Achievement Standard

Subject Reference	Science 1.3				
Title	Investigate implications of wave behaviour for everyday life				
Level	1	**Credits**	4	**Assessment**	Internal
Subfield	Science				
Domain	Science - Core				
Status	Registered	**Status date**	30 November 2010		
Planned review date	31 December 2016	**Date version published**	12 December 2013		

This achievement standard involves investigating implications of wave behaviour for everyday life.

Mutual exclusion exists between this standard and AS90938.

Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence
• Investigate implications of wave behaviour for everyday life.	• Investigate, in- depth, implications of wave behaviour for everyday life.	• Investigate, comprehensively, implications of wave behaviour for everyday life.

Explanatory Notes

1 This achievement standard is derived from *The New Zealand Curriculum*, Learning Media, Ministry of Education, 2007, Level 6. It is aligned with the Nature of Science and Physical World strands, and is related to the material in the *Teaching and Learning Guide for Science*, Ministry of Education, 2010 at http://seniorsecondary.tki.org.nz.

This standard is also derived from Te Marautanga o Aotearoa. For details of Te Marautanga o Aotearoa achievement objectives to which this standard relates, see the Papa Whakaako.

2 *Implications of wave behaviour for everyday life* may relate to issues involving individuals, groups of people, society in general, the environment, or natural phenomena.

3 *Investigate* involves showing awareness of how science is involved in an issue that students encounter in their everyday lives. This requires at least one of the following:
- the collection of primary evidence from an investigation and relating it to the scientific theory relevant to the issue
- the collection of secondary data and the identification of the scientific theory relevant to the issue under investigation. The issue must involve two different views, positions, perspectives, arguments, explanations, or opinions.

4 *Investigate, in depth,* involves providing reasons for the way science is involved in this issue. This requires at least one of the following:
- the collection of primary evidence from an investigation and relating it to the scientific theory relevant to the issue in order to give an explanation of the issue being investigated
- the collection of sufficient relevant secondary data and the application of the identified scientific theory relevant to the issue to explain the different views, positions, perspectives, arguments, explanations, or opinions of the issue under investigation.

5 *Investigate, comprehensively,* involves providing reasons and linking the reasons in a way that clearly explains the science that is involved in this issue. This requires at least one of the following:
- the collection of primary evidence from an investigation and relating it to the scientific theory relevant to the issue in order to give a comprehensive and critical explanation of the issue being investigated
- the collection of sufficient relevant secondary data and the application of the identified scientific theory relevant to the issue to critically evaluate the different views, positions, perspectives, arguments, explanations, or opinions of the issue under investigation.

6 Aspects of waves may be chosen from, but are not limited to:

Light: reflection at a plane surface, reflection and refraction at a straight boundary, dispersion of white light through a triangular prism, total internal reflection, speed of light in different media, the relationships that are relevant to the investigation.

Waves: longitudinal waves, transverse waves, period, wavelength, frequency, amplitude, speed, diffraction around a barrier, the relationships that are relevant to the investigation.

7 The procedures outlined in *Safety and Science: A Guidance Manual for New Zealand Schools*, Learning Media, Ministry of Education, 2000, must be followed during any practical component of the investigation.

8 Conditions of Assessment related to this achievement standard can be found at www.tki.org.nz/e/community/ncea/conditions-assessment.php.

Quality Assurance

1 Providers and Industry Training Organisations must be accredited by NZQA before they can register credits from assessment against achievement standards.

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

Accreditation and Moderation Action Plan (AMAP) reference 0233