



**Australian Government**

**Department of Education, Employment and Workplace Relations**

# **MSS017007A Design for sustainability**

**Release: 1**

## **MSS017007A Design for sustainability**

### **Modification History**

Not applicable.

### **Unit Descriptor**

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'.

### **Application of the Unit**

This unit is a Vocational Graduate Certificate unit and follows the AQF guidelines for such units in that it assumes an entry qualification, such as:

- an Advanced Diploma or Diploma in sustainability or relevant technical field,
- a Bachelor Degree in a relevant technical field
- other relevant higher education qualifications, often with relevant vocational practice
- relevant extensive vocational practice, without formal qualifications but which result in appropriate entry level skills.

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.

It would typically be undertaken by a manager or senior technologist who has a significant sustainability responsibility work role.

Skills covered by this unit may be applied individually or in a team context.

### **Licensing/Regulatory Information**

Not applicable.

### **Pre-Requisites**

Not applicable.

### **Employability Skills Information**

Not applicable.

## Elements and Performance Criteria Pre-Content

Not applicable.

## Elements and Performance Criteria

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|---|--|-----|---|
| 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   |

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|   |   | 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                                     |

## Required Skills and Knowledge

### Required skills

Required skills include:

- using lateral thinking techniques
- conducting market research
- writing and interpreting specifications, operating procedures, manuals, regulations and other complex documents
- consulting and negotiating with internal and external stakeholders
- conducting life cycle analysis
- analysing and problem solving, including root cause analysis
- interpreting and manipulating data
- drafting reports

### Required knowledge

Required knowledge includes:

- 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

## Evidence Guide

Overview of assessment

A person who demonstrates competency in this unit must be able to determine the sustainability related benefits sought by customers for products and design a product to

	maximise the identified sustainability related benefits.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	<p>Assessors must be satisfied that the candidate can competently and consistently apply the skills covered in this unit of competency in new and different situations and contexts. Critical aspects of assessment and evidence include:</p> <ul style="list-style-type: none"> <li>• determining customer benefit</li> <li>• identifying and ranking alternative ways of providing that benefit</li> <li>• specifying preferred, sustainable alternative</li> <li>• communicating the above, as appropriate.</li> </ul>
Context of and specific resources for assessment	<ul style="list-style-type: none"> <li>• This unit of competency is to be assessed in the workplace or a simulated workplace environment.</li> <li>• Assessment should emphasise a workplace context and procedures found in the candidate's workplace.</li> <li>• This unit of competency may be assessed with other relevant units addressing sustainability at the enterprise level or other units requiring the exercise of the skills and knowledge covered by this unit.</li> <li>• The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team.</li> </ul>
Method of assessment	<ul style="list-style-type: none"> <li>• In all cases, practical assessment should be supported by questions to assess underpinning knowledge and those aspects of competency which are difficult to assess directly.</li> <li>• Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.</li> <li>• The language, literacy and numeracy demands of assessment should not be greater than those required to undertake the unit of competency in a work-like environment.</li> </ul>
Guidance information for assessment	

## Range Statement

<b>Sustainability</b>	<p>Sustainability incorporates the three aspects of:</p> <ul style="list-style-type: none"> <li>• survival of the ecology/physical environment (to manage the impact of the business to ensure the</li> </ul>
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	<p>survival of the physical environment)</p> <ul style="list-style-type: none"> <li>• economic viability (efficiency, cost and waste reduction and competitiveness to support survival of the business)</li> <li>• social sustainability (to manage the impact of the business to ensure its continued survival within the community and the survival of the community)</li> </ul>
<b>Product</b>	<p>Product may include:</p> <ul style="list-style-type: none"> <li>• physical product</li> <li>• service</li> <li>• some other type of product</li> </ul> <p>A product will be something which is produced/developed for/provided to a customer or client</p>
<b>Benefit</b>	<p>Benefit includes, but is not limited to, consideration of the:</p> <ul style="list-style-type: none"> <li>• deliverable the customer expects</li> <li>• location in which it should occur</li> <li>• timing, duration, frequency and longevity of the deliverable</li> <li>• value to the customer</li> <li>• required maintenance and other 'running' inputs</li> <li>• disposal/replacement required by the customer</li> <li>• the degree to which the designed product is: <ul style="list-style-type: none"> <li>• portable</li> <li>• modular</li> <li>• reusable</li> <li>• recyclable</li> <li>• returnable</li> <li>• easily able to be repaired after malfunction</li> <li>• durable</li> <li>• aesthetics</li> <li>• price</li> </ul> </li> </ul>
<b>Alternative methods of delivering benefits</b>	<p>Alternative methods of delivering benefits may include:</p> <ul style="list-style-type: none"> <li>• selling a redesigned product</li> <li>• selling the benefit obtained from the product rather than the product</li> <li>• selling a combination of physical product and service rather than either</li> <li>• leasing (or similar) of the above</li> <li>• providing buy back/take back or similar</li> <li>• other alternative strategies</li> </ul>

	<p>Alternatives to be considered also include design for:</p> <ul style="list-style-type: none"> <li>• reuse</li> <li>• remanufacture</li> <li>• recycling</li> </ul>
<b>Portion of the value chain</b>	<p>Value chain is the sequence of activities that a firm undertakes to create value/product (good or service). Portion of the value chain includes sections internal or external to the organisation</p>
<b>Sustainability issues of particular relevance</b>	<p>Sustainability issues of particular relevance include:</p> <ul style="list-style-type: none"> <li>• particular sensitivities of the local ecology, such as:</li> <li>• endangered species</li> <li>• sensitive local flora/fauna</li> <li>• material scarcity</li> <li>• water availability</li> <li>• general ecology issues and regulations, such as:</li> <li>• climate change and carbon footprint</li> <li>• pollution control measures</li> <li>• particular local social issues, such as:</li> <li>• distortions to the housing market</li> <li>• disruption to local lifestyles</li> <li>• general social issues, such as:</li> <li>• corporate citizenship</li> <li>• use or/deterioration to infrastructure</li> <li>• particular local economic issues, such as:</li> <li>• cost of capital</li> <li>• profit margins</li> <li>• competition</li> <li>• general economic issues, such as</li> <li>• state of the economy</li> <li>• stage of the business cycle</li> </ul>
<b>Appropriate response</b>	<p>Appropriate response includes:</p> <ul style="list-style-type: none"> <li>• application of the hierarchy of hazard control to sustainability hazards</li> <li>• when the impact cannot be prevented application of mitigation and amelioration techniques, such as:</li> <li>• capture and storage (e.g. scrubbing) and similar ‘end of pipe’ solutions</li> <li>• dilution/dispersion and similar techniques which reduce concentration but not amount</li> <li>• other approaches which meet the sustainability</li> </ul>



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### **Unit Sector(s)**

Sustainability

### **Custom Content Section**

Not applicable.