

Title	Evaluate plans to manage old workings and inundations in underground sites <u>at extractive sites</u>		
Level	5	Credits	10

Purpose	People credited with this unit standard are able to: explain the reasons why old workings are a hazard, and explain methods for safely approaching and working through them; explain the type of mine -infrastructure and mining plans required to safely work in proximity to, and through, old workings; evaluate the hazards and causes of inrush and inundations and explain methods for managing them in underground sites <u>at extractive sites</u> ; identify and evaluate the documentation and reporting requirements for approaching and working through old workings and for inundation management; in underground <u>at extractive</u> sites.
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Classification	Extractive Industries > Underground Extraction <u>Extractive Industries Management</u>
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Available grade	Achieved
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Entry information	
Critical health and safety prerequisites	Unit 21281, Interpret and test for gases in an underground extraction site, or demonstrate equivalent knowledge and skills.

Guidance Information
Explanatory notes

- 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 (Mining Operations and Quarrying Operations) Regulations 2016;~~
 - ~~Health and Safety at Work (Worker Engagement, Participation, and Representation) Regulations 2016;~~
 - ~~approved codes of practice issued pursuant to the HSW Act.~~
 - ~~Health and Safety in Employment Act 1992 (HSE);~~
 - ~~Health and Safety in Employment Regulations 1995;~~
 - ~~Health and Safety in Employment (Mining Operations and Quarrying Operations) Regulations 2013;~~
 - ~~approved codes of practice issued pursuant to the HSE Act.~~

- 2 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.
- 3 Definitions
Company procedures mean the documented methods for performing work activities and include health and safety, operational, environmental, and quality management requirements. They may refer to legislation, regulations, guidelines, standard operating procedures, manuals, codes of practice, or policy statements.
Industry best practice may be documented in management plans, control plans, company procedures, managers' rules, occupational health and safety policy, industry guidelines, codes of practice, manufacturers' instructions, and safe working and/or job procedures (or equivalent).
- 4 Evidence for this unit standard may be obtained by reference to historic or a theoretical workplace that reflects current workplace conditions.

Outcomes and ~~evidence requirements~~ **performance criteria**

Outcome 1

Explain the reasons that old workings are a hazard, and explain methods for safely approaching and working through them.

Performance criteria **Evidence requirements**

- 1.1 Hazards are identified and evaluated at old workings in accordance with industry best practice.

Range **may includes** but is not limited to – inflow of water and other fluid material, old plan inaccuracy, fault variations and throw, inadequate barrier dimensions, type of rock barriers, inherent gas make, gas accumulations, spontaneous combustion, working under the sea and other surface water bodies, proximity to other seams, interconnections, fault and weak zone channels.
- 1.2 Methods for safely approaching old workings are explained in accordance with industry best practice.

Range **may includes** but is not limited to – old plan review, digitising old plans, realignment to survey grid system, research old documents and reports, examination of risks, exploratory drives, advance boreholes, refuge holes, escape routes, emergency sumps, drilling into water-filled workings, drilling equipment and safety features (stuffing boxes, pressure valves), gas release control, spontaneous combustion control, re-ventilation, re-stabilisation of the ground.

Outcome 2

Explain the type of ~~mine~~-infrastructure and ~~mining~~-plans required to safely work in proximity to, and through, old workings.

Performance criteria

~~Evidence requirements~~

2.1 Methods of ensuring old workings plans are accurate are explained in accordance with industry best practice.

Range ~~may~~ includes but is not limited to – old plan review, digitising old plans, realignment with survey grids, research of old documents and reports, re-survey known old working locations, visual inspections of portals and shafts.

2.2 ~~Mine~~-infrastructure required to work safely in proximity to, and through, old workings is explained in accordance with industry best practice.

Range ~~may~~ includes but is not limited to – drilling equipment and safety measures, water drainage and pumps, ventilation ~~systems and~~ ventilation control devices (VCDs), seals, dams, proximity to surface, spontaneous combustion control, re-ventilation, re-stabilisation of the ground, gas monitoring systems, gas drainage systems.

Outcome 3

Evaluate the hazards and causes of inrush and inundations and explain methods for managing them ~~in underground at extractive~~ sites.

Performance criteria

~~Evidence requirements~~

3.1 Origins, causes, and hazards associated with inrush and inundations are evaluated.

Range ~~may~~ includes but is not limited to – old working location, elevated water accumulations, surface located sources, barrier failure, inaccurate surveying, multiseam mining, interactions with goaf ~~faces~~ or stopes, gas pressure, geological stresses, induced stress, geological structures, gas outbursts, coal and rock outbursts, underground dam failure.

3.2 Methods for identifying and managing hazards associated with inrush and inundations are explained.

Range ~~may~~ includes but is not limited to – surface dams and barriers, emergency drainage routes, geotechnical monitoring, barrier protection, gas make, gas desorption tests and analysis, gas characteristics, inrush principal hazard management plan (PHMP), ~~outburst PHMP~~, delineation of risks areas, drilling ahead, gas

drainage, shofiring controls, authority to work, gas and environment monitoring, geophysical techniques.

Outcome 4

Identify and evaluate the documentation and reporting requirements for approaching and working through old workings and for inundation management.

Performance criteria
Evidence requirements

- 4.1 Documentation is identified in terms of recording hazards and occurrences of old workings and inundations.
- 4.2 Documentation is evaluated in terms of its purpose in accordance with industry best practice.

Range ~~may~~ **includes** but is not limited to – risk assessments, gas analysis reports, environmental monitoring system reports, working place reports, geological structure evaluation, geotechnical reports, shift supervisor reports, air flow reports, hazard reports, updated mine plans, piezometer readings.

Replacement information	This unit standard replaced unit standard 17746.
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Planned review date	31 December 2019 <u>2022</u>
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	24 November 2005	31 December 2017
Rollover and Revision	2	16 July 2010	31 December 2017
Review	3	18 June 2015	N/A <u>31 December 2019</u>
<u>Review</u>	<u>4</u>		<u>N/A</u>

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>.

Please note

~~Providers must be granted consent to assess against standards (accredited) by NZQA, before they can report credits from assessment against unit standards or deliver courses of study leading to that assessment.~~

~~Industry Training Organisations must be granted consent to assess against standards by NZQA before they can register credits from assessment against unit standards.~~

~~Providers and Industry Training Organisations, which have been granted consent and which are assessing against unit standards must engage with the moderation system that applies to those standards.~~

~~Requirements for consent to assess and an outline of the moderation system that applies to this standard are outlined in the Consent and Moderation Requirements (CMR). The CMR also includes useful information about special requirements for organisations wishing to develop education and training programmes, such as minimum qualifications for tutors and assessors, and special resource requirements.~~

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.~~

~~Please contact the NZ Motor Industry Training Organisation (Incorporated) (MITO) info@mito.org.nz if you wish to suggest changes to the content of this unit standard.~~