

Title	Plan and install an underground drain system for rural land drainage		
Level	4	Credits	15

Purpose	people credited with this unit standard are able to: plan the underground drain system for rural land; select and prepare equipment, machinery, and materials for underground drain system; install an underground rural land drain system; and carry out post-operational procedures.
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Classification	Rural Contracting > Agricultural Contracting
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Available grade	Achieved
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Prerequisites	Driver licence and any driver licence endorsement appropriate to the machine or vehicle being used.
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Guidance Information

- 1 The following legislation and requirements apply to this unit standard:
Health and Safety in Employment Act 1992;
Resource Management Act 1991;
Territorial authority and/or regional council (TA/RC) requirements;
Guidelines for the Provision of Safety, Health and Accommodation in Agriculture (Wellington: Department of Labour, 1996); and
Approved Code of Practice for Excavation and Shafts for Foundations (Wellington: Department of Labour, 1995); both available from <http://www.osh.govt.nz/order/catalogue>;
Operator Safety Manual for Earthmoving Machinery, 2006, Connexis Infrastructure ITO;
Manufacturer's instructions.
Any legislation or other requirement superseding any of the above will apply, pending review of this unit standard.
- 2 Assessment against this unit standard must be based on evidence from a workplace context.
- 3 Personal protective equipment, appropriate to job requirements, is to be selected and used in accordance with company requirements and manufacturer's instructions.
- 4 Definitions
Company requirements refer to all policies, procedures, and methodologies the candidate's organisation has in place including but not limited to those relating to health, safety, environment, quality, and operations.

Manufacturer's instructions may include specifications, installation, handling, use, and maintenance instructions and safety data sheets.

Underground drains means drains constructed to drain soils for agricultural purposes.

Outcomes and performance criteria

Outcome 1

Plan the underground drain system for rural land.

Performance criteria

- 1.1 Objectives and requirements of the land drainage system are established with the client.
- 1.2 System layout is developed in accordance with client requirements.
- 1.3 Grade is calculated and set to ensure sufficient fall for drainage.
- 1.4 Hazards are identified in terms of underground services, in-ground services, overhead objects, surface obstacles, and contours.
- 1.5 Excavation and trenching work pattern is developed that minimises empty running, and takes account of the terrain and identified hazards.
- 1.6 Ground conditions are checked for suitability for mole ploughing and trenching and any requirements for shoring.
- Range soil type, soil conditions, terrain.
- 1.7 Planning is in accordance with TA/RC requirements.

Outcome 2

Select and prepare equipment, machinery, and materials for underground drain system.

Performance criteria

- 2.1 Equipment and machinery chosen are appropriate for the work to be carried out.
- Range may include – excavator, trencher, tractor, mole ploughs.
- 2.2 Equipment and machinery are checked for condition, damage, wear, and faults; problems are identified; and corrective action is taken in accordance with manufacturer's instructions and company requirements.
- Range may include but is not limited to – tracks, track tension, trencher chain, nuts and bolts, bearings, hydraulic system transmission system, couplings, alignments, tiling chute, mole ploughs.

- 2.3 Checks are made and any necessary actions are taken or adjustments made to ensure the mobile machinery complies with legal and company requirements for operator health and safety.

Range may include but is not limited to – fire extinguisher, first aid equipment, seat, safety belt, mirrors, controls, climate control, sound equipment, communications equipment.

- 2.4 Materials required are acquired in accordance with company requirements and requirements of the job.

Outcome 3

Install an underground rural land drain system.

Performance criteria

- 3.1 A check is made to ensure backfill material meets job requirements, and any discrepancies are reported in accordance with company requirements.

- 3.2 Drains are excavated to predetermined line and grade in accordance with system planned.

- 3.3 Drains are laid in accordance with system planned.

Range tile or novaflow or plastic pipes, aggregate, backfill.

- 3.4 Drains are constructed at the predetermined depth and angle in accordance with system planned.

- 3.5 Drains are constructed causing no damage to machinery, equipment, and existing drains or services.

- 3.6 Equipment and machinery are monitored during use, and required adjustments are made to replace worn parts and to ensure required line, grade, and mole depth.

- 3.7 Installation checks are made in accordance with company requirements.

- 3.8 Backfill material is placed and compacted and site is reinstated in accordance with client and TA/RC requirements and company requirements.

Outcome 4

Carry out post-operational procedures.

Performance criteria

- 4.1 Shut-down procedures are carried out in accordance with manufacturer's instructions.

- 4.2 Equipment is cleaned and, as required, treated in accordance with manufacturer's instructions and/or company requirements.
- 4.3 Lubrication is carried out in accordance with manufacturer's instructions.
- 4.4 Any damage or faults including any missing, bent, broken, or loose parts are identified and are repaired, replaced, or reported in accordance with manufacturer's instructions and/or company requirements.
- 4.5 Equipment and machinery are stored in accordance with company requirements.
- 4.6 Documentation for the operation is completed in accordance with company and client requirements, and is stored in accordance with company requirements.

This unit standard is expiring. Assessment against the standard must take place by the last date for assessment set out below.

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	23 July 1996	31 December 2021
Revision	2	5 January 1999	31 December 2021
Revision	3	18 January 2000	31 December 2021
Review	4	31 October 2002	31 December 2021
Review	5	25 June 2007	31 December 2021
Review	6	26 March 2020	31 December 2021

Consent and Moderation Requirements (CMR) reference	0101
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.