



**Australian Government**

# **MEM22007 Manage environmental effects of engineering activities**

**Release: 1**

# MEM22007 Manage environmental effects of engineering activities

## Modification History

Release 1. Supersedes and is equivalent to MEM22007A Manage environmental effects of engineering activities.

## Application

This unit of competency defines the skills and knowledge required to examine environmental issues and determine environmental strategies for a new or existing product, process, system or service. It applies to engineering work at the paraprofessional level and activities carried out within a range of engineering disciplines.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

## Pre-requisite Unit

MEM16006 Organise and communicate information

## Competency Field

Management and organisation

## Elements and Performance Criteria

| Elements                                          | Performance Criteria                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Elements describe the essential outcomes.</i>  | <i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>                                                                                                                                                                                                                                                                                                                                 |
| 1. Determine the existing environmental condition | <ul style="list-style-type: none"><li>1.1 Follow standard operating procedures (SOPs)</li><li>1.2 Comply with work health and safety (WHS) requirements at all times</li><li>1.3 Research, discuss and report on case studies involving examination of environmental values</li><li>1.4 Prepare an inventory of the existing environmental condition</li><li>1.5 Record and report on the findings of the initial assessment</li></ul> |

| <b>Elements</b>                                                      | <b>Performance Criteria</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Elements describe the essential outcomes.</i>                     | <i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>                                                                                                                                                                                                                                                                                                                                                                                           |
| 2. Develop strategies for sustainable development                    | 2.1 Determine expectations regarding each component of the environment<br>2.2 Record and report on expectations for project or operation integration<br>2.3 Determine variations between expectations and the existing environmental conditions<br>2.4 Establish the possibilities and options for improvement in the environment<br>2.5 Evaluate available options against assessment criteria to identify risks and priorities<br>2.6 Develop an environmental report on the preferred options |
| 3. Develop an implementation plan to achieve sustainable development | 3.1 Consult with stakeholders and specialists according to project scope<br>3.2 Establish the data necessary to evaluate the implementation<br>3.3 Identify the process for collection and documentation of data<br>3.4 Develop an implementation plan that outlines actions, timelines, resources and evaluation mechanisms                                                                                                                                                                     |
| 4. Implement strategies to achieve sustainable development           | 4.1 Implement strategies in consultation with appropriate stakeholders<br>4.2 Collect and review data on implementation of strategies in accordance with agreed plan<br>4.3 Evaluate progress and review strategies based on implementation outcomes                                                                                                                                                                                                                                             |

## Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

## Range of Conditions

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| This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Environmental values include:                                                                                                                                                                                                                                                                 | <ul style="list-style-type: none"> <li>• biophysical values including:               <ul style="list-style-type: none"> <li>• clean air</li> <li>• soil</li> <li>• water</li> <li>• biodiversity</li> <li>• ecosystem</li> <li>• sustainability</li> <li>• sustaining the quality of natural and artificial environments</li> </ul> </li> <li>• indoor and outdoor socio-cultural values.</li> </ul>                                                                                                                                                                                                                                     |
| Determining existing environmental conditions include:                                                                                                                                                                                                                                        | <ul style="list-style-type: none"> <li>• identifying how certain actions can affect an environment and recording results</li> <li>• mapping out environmental conditions to analyse areas of intense impact, especially as a result of cumulative impacts</li> <li>• identifying physical, socio-cultural and economic conditions for life</li> <li>• visualising the existing or desired quality of life within the environment</li> <li>• identifying both negative and positive environmental impacts</li> <li>• identifying potential de-sustaining and sustaining aspects of the activity and engineering interventions.</li> </ul> |
| Environmental report includes:                                                                                                                                                                                                                                                                | <ul style="list-style-type: none"> <li>• description of the state of the environment</li> <li>• assessment of the nature and consequence of impacts and identifiable trends available and recommended actions</li> <li>• identification of responsibilities and potential change agents</li> <li>• cost of action</li> <li>• critical review of the parameters of the environmental relations considered, the criteria by which they were evaluated, the process of developing responses and the achievement of the actions taken.</li> </ul>                                                                                            |

## Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM22007A Manage environmental effects of engineering activities.

## Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

# Assessment Requirements for MEM22007 Manage environmental effects of engineering activities

## Modification History

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## Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- researching and reporting on environmental case studies
- producing an inventory of existing environmental conditions and documenting findings of the initial environmental assessment
- identifying stakeholders' environmental expectations and integrating those expectations with the overall outcomes of the operation or project and communicating the expected outcomes to stakeholders
- documenting variations between expected and current environmental status on at least two occasions and implementing strategies for improving outcomes of the operation or project
- evaluating available options and implementing selected sustainable development options on at least two occasions
- developing environmental management plan, monitoring the implementation, collecting data and reviewing and evaluating implementation strategies.

Note: Where a volume and/or frequency is not specified, demonstration must be provided at least once.

## Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures
- environmental conditions of the relevant workplace, process, operation or procedure
- procedures for documenting environmental conditions
- applicable environmental legislation and regulations
- legislative and regulatory reporting and recording requirements
- tests required to establish environmental conditions
- options for environmental improvement within engineering activities
- concept and options of sustainable development and criteria for assessing the feasibility of available options

- risks and priorities associated with sustainable development
- strategies to implement sustainable development options
- procedures for communicating sustainable development options to stakeholders
- strategies to implement environmental management plans
- data necessary to evaluate the implementation of the environmental management plan
- procedures for collecting and documenting environmental data
- benchmarks against which implementation strategies can be evaluated.
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## Assessment Conditions

- Assessors must:
  - have vocational competency in managing environmental effects of engineering activities at least to the level being assessed with relevant industry knowledge and experience
  - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires.
- Where possible, assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions that cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required including relevant workplace procedures, product and manufacturing specifications.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.
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