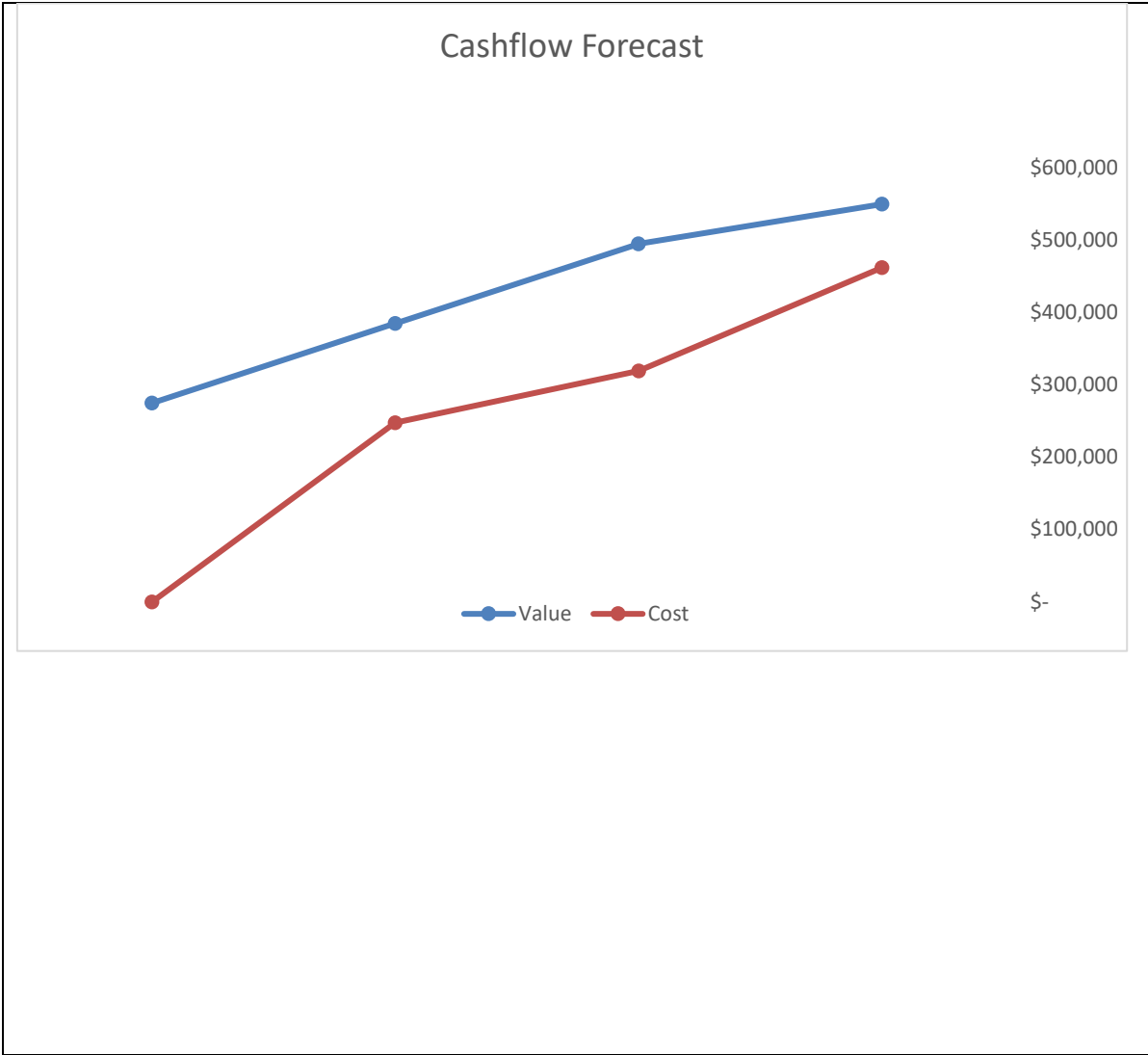
All invoices should be cost coded and analysed against the budget by the Project Manager on monthly basis so we can track actual costs against budget and forecast costs to completion.

Table 2 should be used to establish actual costs against budget for each phase of the works.

Cost Type	Direct Costs	Budget	Actual	Procurement	Budget	Actual	Suppliers	Budget	Actual
Project Commencement									
Phase 1									
Phase 2									
Phase 3									
Project Completion									

The project cashflow should be analysed monthly to ensure our projected spend is on target and compared against the budget with actual costs monthly.

A project cashflow s-curve could be produced to track forecast value with actual cost as below diagram.



WORKBOOK CHECKLIST

When you have completed this workbook, please ensure you have completed all parts of it:

- ☐ **Written Questions**
 - ☒ **Part 1 – Project Scope**
 - ☒ **Part 2 – Project Time**
 - ☒ **Part 3 – Project Cost**
 - ☒ **Part 4 – Project Quality**
- ☒ **Case Study**

IMPORTANT REMINDER

Students must achieve a satisfactory result to ALL assessment tasks to be awarded COMPETENT for the unit relevant to this subject.

To award the student competent in the units relevant to this subject, the student must successfully complete all the requirements listed above according to the prescribed benchmarks.

End of Document