



BSB51415 Diploma of Project Management



Constraint Management

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Version control & document history

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22 June 2017	Updated Table of Contents	1.1
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ASSESSMENT WORKBOOK COVERSHEET

WORKBOOK:	Workbook 2
TITLE:	Constraint Management
FIRST AND SURNAME:	Haydon Hall
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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 :	Haydon Halll	Signature:	Date:
		H.Hall	17/02/21

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
x	b. Project plan
	c. Work Breakdown Structure (WBS)
	d. Gantt Chart
x	e. Project charter
	f. Risk management

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.
x	b. Identify and analyse the deliverables and related work.
x	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
x	e. Decompose the upper work breakdown structure (WBS) levels into lower level detailed components.
	f. Calculate duration and resource effort for each project task.
x	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.
x	j. Verify that the degree of decomposition of the work is necessary and sufficient.

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

Do not exceed 150 words.

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

Do not exceed 150 words.

Scope management is very significant to eliminate scope growth/creep while assisting with any problems or challenges that arise. Without scope management, the project team would not be aware of what is/is not included and have minimal understanding of what is being added or removed whilst the project is being completed. The project manager must have a good understanding of the scope to ensure that changes to the scope are not going unnoticed and all changes are documented and charged for correctly.

Part 2 – Project Time

1. 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	ES is an abbreviation for Earliest Start, meaning the earliest time in which a particular task can start, keeping in mind any previous tasks that may be required to be completed prior to a new task being started. An example of this is, framing must be complete prior to services rough-in starting.
EF	EF is an abbreviation for Earliest finish time. This is simply calculated by adding the ES + task duration time . The EF is an important calculation for tasks that have another task following, that cannot be started without a previous task being completed.
LF	LF is an abbreviation for the Latest finish time. This is the latest date in which a task can be completed, without delaying the project. LF is used for tasks that do not have a following task that relies on the completion of the previous task being finalized.
LS	LS is the abbreviation for the latest start time. This is simply calculated by subtracting the task duration from the latest finish time. If previous tasks have gone over time, LS is used to determine the latest start time for finishing tasks.

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

Select all that apply.

Select all that apply.

x	a. Developing the schedule is the process of analysing activity sequences, durations, resource, requirements, and schedule constraints to create the project schedule.
x	b. The project schedule and schedule baseline are developed or established using the activity lists, activity attributes, project scope statement as the bases.
x	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.

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

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.

x	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.
x	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.
x	e. The work breakdown structure provides the relationships among all components of the project and the project deliverables.
x	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 costs is the process of developing a prediction on the financial requirements to complete the project based on the information known at the time of the calculation. The estimate will cover all activities to complete the project including materials and labour.
Determine budget	Determining budgets is the process of accumulating the estimated costs to create a cost baseline. To determine the budget, you must combine the WBS of the project along with the estimated costs. The budget may differ from the formal cost once the project is underway.
Control cost	Controlling costs is the process of monitoring the monetary value spent in relation to the status of the project. During this process, it may be required to update the budget once the actual expenses are known.

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. Using an effective tool for managing the project finances i.e. finance package or a spreadsheet
- b. Sending invoices on a regular basis
- c. Paying invoices promptly
- d. Checking incoming invoices against contracts, quotes, agreements etc.,

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 an indication of the quality of the project. If the project was produced to a high quality, and the customers' needs and expectations were met, the customer will hold the project quality in high regard. Managing customer satisfaction is a crucial part of the project to avoid project failure and a key part to securing ongoing work with the client.
Prevention over inspection	Prevention over inspection is a term used in project management that refers to the cost of quality (COQ). This is extra money spent throughout the project, to avoid mistakes or failures that often cost more for remedial repairs post completion.
Continuous improvement	Continuous improvement is the process to continually better your services/products/processes of a project. This process is in place to improve the final results of previous projects and avoid repeating the same matters that have previously be encountered. These improvements can very small right through to whole business structure changes.

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

Do not exceed 100 words.

The main difference between (QA) Quality Assurance and (QC) Quality Control is that QA forms the processes, standards and techniques put in place (prior to producing the product) to prevent defects; whereas QC is the process of detecting defects (at the end result of the product) which are reported to management 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	People standards are the standards for the requirements for people working on the project. This standard includes ensuring that all personnel have the correct qualifications and experiences to complete their task, along with the correct license or certification, if required.
Process standards	Process standards is the standard for in which the project will be delivered, involving quality assurance review. This process is in place to ensure that the procedures within the project run well.
Product / service standards	Product/Service Standards are the standards which examine the final product, involving quality control standards. This standard is in place to ensure regulations, standards etc. are being adhered to.

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.

CASE STUDY

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. Removal of vegetation in areas being cleared and replanting//maintaining the plants for replanting in stage 3
- b. Access roads through the existing forest for builders to access each building site
- c. Retaining walls to provide stability. Includes three additional retaining walls as per updated site plan.

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

Scope	The scope constraints are set out in the Project Plan in Section 2 - Scope Management plan. This includes the project deliverables, along with the inclusions and exclusions of all 3 phases of the project.
Time	All work must be completed within 9 months and in conjunction with the building construction works and the Gantt Chart. Furthermore, refer to Appendix 5 (task dependency worksheet) that has a column with all of the required time constraints.
Cost	There is a fixed budget of \$550 000 + GST. The budget must include all of the financial resources needed to complete the project on time, in line with the scope provided.
Quality	The quality of work must follow the strict guidelines of the council. As the environment is very sensitive, the natural environment must be carefully preserved.

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.

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

8	Remove weeds
11	Plant additional plants

The Project Plan does not follow the change management procedure. Although the majority of the points have been covered, the change register (Appendix 37) is not up to date. Further to this, the required stakeholders are yet to sign off the change request (appendix 38).

--

Quality Audit Template		
Project Name: <i>Cascade Peak Chalets Landscaping Project</i>		
Prepared by: Haydon Hall		
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: To evaluate the financial processes at various points along the project.		
Audit of Management of Project:		
1. Are invoices being checked against original quotes and being paid on time?	Assessment:	Comment:
2. Are payments being received on time as per the payment calendar/schedule?	Assessment:	Comment:
3. Have cashflow deficit problems been identified and adjusted due to the change in scope?	Assessment:	Comment:
4. Have all procurement and expenditure costs as per quoted figures in provided quotes been updated due to the change in scope?	Assessment:	Comment:
5. Have all of the staff salaries/wages budgets been allowed for due to the change?	Assessment:	Comment:

6. Are all processes being followed to gain extra funding from changes within the project?	Assessment:	Comment:
7. Has all financial reporting been completed and on time?	Assessment:	Comment:
8. Are all invoices being sent out on time?	Assessment:	Comment:
9. Have all financial changes been reported and approved correctly to the required stakeholders?	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)?	☐	☐
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:

- a. What was the cause of the unsatisfactory results?
- b. What action would you recommend to prevent the issue coming up again in this project?

- a. As per the overall assessment section, it states that 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.
- b. Sam Ng is to prepare task briefs in enough time to add the required level of detail and are to be supplied with all relevant attachments such as detailed plans. Sam Ng could hold weekly face to face meetings to ensure the site supervisors have all their required information. Prior to the meetings being held, Sam could ensure all required information has been emailed to the site supervisor to review.

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:		

Have you attached additional material(s)?	yes	x	no
Audit Report Submitted To: Kim Nguyen	Date: 24/08/2015		

COST MANAGEMENT PLAN

Meeting with contractual requirements

Massive Eco-development Corporation is paying a fixed sum of \$550,000. The project budget as per this project plan is \$462 153. This sum covers all required tasks set out in the Project Plan to deliver Phase 1 – Phase 3 of the Cascade Peaks Chalets Landscaping Project. Awesome landscapes management must monitor the progress and project milestones outlined in Clause 3.2 as the project and communicate these key dates to all staff as there is no allowance for variance in these dates.

Invoicing

Paying invoices on time

The Contract Administrator is responsible for advising the project manager and payroll officer of invoices to pay. The contract administrator is to create an easy to use spreadsheet with receival date and payment date to ensure all invoices are paid on time to avoid any loss in productivity.

Raising Invoices and cashflow

Awesome Landscaping will raise an invoice on the first working day, following the due date of each progress payment. The terms of all invoices are 28 days from date of invoice. All cash flow calculations are based on the funds being paid on the final day of the terms of the invoices. The project manager is responsible that all invoices are sent out on time to avoid delays in payment and assist with any cashflow deficit problems.

Funding payments from Massive Eco-Development Corporation are to be due as follows and adhered to in order to control cashflow deficit:

Phase of the project:	Expected payment date:	Payment	Proportion		
	Amount (pre-GST)	Amount (GST incl.)			
Commencement of Phase 1	1 October 2016	Payment 1	50%	\$275,000	
					\$302,500
Completion of phase 1	11 October 2016	Payment 2	20%	\$110,000	
					\$121,000
Completion of phase 2	1 February 2017	Payment 3	20%	\$110,000	
					\$121,000
Completion of phase 3	1 April 2017	Payment 4	10%	\$55,000	\$60,500
TOTAL		100%		\$550,000	\$605,000

Financial Reporting

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