

Title	Design blasting layouts and carry out blasting operations for construction and infrastructure sites		
Level	4	Credits	40

Purpose	People credited with this unit standard are able to: design blasting layouts for construction and infrastructure sites and prepare for work; contain site prior to blasting; test, charge, and initiate blast for construction and infrastructure sites; and carry out post-blast procedures.
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Classification	Extractive Industries > Surface Extraction
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Available grade	Achieved
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Prerequisites	Unit 21152, <i>Demonstrate and apply knowledge of storing explosives for use</i> ; and Unit 17694, <i>Demonstrate knowledge of explosives and their properties</i> ; or demonstrate equivalent knowledge and skills.
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Guidance Information

- Performance of the outcomes of this unit standard must comply with the following:
 - Health and Safety at Work Act 2015 (HSW);
 - Health and Safety at Work (General Risk and Workplace Management) Regulations 2016;
 - Health and Safety at Work (Worker Engagement, Participation, and Representation) Regulations 2016;
 - Health and Safety at Work (Hazardous Substances) Regulations 2017 and related Safe Work Instruments (SWIs) published by WorkSafe NZ;
 - approved codes of practice issued pursuant to the HSW Act;
 - WorkSafe New Zealand Act 2013;
 - Hazardous Substances and New Organisms (HSNO) Act 1996;
 - AS 2187.1:1998 *Explosives – Storage, transport and use – Storage*;
 - NZS 5433:1&2:2012 *Transport of dangerous goods on land*;
 - NZS 4403:1976 *Code of practice for the storage, handling and use of explosives (Explosives Code)*;
 - Occupational health and safety guidelines, available at <https://worksafe.govt.nz>.
- The Environmental Protection Authority (EPA) is responsible for assessing and approving hazardous substances and, where appropriate, setting controls on the way the substances are used. Any questions relating to the provisions for hazardous substances should be directed to [EPA New Zealand](#).

- 3 Any new, amended or replacement Acts, regulations, standards, codes of practice, guidelines, or authority requirements or conditions affecting this unit standard will take precedence for assessment purposes, pending review of this unit standard.
- 4 Special training in the use of different kinds of initiation systems for example, electric, non-electric, or electronic detonators is to be provided in accordance with the authority that has jurisdiction.
- 5 Blasting of structures, as covered in this unit standard does not encompass total collapse of multi-storied buildings.
- 6 People who want only to conduct blasting operations involving 'Land Work', e.g. agricultural workers, seismic blasters, conservation workers, or firewood contractors, (as opposed to Construction Blasting, e.g. roading or forestry contractors) should look to Unit 17700, *Design blasting layouts and carry out blasting operations for land work*.
- 7 **Definitions**
Industry best practice refers to those practices which competent practitioners within the industry recognise as current industry best practice. These may be documented in management plans, managers' rules, occupational health and safety policy, industry guidelines, codes of practice, manufacturers' instructions, and safe working and/or job procedures (or equivalent).
Company procedures and *site requirements* mean the documented methods for performing work activities and include health and safety, operational, environmental, and quality management requirements. They may refer to manuals, codes of practice, or policy statements.
- 8 This unit standard is intended for, but is not limited to, workplace assessment.
- 9 Joint assessment is required for this unit standard, which has been considered as critical by MITO New Zealand Incorporated because of the high degree of risk. Please contact MITO for further information about the requirements of joint assessment.

Outcomes and performance criteria

Outcome 1

Design blasting layouts for construction and infrastructure sites and prepare for work.

Range groundwork, removal of structures.

Performance criteria

- 1.1 Site assessment is carried out in relation to the client's requirements.
- 1.2 Site plans are analysed in terms of meeting the client's requirements.

Range site strata, underground services, overhead services, adjacent properties, resource consent, notification to statutory bodies.

- 1.3 Blasting management plans are prepared and analysed to ensure they meet the client's requirements, legislative requirements and company procedures.
- 1.4 The layout of explosives and blasting pattern is designed and recorded on blast plan in accordance with the site requirements and technical data.
- 1.5 Explosives are selected in accordance with the blast plan.
- Range primers, blasting products.
- 1.6 Initiation systems are selected with consideration for the environmental constraints.
- Range environmental constraints may include but are not limited to – electrical, gas, adjacent properties, radio frequencies, mobile telephones, static electricity, moisture, isolation procedures, vibration, air overpressure.
- 1.7 Personal protective equipment is worn in accordance with legislative requirements and company procedures.

Outcome 2

Contain site prior to blasting.

Performance criteria

- 2.1 Exclusion zone is established in terms of the size and extent of the proposed blast.
- 2.2 Signage appropriate to the situation is clearly displayed in accordance with industry best practice and legislative requirements.
- 2.3 Physical controls required are in place in accordance with industry best practice and legislative requirements.
- 2.4 Audible and visible warnings are set off, as required, in accordance with industry best practice and legislative requirements.

Outcome 3

Test, charge, and initiate blast for construction and infrastructure sites.

Performance criteria

- 3.1 Electrical and electronic detonators, where used, are tested in accordance with industry best practice.
- 3.2 Check is made for drilling accuracy before charging the blastholes in accordance with industry best practice.
- 3.3 Charge is primed and loaded in accordance with the blast plan.

3.4 Suitable stemming and physical containment, where required, is placed in accordance with the blast plan.

3.5 Blast initiation procedures are carried out in accordance with the blast plan.

Range may include but is not limited to – circuit test for electrical initiation, resistance test using a blasting galvanometer, electrical connection using an approved exploder, non-electrical initiation, safety fuses and plain detonator, electrical initiation, final warning, blast initiation.

Outcome 4

Carry out post-blast procedures.

Performance criteria

4.1 All charges are checked to ensure that complete firing has occurred in accordance with the blast plan.

4.2 Any identified misfires are reported, and recorded, and company procedures for isolation, recovery, and disposal are initiated in accordance with industry best practice.

4.3 Signage is removed and all clear signal is given in accordance with the blast plan.

Planned review date	31 December 2022
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	25 November 2000	31 December 2012
Review	2	19 April 2002	31 December 2012
Review	3	24 November 2005	31 December 2012
Review	4	18 March 2011	31 December 2017
Review	5	22 August 2014	N/A
Rollover and Revision	6	25 January 2018	N/A

Consent and Moderation Requirements (CMR) reference	0114
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

Comments on this unit standard

Please contact MITO New Zealand Incorporated info@mito.org.nz if you wish to suggest changes to the content of this unit standard.