Title	Demonstrate knowledge of geology and geotechnical features and hazards for surface extraction		
Level	4	Credits	5

Purpose	People credited with this unit standard are able to demonstrate knowledge of geology and geotechnical features and hazards for surface extraction.
---------	--

Classification	Extractive Industries > Surface Extraction
Available grade	Achieved

Guidance Information

- 1 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 2022;
 - Health and Safety at Work (Worker Engagement, Participation, and Representation) Regulations 2016;
 - Approved codes of practice issued pursuant to the HSW Act.

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.

2 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 good 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).

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of geology and geotechnical features and hazards for surface extraction.

Performance criteria

- 1.1 Rock and soil types are identified and described in terms of their formation and characteristics.
 - Range rock types igneous, metamorphic, sedimentary; soil types gravel, sand, clay, silt.
- 1.2 Geological and geotechnical features occurring in relation to potential impact in the operations are described.
 - Range features may include but are not limited to depositional (bedding, seam, lamination, stratigraphy, overburden, etc), intrusive/metamorphic (dyke, sill, lava flow, columnar joint, flow banding, hydrothermal alteration, orebody, foliation, etc), tectonic (fold, cleavage, fracture, joint, fault, shear, stress direction etc), erosional (washout, weathering, stress relief, landslide, karstic void, cave, gully, tomo, slope debris, seepage, rilling, etc), or induced (blast damage, stress relief, old underground workings, backfill, buried topsoil, etc).
- 1.3 Ground features indicating impending or active movement are described.
 - Range features may include but are not limited to tension cracks and slumping, rockfall, bulging slopes, floor heave, subsidence, increased seepage and fretting of material
- 1.4 Risk management of geological and geotechnical hazards and failures within an extractives site are described with reference to safety management plans and industry good practices.
 - Range hazards may include but are not limited to slope instability, rockfall, undercut stockpile, subsidence, caving into voids, earthquake movement, tiphead failure, and mineral toxicity; risk management may include but is not limited to – risk assessment, slope and earthworks design, monitoring, recording, reporting, 3D scanning/photogrammetry mapping, InSAR (Interferometric Synthetic Aperture Radar), external geotechnical advice, ground support, excavation limits, rockfall protection, ground water and surface water management.

Planned review date	31 December 2029
---------------------	------------------

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	25 July 1999	31 December 2017
Review	2	27 January 2005	31 December 2017
Rollover and Revision	3	16 July 2010	31 December 2017
Review	4	18 June 2015	31 December 2019
Review	5	1 March 2018	31 December 2026
Review	6	30 January 2025	N/A

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

Comments on this unit standard

Please contact Hanga-Aro-Rau Manufacturing, Engineering and Logistics Workforce Development Council <u>qualifications@hangaarorau.nz</u> if you wish to suggest changes to the content of this unit standard.