Achievement Standard

Subject Reference	Generic Technology 2.7				
Title	Demonstrate understanding of redundancy and reliability in technological systems				
Level	2	**Credits**	4	**Assessment**	External
Subfield	Technology				
Domain	Generic Technology				
Status	Registered	**Status date**	17 November 2011		
Planned review date	31 December 2016	**Date version published**	12 December 2013		

This achievement standard involves demonstrating understanding of redundancy and reliability in technological systems.

Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence
• Demonstrate understanding of redundancy and reliability in technological systems.	• Demonstrate in-depth understanding of redundancy and reliability in technological systems.	• Demonstrate comprehensive understanding of redundancy and reliability in technological systems.

Explanatory Notes

1 This achievement standard is derived from Level 7 of the Technology learning area in *The New Zealand Curriculum*, Learning Media, Ministry of Education, 2007; and is related to the material in the *Teaching and Learning Guide for Technology*, Ministry of Education at http://seniorsecondary.tki.org.nz.

Further information can be found at http://www.technology.tki.org.nz/.

Appropriate reference information is available in *Safety and Technology Education: A Guidance Manual for New Zealand Schools,* Ministry of Education at http://technology.tki.org.nz/Curriculum-support/Safety-and-Technology-Education, and the Health and Safety in Employment Act 1992.

2 *Demonstrate understanding of redundancy and reliability in technological systems* involves:

- explaining the importance of redundancy in the development of a technological system
- explaining the importance of reliability in the development of a technological system
- describing how redundancy was applied and reliability was addressed in a technological system.

Demonstrate in-depth understanding of redundancy and reliability in technological systems involves:

- explaining why decisions regarding redundancy and reliability were made in the development of a technological system.

Demonstrate comprehensive understanding of redundancy and reliability in technological systems involves:

- discussing how redundancy and reliability implications influenced design and maintenance decision making in the development of a system.

3 *Redundancy* in technological systems refers to the inclusion of additional components and/or subsystems to duplicate a function/s. Duplication provides 'back-up' or allows for increased 'fail-safe' tolerance.

4 *Reliability* in technological systems refers to a system's ability to perform consistently and maintain its expected functions when operated within stated conditions for a stated period of time. This also includes consideration of social, cultural and/or environmental factors which impact on a system's reliability.

5 Assessment Specifications for this achievement standard can be accessed through the Technology Resources page found at http://www.nzqa.govt.nz/qualifications-standards/qualifications/ncea/subjects/.

Quality Assurance

1 Providers and Industry Training Organisations must have been granted consent to assess by NZQA before they can register credits from assessment against achievement standards.

2 Organisations with consent to assess and Industry Training Organisations assessing against achievement standards must engage with the moderation system that applies to those achievement standards.

Consent and Moderation Requirements (CMR) reference 0233