



Australian Government

MSS017007 Design for sustainability

Release: 1

MSS017007 Design for sustainability

Modification History

Release 1. Supersedes and is equivalent to MSS017007A Design for sustainability.

Application

This unit of competency covers the designing of a new product, or the redesigning of an existing product as a sustainable product or to improve its sustainability. It may be applied to a physical product, a service or some other type of 'product'.

This unit covers the analysis of the benefit received by the consumer and then an examination of how best this benefit can be delivered to maximise both the benefit and the sustainability of this benefit. It includes an analysis of the cradle to grave/cradle to cradle impacts of the product and the various sustainability impacts along the value chain.

This unit will lead to the design specification for a sustainable/more sustainable product. It does not include the implementation of that design.

A manager or senior technologist who has a significant sustainability responsibility work role would typically undertake this. Skills covered by this unit may be applied individually or in a team context.

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

Pre-requisite Unit

Nil

Competency Field

Sustainable operations

Unit Sector

Not applicable

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1	Define the benefit received by the customer	1.1	Select an existing or potential new product for analysis.
		1.2	Determine who the customers are for the product.
		1.3	Determine uses of product by customers.

- | | | | |
|---|---|-----|--|
| | | 1.4 | Analyse the benefits received by the customer from using the product. |
| | | 1.5 | Define and rank the benefits received. |
| | | 1.6 | Validate benefits in an appropriate manner. |
| 2 | Develop alternative ways of delivering benefit | 2.1 | Brainstorm alternative methods of delivering required benefits. |
| | | 2.2 | Brainstorm related benefits which may also be able to be delivered. |
| | | 2.3 | Analyse sustainability impacts of each alternative. |
| | | 2.4 | Consult with relevant stakeholders, as appropriate. |
| | | 2.5 | Rank alternatives by sustainability. |
| | | 2.6 | Prepare an initial business case for top ranked alternatives. |
| 3 | Develop product and process design | 3.1 | Develop product design specification for alternatives most likely to be implemented. |
| | | 3.2 | Determine likely production process for alternatives most likely to be implemented. |
| | | 3.3 | Analyse life cycle sustainability for alternatives most likely to be implemented. |
| | | 3.4 | Select alternative to develop. |
| | | 3.5 | Consult with relevant stakeholders, as appropriate. |
| | | 3.6 | Confirm selected alternative does deliver key customer benefits. |
| 4 | Confirm design for selected alternative | 4.1 | Develop and document product specification. |
| | | 4.2 | Develop and document key production process parameters. |
| | | 4.3 | Consult with relevant stakeholders, as appropriate. |

		4.4	Prepare business case for implementing selected alternative.
		4.5	Negotiate solutions to value chain issues caused by changed design.
5	Communicate required responses as appropriate	5.1	Identify what communications are required and to whom.
		5.2	Prepare appropriate reports and recommendations.
		5.3	Pitch reports and recommendations, as appropriate.
		5.4	Brief appropriate persons as required by determined responses.
		5.5	Finalise appropriate recording.

Foundation Skills

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

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

Range of Conditions

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.

Sustainability incorporates all of	• survival of the ecology/physical environment (to manage the impact of the business to ensure the survival of the physical environment) • economic viability (efficiency, cost and waste reduction and competitiveness to support survival of the business) • social sustainability (to manage the impact of the business to ensure its continued survival within the community and the survival of the community).
Product includes	• physical product

- one or more of**
- service
 - some other type of product.
- Benefit includes consideration of one or more of**
- deliverable the customer expects
 - location in which it should occur
 - timing, duration, frequency and longevity of the deliverable
 - value to the customer
 - required maintenance and other ‘running’ inputs
 - disposal/replacement required by the customer
 - the degree to which the designed product is portable, modular, reusable, recyclable, returnable, easily able to be repaired after malfunction, durable, aesthetics and price.
- Alternative methods of delivering benefits include one or more of**
- selling a redesigned product
 - selling the benefit obtained from the product rather than the product
 - selling a combination of physical product and service rather than either
 - leasing (or similar) of the above
 - providing buy back/take back or similar
 - other alternative strategies (e.g. design for reuse, remanufacture, recycling).
- Sustainability issues of particular relevance include one or more of**
- particular sensitivities of the local ecology (e.g. endangered species, sensitive local flora/fauna, material scarcity, water availability)
 - general ecology issues and regulations (e.g. climate change and carbon footprint, pollution control measures)
 - particular local social issues (e.g. distortions to the housing market, disruption to local lifestyles)
 - general social issues (e.g. corporate citizenship, use or/deterioration to infrastructure)
 - particular local economic issues (e.g. cost of capital, profit margins, competition)
 - general economic issues (e.g. state of the economy, stage of the business cycle).
- Appropriate response when impact cannot be prevented includes**
- capture and storage (e.g. scrubbing) and similar ‘end of pipe’ solutions
 - dilution/dispersion and similar techniques which reduce concentration but not amount

one or more of

- other approaches which meet the sustainability requirements.

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSS017007A Design for sustainability.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998>

Assessment Requirements for MSS017007 Design for sustainability

Modification History

Release 1. Supersedes and is equivalent to MSS017007A Design for sustainability.

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 the ability, for one (1) or more existing or potential new product, to:

- determine customer benefit
- identify and rank alternative ways of providing that benefit
- specify preferred, sustainable alternative
- communicate the above, as appropriate.

Knowledge Evidence

Must provide evidence that demonstrates sufficient knowledge to interact with relevant personnel and be able to design/redesign a product to improve its sustainability including knowledge of:

- process and changes which occur at each step in selected value chain
- principles of sustainability
- sustainability impacts at different points in the value chain
- principles of sustainable design
- the sustainability hierarchy
- sources and transport of materials and components and alternatives
- processes for producing products, and alternatives
- life cycle analysis techniques
- hierarchy of hazard control and its application to sustainability hazards
- relevant legislation, regulation and protocols, government incentives and other initiatives
- risk analysis and its application to sustainability risks.

Assessment Conditions

- The unit should be assessed holistically and the judgement of competence shall be based on a holistic assessment of the evidence.
- The collection of performance evidence is best done from a report and/or folio of evidence drawn from:
 - a single project which provides sufficient evidence of the requirements of all the elements and performance criteria

- multiple smaller projects which together provide sufficient evidence of the requirements of all the elements and performance criteria.
- A third party report, or similar, may be needed to testify to the work done by the individual, particularly when the project has been done as part of a project team.
- Assessment should use a real project where the design specification for a sustainable/more sustainable product is developed for an operational workplace.
- Knowledge evidence may be collected concurrently with performance evidence or through an independent process such as workbooks, written assessments or interviews (provided a record is kept).
- 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.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required including relevant workplace procedures, product and manufacturing specifications associated with this unit.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- The assessor must demonstrate both technical competency and currency.
- Technical competence can be demonstrated through:
 - relevant VET or other qualification/Statement of Attainment AND/OR
 - relevant workplace experience
- Currency can be demonstrated through:
 - performing the competency being assessed as part of current employment OR
 - having consulted with an organisation providing relevant environmental monitoring, management or technology services about performing the competency being assessed within the last twelve months.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5b04f318-804f-4dc0-9463-c3fb9a3fe998>