

Title	Produce a design from a supplied design concept		
Level	6	Credits	15

Purpose	People credited with this unit standard are able to: produce design alternatives from a supplied concept; develop design standards; produce a detailed design; and prepare documentation for a design.
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Classification	Engineering > Generic Engineering
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Available grade	Achieved
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Guidance Information

- 1 This unit standard applies to technician engineers working from published data rather than from first principles.
- 2 Definitions
Design refers to a fully integrated process controlling each stage in the creation of a new artifact (product, structure, machine, component or system);
design concept refers to the description of a specific solution to a specified requirement;
detailed design refers to the statement of a specific solution in sufficient detail to allow manufacture of the artefact;
company requirements include the policy, procedures, and methodologies of the company. They include requirements documented in company and site health and safety plans, quality assurance documents and contract work programmes.
- 3 The following note shall apply to the performance of all outcomes in this unit standard:
 all activities must comply with any policies, procedures, and requirements of the organisations involved; the ethical codes and standards relevant to professional bodies; and any relevant cultural, legislative and/or regulatory requirements, which may include but are not limited to: the Treaty of Waitangi, Health and Safety at Work Act 2015, Resource Management Act 1991, Building Act 2004, Copyright Act 1994, Contracts Enforcement Act 1956, and their subsequent amendments and regulations.

Outcomes and performance criteria

Outcome 1

Produce design alternatives from a supplied design concept.

Performance criteria

- 1.1 Analysis of supplied design concept identifies its purpose and relevant engineering principles.
- Range engineering principles – sustainability, functionality, serviceability, durability, economy, environment, nature of materials.
- 1.2 A range of alternative designs are generated within the constraints of supplied criteria, and company requirements.
- 1.3 The viability of generated design alternatives is confirmed as meeting the requirements of relevant stakeholders.
- Range stakeholders – client, production staff, sales staff, installation staff, commissioning staff, maintenance staff, internal and external inspectors.
- 1.4 Decision-making criteria are obtained and/or generated to meet project requirements.

Outcome 2

Develop design standards.

Performance criteria

- 2.1 Information inputs provide the basis for design standards in accordance with company requirements and selected design alternative.
- Range design inputs include, but are not limited to – site information, codes of practice relevant to the project, controlling authority requirements, industry standards, manufacturer's specifications.
- 2.2 Design standards developed are in accordance with client's requirements, design concept, and company requirements.

Outcome 3

Produce a detailed design.

Performance criteria

- 3.1 Design meets legal, client and company requirements, and the requirements of the supplied design concept.
- 3.2 Design reflects relevant engineering principles and current industry practice.
- Range engineering principles – sustainability, functionality, serviceability, durability, economy, environment, nature of materials;
industry practice – use of charts, tables, catalogues, computer programmes, design codes, standard methodologies.

- 3.3 Design meets the company's and/or client's requirements for presentation and documentation.
- Range presentation – formal, informal;
documentation – sketches, calculations, notes.
- 3.4 Design is confirmed as meeting the requirements of relevant stakeholders.
- Range stakeholders – client, production staff, sales staff, installation staff, commissioning staff, maintenance staff, internal and external inspectors.
- 3.5 Analysis of the inter-relationships of design components establishes the engineering integrity of the design.
- 3.6 Checking procedure validates the accuracy of the design in accordance with the company requirements.

Outcome 4

Prepare documentation for a design.

Performance criteria

- 4.1 Desired solution is documented to ensure that the project can be implemented.
- Range documentation includes – calculations, drawings, specifications.
- 4.2 Documentation prepared complies with controlling authority standards.
- 4.3 Documentation is communicated to related personnel in accordance with the company requirements.
- Range personnel – draughters, CAD operators, word processors, supervisor and/or principal, engineer.

This unit standard is expiring. Assessment against the standard must take place by the last date for assessment set out below.

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	24 February 1998	31 December 2020
Revision	2	7 June 2000	31 December 2020
Revision	3	19 February 2004	31 December 2020
Revision	4	14 July 2005	31 December 2020
Rollover and Revision	5	18 December 2006	31 December 2020
Review	6	24 January 2019	31 December 2020

Consent and Moderation Requirements (CMR) reference

0101

This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.