

BSB51415 Diploma of Project Management



Constraint Management

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ASSESSMENT WORKBOOK COVERSHEET

WORKBOOK:	Workbook 2
TITLE:	Constraint Management
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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 : LEANNE
PHILLIPS**

Signature:



Date: 21-02-2021

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 and cost can have a massive impact on the scope.

If time blows out (e.g: due to unseasonable weather event, supplier delays) the scope of the project may have to be altered because it may not be physically possible to meet the scope. E.g: if there has been a cyclone that has blown time out, it may be necessary to change the scope to reflect what will be physically possible – such as building fewer building.

Similarly, if an event/incident (e.g: world shortage of a certain product) would cause cost to blow out, the scope of the project may be changed to meet what is physically possible.

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. Using phases of the project lifecycle as the first level of decomposition with the product and project deliverables inserted at the second level.
- b. Using major deliverables as the first level of decomposition
- c. Using sub-projects 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	Scope creep is when the project scope changes without being controlled properly. It is often multiple, small changes that happen, sometimes without even being noticed by the project manager, that cumulatively can have a massive impact on budget, time frames and final deliverables. Scope creep can happen because the project hasn't been defined, documented and/or controlled properly. A good change management process (that is adhered to by all parties) is essential to avoid scope creep and the negative ramifications it can have on the project.
Sponsor / project owner approval	Sponsor/owner approval must be gained before changes to the scope can be made. If it becomes evident to the project manager that a change to the scope will be necessary for whatever reason, consulting with the sponsor/owner is absolutely critical. That can sometimes be challenging if the sponsor/owner is difficult to make contact with (e.g: interstate or overseas) or is not willing to approve the changes.
Project team accountability	Ensuring the project team are accountable for managing the scope of the project could become problematic on some projects. Reflecting blame "It wasn't our fault – XYZ didn't do ABC" could be a huge issue if the project team will not hold up their accountability responsibility.

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

Do not exceed 150 words.

Scope management is critical to the successful completion of the project and delivery of the final product/services as per the approved Project Plan. Scope management processes ensure that the project delivers all the work that is required to enable the project to be completed successfully. Importantly scope management also ensures that only the specific deliverables in the Project Plan are delivered – not extra.

Without adequate scope management, it is possible that:

a) Not all the deliverables would be achieved (meaning the owner/sponsor has received less than they should);

b) The project has delivered MORE than required (which could have significant adverse cost impacts for the contractors)

c) The deliverables are different to what was spelt out in the Project Plan.

Incremental and cumulative changes can deliver a final product very different from the defined products in the Project Plan, if not managed adequately or at all.

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	Expert Judgement
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 ensure he/she knows, is completely familiar with and fully understands: a) The reason why the project was initiated, b) Key stakeholders' needs/wants and expectations, and c) The final deliverables of the project
Scope management	The project manager must have record of all of the requirements and turned them into work packages (which will become deliverables).
Time management	The project manager must schedule the project and come up with the fixed schedule for the project (schedule baseline).
Cost Management	The project manager must create a cost baseline which includes authorised budgets.
Quality management	The project manager must (among other things): Define the quality standards for the deliverables of the project. Conduct (or at least co-ordinate) QA and QC activities/audits. Determine the required quality standards for the project processes.

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	Earliest start time (ES) – This is the earliest time that the task can be started. Any preceding tasks that must be completed first must be taken into consideration. E.g: If a wall is to be painted, it must first be installed 😊
EF	Earliest finish time (EF) – This is the earliest start time for the task plus the time required to complete the task. E.g: If the ES is 1 January and the time to complete is 3 months, the EF would be 1 April.
LF	Latest finish time (LF) – This is the latest time at which the task can be completed without delaying the project. E.g: if the sheeting has been finished by 15 April or else it would hold up the rest of the project, the LF would be 15 April.
LS	Latest Start Time (LS) – This is the latest finish time minus the time required to complete the task. In the above example, the LS would be 15 January (LF 15 April – time to complete task of 3 months)

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) Gantt Charts are a really useful tool for planning and scheduling projects and are essentially a fundamental building block of project management. They chart time (X Axis) and tasks (Y Axis) to provide a visual outline of the project schedule. The dependency of a task on other tasks, can be taken into account (e.g: to ensuring putting is a power point on a wall is not scheduled until after the wall is painted, and that paining is not scheduled until the plastering has been carried out).

b) The Gantt Chart generates:

- * How long a project should take,
- * What resources are needed,
- * The order in which tasks need to be completed in.

c) Some of the limitations of Gantt charts include:

- The area of the Gantt chart page can be very large and difficult to print.
- The Gantt chart is only as useful and accurate as the information the project manager puts into it. “Rubbish is = Rubbish Out”. If the project manager inaccurately guesses the duration of a task along the critical path, then the entire duration of the project could be blown out.

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.

a) Critical Path Method is a systemized step-by-step process of identifying time critical activities on the Critical Path or “Best Line” to complete the project in the minimum time. In CPM you identify the tasks that have to be done to complete the project (breaking the project down into work tasks), the order in which they need to be done and how long the tasks will take. The data is then displayed in a flow chart. CPM calculates the project duration, based on the estimated duration for the individual tasks.

b) The Critical Path Method helps work out:

Earliest Start; Earliest Finish, Latest Start and Latest Finish

The Critical Path (best line to complete the project in the minimum time)

Activities on the critical path

c) Like many tools, the CPM is not a perfect solution. Some limitations:

It relies on the quality of the information input by the project manager. If that data is not accurate or skewed in any way, the Critical Path will not be accurate.

CPM can be difficult to adapt for mid-project revisions.

Identifying the “Critical Path” can be difficult and time consuming for particularly difficult or involved projects.

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	Analogous estimating bases the estimates on historical data (e.g: time, complexity) from a previous similar project. This method is typically cheaper (and less complex) to carry out, but less accurate. With the Parametric method, algorithms are used to estimate cost based on historical data and the project parameters (statistical relationship).
Determine budget	1. Cost aggregation – estimates are combined by work packages from the WBS, then higher levels of the WBS and then the entire project. 2. Reserve Analysis – working out contingency and management cost reserves. 3. Historical relationships – used to develop mathematical models to predict the total cost of the project.
Control cost	Control Cost is monitoring the status of the project to update and manage changes to the cost baseline. Spreadsheets or financial software are used along with sound financial practices including sending invoices regularly and paying invoices promptly (after checking and verifying them again quotes/contracts).

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.

- a. Use of spreadsheets or financial management software.
- b. Sending invoices regularly
- c. Ensuring invoices are paid promptly.
- d. Checking and reconciling invoices to be paid against contracts/quotes and other documentation to ensure they are correct.

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 BTBC Project Management policy spells out the principles and responsibilities for, the projects that it manages.
BTBC strive to have a standard approach to project management that is consistent with the Mission and Values of the company. BTBC uses procedures and templates to communicate the scope, involve stakeholders, manage risk and maximise project benefits. The policy spells out the minimum requirements for a company wide approach to all stages of project management - initiation, planning, implementation and closure.
The scope of the policy is for projects at BTBC, which are typically within a Program of Work.
- b. The purpose of the BTBC Project Management Procedures is to spell out their project management policy and lifecycle. The procedures define the processes that are performed throughout the life of a project to make sure that projects are managed effectively and efficiently.
The Project Management Procedures apply to projects in BTBC. They define projects as a body of work with a distinct start and end date that travel through defined phases. The project results in the delivery of an outcome/s and/or the transformation of a business function.
- c. Project Phases:
 - * Pre-Initiate Phase: Triggered when there is a problem that needs to be solved, process to the improved or new service to be implemented. This is the phase where the size of the project is determined, a business case is prepared and submitted for approval, sponsor confirmed and a project manager appointed.
 - * Initiate Phase: Determining how the project will be executed by:
Confirming project size and governance structure,
Complete Project Initiation document, and for larger projects:
Adding the project to the BTBC project register and completing the End of Phase report.
 - * Plan Phase: Provides more detail about how the project will be conducted. The critical activity in this phase is adding a detailed schedule and budget information to the Project Initiation Document. Risk management, communication and workforce impact plans must also be prepared.
 - * Implement Phase: Main focus is on working out how the projects outputs will be delivered. It is in this phase that activities related to staff, systems, training and processes to achieve the project outputs is added to the implementation plan.
 - * Close Phase: The handover of the outputs from the project to the areas responsible for the ongoing support/maintenance and evaluating the success of the project (referred to as the Benefits Realisation Analysis) are the main tasks in this phase.

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	This is the ultimate measure of the overall quality of the project. Customers who aren't happy with the end product and/or the management of the project are not at all likely to be happy with the project as a whole. The customer can have very different perceptions and opinions of the product/process than the project manager, so ensuring the CUSTOMER is satisfied is paramount. At least meeting, if not exceeding, customers expectations is critical to the success of the project. At the end of the day, if the project management/team is happy but the customer is not, the success of the project is debatable at best.
Prevention over inspection	The Cost of Quality includes money (and ultimately time and effort) that is put in to avoiding failures (Cost of Conformance) rather than fixing mistakes/problems at the end (the Cost of Non-conformance). Typically the cost of non-conformance is higher in terms of time, effort and loss of reputation than the cost of conformance.
Continuous improvement	Continuous improvement is an ongoing and sustained effort to improving processes, products and services. Some improvements will be minor and incremental while others may be almost revolutionary. Using the lessons learnt during the project and applying them to future projects helps minimize the risk of repeating the same mistake/having the same issues.

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

Do not exceed 100 words.

The main differences are summarized as:

QA – process based, primarily audit function and

QC – product based, primarily an inspection function.

Quality Assurance focuses on the processes used to produce the product. QA is predominantly an audit function to determine whether the entity meets the pre-determined quality requirements. QA examines and corrects the processes with a goal to prevent defects.

Quality Control is product orientated and is essentially looking and testing for defects in the product. QC is predominantly an inspection-based activity.

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	Requirements (including qualifications and experience) for people working on the project. It includes ensuring people have the appropriate experience as well as necessary licenses/training to carry out the work. They also must have access to on-going professional development and testing.
Process standards	Standards/benchmarks for the processes in delivering the project. QA auditing measures whether the required and pre-determined process standards are being met.
Product / service standards	These are the standards/benchmark/requirements for the end product. QC assesses the end product for compliance.

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 deliverables of the project
- b. Documenting the required standards in the project plan
- c. Leading or coordinating QA and QC activities
- d. Conducting or coordinating project audits
- e. Reporting quality outcomes to the project sponsor and any other relevant stakeholders

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	Refers to the tools and techniques for improving processes. It aims to improve the output of a process by working out what causes defects and then removing those factors/causes. Minimising variability in processes and manufacturing is an important outcome of the Six Sigma approach.
Lean Six Sigma	A combined effort from the project team to ultimately improve performance. It's a systematic approach to removing waste, by combining lean manufacturing and Six Sigma. Waste is in terms of Time, Inventory, Motion, Waiting, Over-production, Over-processing, Defects and Skills (TIMWOODS).
Total Quality Management	TQM is an extensive and structured approach to managing the project that aims to improve the quality of the products and services. Through continuous feedback, refinements can be made to ensure improve quality.

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 20xx. 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. Remove and store soil.
- b. Install road gravel.
- c. Construct training walls

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

Scope	The landscaping work must work around the building construction. Any other conditions imposed by Council.
Time	All work to be completed within 9 months
Cost	Fixed budget of \$550,000 + GST
Quality	The natural environment must be carefully preserved as per Council requirements for environmentally sensitive areas.

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.

8	Remove weeds (start 16/2)
11	Plant additional plants (start 3/3)
2	Move gravel to car park (start 13/1)
1	Expand car park (start 5/1)
12	Remove greenhouses (start 8/3)
9	Plant plants from greenhouses (start 23/2)
3	Seal car park (start 13/1)
6	Soil preparation (start 6/2)
7	Add boulders (start 9/2)
5	Construct stone paving pathway (start 24/1)
10	Purchase additional plants (start 28/2)
4	Landscape over old access roads (start 17/1)

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.
- The project will take one week longer as the project will commence 1 week earlier. "Project commencing a week earlier" in para 2 of the Description of the Changes being made in Change Request 1.
- There are no impacts on the quality aspect of the project.

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.

The cost increase listed in the Change Request (\$6 500) is for the cost of the road gravel only.

The actual total increase is \$17 900 which includes the other associated costs (\$1 500) extra granite boulders, construction of the retaining walls (\$4 180) & installation and compacting of the soil behind the walls (\$2 480) and the Project Management (additional \$3 240) for the phase.

I am not sure why the full amount of \$17 900 wasn't listed in the project cost.

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?

Sam Ng is responsible for working out the impacts of the change (he populates the info into the change request) and communicating and implementing the changes.

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

Assuming this question relates to the change request.

- a. The quality audits are not included in the Gantt Chart.
- b. Quality audits are important to detect any potential defects sooner rather than later. If a defect isn't detected early, it would have a cumulative affect on the quality of many (or potentially every) subsequent stages of the project. The longer a defect continues, the higher the cost of rectification and also the greater than chance that the defect may not be able to be rectified at all. The audits are necessary to ensure the site supervisor is meeting their responsibilities spelt out in the Quality Plan. By putting the audits in the Gantt Chart, the site supervisor can ensure they are available when required. The Council audits are also important to be on the Gantt Chart so both the site supervisor and project manager can be on site at the time.

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

- a. Susan Wills
- b. Stephen Lyons
- c. Kim Nguyen

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

\$17 900

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

- a. Installation of Utilities
- b. Installation of pipes and tanks
- c. Removal of additional plants or weeds from the building sites
- d. Weather damage
- e. Onsite securing

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

Do not exceed 50 words.

Not fully

YES - The appropriate Change Request Template was used.

YES - The Council were consulted (assumably via a draft CR) – “as all Council approval has been received” in para 2 of the change description.

YES – Changes are highlighted in yellow (as per para 1.3, 7. a)

YES – The CR is included in the project plan

YES – The new dates etc. as a result of CR1 are on the Gantt Chart

NO – the Change Register does not show CR1

NO – there are no signatures on the CR1

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 do not match up in the Gantt chart?

There aren't double bars for each task. There are only double bars for Phase 1 and Stage 1.1.

- The coloured bars would represent the current project schedule.

Progress 
Manual Progress 

- The closest colour in the Gantt Chart to the one in this question is below which represents the summary/baseline.

Summary 

- The Change Request may be the reason why the grey and coloured bars wouldn't match up on the Gantt Chart.

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'.

- Move plants to glasshouse and dispose.
- Delivery of granite boulders

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?

I don't believe the 2 tasks would be in progress on the 22nd of September, IF the project follows the Gantt Chart progress.

The task dependency worksheet shows that task 15 must be completed before task 16 can be started, BUT shows that task 15 (not 16) must be finished before task 17 can be started.

ID	Task Name	Duration	Start	Finish						
					Jun	Qtr 3, 2016 Jul	Aug	Sep	Qtr 4, 2016 Oct	
16	Construction of retaining walls	15 days	Mon 9/5/16	Fri 9/23/16					Andrew Lowe - Site Supervisor	
17	Install and compact soil behind walls	15 days	Thu 8/25/16	Thu 9/15/16					Andrew Lowe - Site Supervisor	

However, given that there are multiple retaining walls to be built, one could be being built on the same day that another one is having the soil put in and compacted on a previously built wall.

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.

a. Task 59 (Erect Signs) – which then delays task 60 (Landscape Around Signs), and Task 62 (soil preparation) – which then delays tasks 63 (Add boulders) and 64 (Remove weeds)

b. Yes, I believe it would because Task 57 is a critical task. Every task for the completion of the project, after the stone paving walkway construction, is reliant upon that task being completed.

c. The landscapers are required for all tasks following Task 57. The landscapers may not be available to carry out the tasks if the delay is significant (e.g: if they have another project that follows directly on from this one).

d. The project not being completed within the 9-month time frame.

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

\$462,153

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?

a. The total outlays to be made prior to receipt of the first payment is greater than the cash reserve of \$224 724.

b. Seek an interim payment before the first payment that is due at the completion of Phase 1 – perhaps at the completion of Stage 1.2 "Construct Access Roads".
Negotiate a slightly longer payment term for one of the contractors.

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.

The Project Plan provided has not been signed by any of the steering committee (page 6) and so is technically not valid. Hence, I believe Awesome should seek increased funding from Massive due to the change in scope BEFORE the Project Plan is signed off by all 5 parties.

HOWEVER, if the Project Plan was signed off by all 5 committee members then I don't believe that Awesome should seek an increase in funding from Massive. The contract is fixed and if the scope changes after contract is signed, that is a cost that would need to be absorbed by Awesome. The cost increase \$17900 / \$229 868 is 7.7% which is considered moderate.

Sign off

The project plan only becomes valid once signed off by the following members of the project steering committee.

Name	Position	Signature	Date
Susan Wills	Program Manager – Massive Eco-Development Corporation		
Stephen Lyons	Planning Manager - Cascade Peak Shire Council		
Kate Chan	Project Manager - Timber Home Construction Ltd		
Kim Nguyen	Director – Awesome Landscapes Pty Ltd		
Sam Ng	Project Manager – Awesome Landscapes Pty Ltd		

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'.

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Quality Audit Template		
Project Name: <i>Cascade Peak Chalets Landscaping Project</i>		
Prepared by: Leanne Phillips		
Date:		
Project Manager: <i>Sam Ng, Awesome Landscapes</i>		
Project Phase:	Overall Project Status:	
Audit Date:	Audit Number:	Audit Leader:
Audit Team:		
Goal(s) of This Specific Audit: Determine whether the criteria used to assess whether changes in the scope should result in Awesome seeking more funds from Massive.		
Audit of Management of Project:		
1. Has the change request been signed off by all 5 members of the steering committee?	Assessment:	Comment:
2. Has the preparation of the Change Request followed the procedure (1.3) spelt out in the Project Plan.	Assessment:	Comment:

3.	Assessment:	Comment:
4.	Assessment:	Comment:
5.	Assessment:	Comment:
6.	Assessment:	Comment:
7.	Assessment:	Comment:
8.	Assessment:	Comment:
9.	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?

- Detailed plans are not being provided with the task briefs.
- I agree with the recommendations that Sam should give himself enough time to prepare the task briefs with the required level of detail. Also, Sam must ensure that the task briefs are supplied with all relevant attachments such as detailed plans. I would also suggest a follow up audit being carried out within a short period of time (depending on the length of the project) to ensure that the issues are not recurring.

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: Implementation	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.

COST MANAGEMENT PLAN FOR MANAGING THE QUALITY OF THE FINANCIAL PROCESSES DURING THE PROJECT

- Meeting with contractual requirements.
A spreadsheet/list of financial contractual requirements should be developed and progress against those requirements must be audited/checked on a regular basis – weekly is recommended. The more frequent the audits, the less the chance of minor issues developing into major ones.
- Paying invoices on time.
Reports are to be run from the accounting software on a weekly basis (to ensure any problems with payments are detected as quickly as possible) which show the due date Vs actual payment date. Investigations must be carried out to determine the reasons for any invoices not being paid on time, and preventative action being taken to ensure the situation doesn't reoccur.
- Ensure invoices are sent out in time, ensuring financial reporting is done on time, and a calendar of when payments are likely to be due.
A calendar (or spreadsheet) to be created showing the details below. Colour coding could be used, where the colour of the item is changed if the item has been met/satisfied within the required time frame:
 - a) Dates invoices need to be issued
 - b) Dates that financial reporting is to be submitted
 - c) Dates when payments are due (28 days from date of issue of invoice)*** Spreadsheet with dates invoices are to be sent attached
- Comparison of actual cash flow against projected cash flow.
The "Project Cashflow" (Appendix 8) shall have extra columns inserted for "ACTUAL Weekly Cash Flow" and "ACTUAL Cumulative expenses". The actual data would need to be updated on the sheet at the start of each working week. Any differences that are likely impact on Awesome's ability to pay it's suppliers and/or contractors are to be communicated to the appropriate personnel immediately.

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