

Title	Demonstrate knowledge of the principles of electromagnetic location		
Level	3	Credits	5

Purpose	People credited with this unit standard are able to demonstrate knowledge of the principles of electromagnetic location (EML).
----------------	--

Classification	Infrastructure Works > Generic Infrastructure Works
-----------------------	---

Available grade	Achieved
------------------------	----------

Guidance Information

- 1 Evidence presented for assessment against this unit standard must be consistent with safe working practices and be in accordance with industry requirements.
- 2 Legislation and guidelines relevant to this unit standard include:
 - Health and Safety at Work Act 2015;
 - *Excavation Safety Good Practice Guidelines*;
 - *Guide for Safety with Underground Services*: available from www.worksafe.govt.nz and any subsequent amendments and replacements.
- 3 Definitions

Industry requirements may refer to but are not limited to relevant policies, processes, methodologies, industry codes of practice, site specific health and safety plans, standard operating procedures, site safety plans, quality plans, work plans, traffic management plans, contract work programmes, job safety analysis, safe work method statements, job instructions, manufacturer's requirements, contract specifications, manuals, procedural documents.

Utility locating refers to any application aimed at position or depth determination of man-made objects embedded within the earth. This includes target location of electrical, water, and gas lines. The principal objectives are target identification and accurate measurement of its position and depth.
- 4 Range

Two different locations.

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of the principles of EML.

Performance criteria

- 1.1 Electromagnetic induction is explained in terms of detecting electromagnetic fields generated around a conducting metallic line.
- Range electro-magnetic field, the signal, alternating current, signal frequency, receiver, transmitter, effect of capacitance on alternating current (ac) circuits.
- 1.2 Active and passive signals are described in terms of their use in locating a trace line.
- 1.3 Application of an active signal is described.
- Range mode of connection, direct connection, induction, clamping the signal.
- 1.4 Passive signals are explained in terms of how they can be used for underground utility locating.
- 1.5 Aerials are described in terms of how they are used to get the strongest response and locate a signal on a line.
- 1.6 Twin aerial antenna are described in terms of how they measure depth.
- 1.7 A sonde transmitter is described in terms of how it is used to locate non-metallic ducts, drains or sewers.

Planned review date	31 December 2027
----------------------------	------------------

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	2 March 2023	N/A

Consent and Moderation Requirements (CMR) reference	0101
--	------

This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

Comments on this unit standard

Please contact Waihangā Ara Rau Construction and Infrastructure Workforce Development Council at qualifications@WaihangāAraRau.nz if you wish to suggest changes to the content of this unit standard.