



Australian Government

MSFFDT4004 Assess environmental impact of a design

Release: 1

MSFFDT4004 Assess environmental impact of a design

Modification History

Release 1 - New unit of competency

Application

This unit of competency covers assessing the environmental impact of a design and evaluating and recording its energy consumption, waste and material sustainability at all stages of production, product use and disposal or recycling.

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

Pre-requisite Unit

Competency Field

Unit Sector

Furniture design and technology

Elements and Performance Criteria

Elements describe the essential outcomes.

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

1	Assess raw sources of material	1.1	Applicable work health and safety (WHS), legislative and organisational requirements relevant to assessing the environmental impact of a design are verified and complied with
		1.2	Design brief is reviewed, confirmed and clarified with appropriate personnel
		1.3	Communication with others to complete assessment is established and maintained
		1.4	Materials are assessed from their source taking account of where they derived from, their processing techniques and energy used to obtain them
		1.5	Materials are assessed for their ecological and environmental impact

		1.6	Materials are assessed for their availability and sustainability
2	Assess the environmental impact of the design	2.1	User needs and desires are assessed and documented
		2.2	Material choice and use as stated in the specifications is audited and assessed
		2.3	Product lifecycle analysis is evaluated and longevity determined
		2.4	Intended manufacturing processes, including assembly and finishing, are assessed for their impact on the environment
		2.5	Final documentation outlining the design environmental impact
3	Assess the manufacturing process	3.1	Production timeline is assessed and energy use measured
		3.2	Supply of raw materials for production is analysed and wastage estimated
		3.3	Manufacturing process is assessed for equipment and assembly method energy usage and waste
		3.4	Component production is analysed to measure energy use and waste
		3.5	Finishing requirements are assessed for toxic waste levels and energy usage
		3.6	Packaging, despatch and transport arrangements are analysed to measure energy usage
		3.7	Final documentation outlining the full analysis of the manufacturing impact on the environment is compiled and produced as a report
4	Assess product potential for recycling	4.1	Ability for all components of product to be recycled are assessed
		4.2	Non-recyclable components are identified and potential alternatives determined
		4.3	Impact of non-recyclable components on environment is assessed
		4.4	Recycling potential of the product is reported in

documentation

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency. Detail on appropriate performance levels for each furnishing unit of competency in reading, writing, oral communication and numeracy utilising the Australian Core Skills Framework (ACSF) are provided in the Furnishing Training Package Implementation Guide.

Range of Conditions

Specifies 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. Range is restricted to essential operating conditions and any other variables essential to the work environment.

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|---------------------------------------|---|
| Unit context includes: | <ul style="list-style-type: none">• WHS requirements, including legislation, building codes, material safety management systems, hazardous and dangerous goods codes, and local safe operating procedures or equivalent• work is carried out in accordance with legislative obligations, environmental legislation, relevant health regulations, manual handling procedures and organisation insurance requirements• work requires individuals to demonstrate conceptual and analytical ability, discretion, judgement and problem solving• customers or suppliers may be internal or external |
| Design brief includes: | <ul style="list-style-type: none">• the aims, objectives, milestones for the design project• organisational or personal profiles• target audience• budget• timeline• consultation requirements• colour requirements• image requirements• function |
| Appropriate personnel include: | <ul style="list-style-type: none">• trainers• supervisors• suppliers |

	• clients • colleagues • managers
Materials include:	• timber (native and imported) • man-made timber products • plastic • metal • alloys • stones • glass • textiles • fibreglass • foam • cardboard • paper products • any other manipulable substance
Sources include:	• origin of the raw material, including the type and location wood was derived from, how and where it was processed, graph impact growth and available seasoning lead time • mining source of metal or alloys and how these were processed • formulas for the composition of plastics • origin of textiles and how these were milled
Energy includes:	• the measure of energy output in correlation to the cost to the environment in terms of electricity, gas or fossil fuel usage
Ecological and environmental impacts include:	• how the use of raw materials effects the ecology and environment and how its continued use will affect the area it has been sourced from, including illegal logging • energy consumption in achieving the material • greenhouse gases created • waste levels • resource utilisation and transport effects • what impact will be felt by reducing or stopping material from the source
Sustainability includes:	• the amount of resource widely available based on demand and its capacity to renew or be renewed
Product lifecycle includes:	• the evolution of a product from its raw source, through its inception, development, manufacture, completion and time as a completed product until potential renewal
Manufacturing processes include:	• methods by which the product will be produced with steps that entail working from drawings and specifications, producing components utilising machine operations, assembly of the components and finishing techniques

Assembly methods include:	• nailing • gluing • screwing • welding • pressing • sewing • bonding • jointing • connecting various materials
Finishing includes:	• paints • waxes • lacquers • stains • pigments • oils • plastic coatings
Wastage includes:	• wasting of valuable raw materials • wastage of energy to obtain the raw materials • wastage during the manufacturing process • how waste is or isn't managed after it is produced
Equipment includes:	• static machinery • portable power tools • computer numerically controlled (CNC) equipment • and is to include procedures for lock out protecting operators and co-workers from accidental injury by isolating the machine from the power source
Components include:	• parts which make up the whole of a product (each component often requires some level of machining to result in the desired part)
Packaging and despatch include:	• wrapping in fabric • plastic wrapping • shrink wrapping • boxing • foam shells • despatch by mobile means
Transport includes:	• truck • trailer • train • plane • ship
Personal protective	• that prescribed under legislation, regulations and enterprise policies and practices

equipment includes:**Information and procedures include:**

- work procedures/instructions
- manufacturer specifications and instructions
- standard forms of workplace process and procedures
- organisation work specifications and requirements
- legislation, regulations and codes of practice
- quality and Australian Standards and procedures

Unit Mapping Information

Supersedes and is equivalent to LMFFDT4004A Assess environmental impact of a design

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=0601ab95-583a-4e93-b2d4-cfb27b03ed73>

Assessment Requirements for MSFFDT4004 Assess environmental impact of a design

Modification History

Release 1 - New unit of competency

Performance Evidence

- Collect, organise and understand information related to furnishing work instructions and work orders and safety procedures
- Apply safe handling requirements for equipment, products and materials, including use of personal protective equipment
- Identify materials used in the work process
- Follow work instructions, operating procedures and inspection processes to:
 - minimise the risk of injury to self or others
 - prevent damage to goods, equipment and products
 - maintain required production output and product quality
- Assess and measure the environmental impact of a design from its raw source through manufacture to its end use and disposal and recording of the impact study outcomes
- Produce a report on the impact study outcomes of a product
- Use mathematical ideas and techniques to correctly complete measurements, calculate area and estimate material requirements
- Lead others and work effectively to improve production quality and outcomes
- Communicate ideas and information to enable confirmation of work requirements and specifications and the reporting of work outcomes and problems, interpret basic plans and follow safety procedures
- Use workplace technology related to the coordination, including communication equipment, time and management aids and other measuring devices
- Minimise wastage of resources, including materials, time and money
- Work with others and in a team by recognising dependencies and using cooperative approaches to optimise work flow and productivity and encourage participation of employees in the planning of work activities and changes

Knowledge Evidence

- State or territory WHS legislation, regulations, standards and codes of practice relevant to assessing the environmental impact of a design
- Organisational and site standards, requirements, policies and procedures for assessing the environmental impact of a design
- Elements and principles of design
- Ergonomics and aesthetic values
- Types of tools and equipment and procedures for their safe use, operation and maintenance

- Characteristics of materials, products, sources and defects
- Energy consumption calculation
- Forest management and sustainability
- Illegal Logging Prohibition Act 2012
- Greenhouse gas emissions
- Resource utilisation
- Waste and waste management solutions
- Relevant computer programs
- Product assembly techniques and equipment capabilities
- Sketching and drawing techniques
- Procedures for the recording, reporting and maintenance of workplace records and information
- Appropriate mathematical procedures for estimation and measurement
- Environmental protection requirements
- Established communication channels and protocols
- Relevant problem identification and resolution

Assessment Conditions

- Assessors must:
 - hold training and assessment competencies as determined by the National Skills Standards Council (NSSC) or its successors
 - have vocational competency in the furnishing industry at least to the level being assessed with broad industry knowledge and experience, usually combined with a relevant industry qualification
 - be familiar with the current skills and knowledge used and have relevant, current experience in the furnishing industry.
- Assessment methods must confirm consistency of performance over time rather than a single assessment event and in a range of workplace relevant contexts.
- Assessment must be by observation of tasks where relevant, Assessment must be by observation of relevant tasks with questioning on underpinning knowledge and, where applicable, multimedia evidence, supervisor's reports, projects and work samples.
- Assessment is to be conducted on single units of competency or in conjunction with other related units of competency. Foundation skills are integral to competent performance in the unit and should not be assessed separately.
- Assessment must occur on the job or in a workplace simulated facility with relevant process, equipment, materials, work instructions and deadlines.
- Access is required to materials, equipment and specifications relevant to assessing the environmental impact of a design.

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