

Title	Demonstrate knowledge of harvest planning and evaluate a given operational forest harvesting plan		
Level	5	Credits	8

Purpose	People credited with this unit standard are able to: describe the objectives of harvest planning; describe the pre-planning requirements of an operational forest harvesting plan; explain forest road and landing construction; explain forest road network maintenance requirements; evaluate a given operational harvesting and roading plan; and evaluate construction costs of a given forest roading plan.
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Classification	Forestry > Forest Operations Management
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Available grade	Achieved
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Guidance Information

- 1 Legislation relevant to this unit standard includes the Health and Safety at Work (HSW) Act 2015, and any subsequent amendments.
- 2 Definition
Accepted industry practice – approved codes of practice and standardised procedures accepted by the wider forestry industry as examples of best practice.
- 3 Reference
Colley, M. *Forestry handbook / New Zealand Institute of Forestry Inc.* (4th ed). (2005). Christchurch: New Zealand Institute of Forestry Inc.

Outcomes and performance criteria

Outcome 1

Describe the objectives of harvest planning.

Performance criteria

- 1.1 Harvest planning objectives are described in accordance with accepted industry practice.

Range good environmental outcomes, maximise productivity of harvest and transport operations, optimise total systems cost, safe operations.

- 1.2 The potential impacts of poor planning on operational performance are described in accordance with accepted industry practice.

Outcome 2

Describe the pre-planning requirements of an operational forest harvesting plan.

Performance criteria

- 2.1 Sources and type of data used to develop a harvest plan are identified and described in accordance with accepted industry practice.

Range mensuration data, stand records, site data, maps.

- 2.2 The process for identifying sensitive areas and other constraints of the site is described in accordance with accepted industry practice and the reference text.

- 2.3 The use of a digital terrain model to aid in planning is described in accordance with the reference text.

- 2.4 Legislative and regulatory requirements to be considered in the development of a harvest plan are identified in accordance with accepted industry practice.

Outcome 3

Explain forest road and landing construction.

Performance criteria

- 3.1 Different types of forest roads are compared in accordance with accepted industry practice.

Range arterial, secondary, spur, track.

- 3.2 Factors that affect road and landing density and design are described in accordance with accepted industry practice and the reference text.

Range topography, construction cost, volume of wood, truck configuration.

- 3.3 Risk factors and risk management techniques in forest road construction are explained in accordance with accepted industry practice.

Range risk factors include – road failure, lack of water control;
risk management techniques include – increased monitoring,
preventative maintenance, early intervention.

3.4 Factors that impact on the location of roads and landings are described in accordance with accepted industry practice.

Range may include but is not limited to – water courses, bridges, valleys, mid-slope, ridge-top, land ownership, cultural or heritage, aesthetics.

3.5 Specifications for forest roads and landings are explained in accordance with accepted industry practice.

Range width, formation, super elevation, gradients, radius of curve, cross fall, sightlines, junctions, shape, size, metal quality.

3.6 Factors impacting on road design are explained in accordance with accepted industry practice.

Range sub grade, shape, drainage, materials, compaction, strength.

3.7 Testing methods for determining pavement strength and deflection are explained in accordance with the reference text.

Range California Bearing Ratio, Benkelman Beam.

3.8 Road construction techniques are described in accordance with accepted industry practice.

Range side casting, benching, end-hauling, cut and fill.

3.9 Design software used to assist in the planning of forest road and landing location is described in accordance with accepted industry practice.

Outcome 4

Explain forest road network maintenance requirements.

Performance criteria

4.1 Road maintenance strategies are compared in terms of cost and impact on operational productivity in accordance with accepted industry practice and the reference text.

Range planned, reactive.

4.2 Factors that impact on maintenance decisions are described in accordance with accepted industry practice and the reference text.

Range rainfall and run-off, traffic volume, material availability, material quality, expected future road use.

Outcome 5

Evaluate a given operational harvesting and roading plan.

Performance criteria

- 5.1 The topography of the block is analysed and an alternative road and landing layout option is compared with the given plan.

Range number of landings, harvesting system, length of road, average haul distance.
- 5.2 Drainage requirements and costs are evaluated for the given plan in accordance with accepted industry practice.
- 5.3 Log transport options for the given plan are evaluated in accordance with the reference text.
- 5.4 Post-harvest rehabilitation requirements are described in accordance with accepted industry practice.

Outcome 6

Evaluate construction costs of a given forest roading plan.

Performance criteria

- 6.1 Factors on the cost of road and landing construction are identified and their impact is described in accordance with accepted industry practice and the reference text.

Range may include but is not limited to – weather, availability of in-situ material, distance to quarry, volume of cut and fill, machine configuration, machine availability.
- 6.2 The quantities of on and off-site materials to be moved are evaluated in accordance with accepted industry practice.

Range cut and fill volumes, end haul volumes, imported material volumes.
- 6.3 The road and landing cost of the plan is evaluated in accordance with accepted industry practice and the reference text.

Planned review date	31 December 2028
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	16 October 2009	31 December 2017
Review	2	10 December 2015	N/A
Rollover and Revision	3	28 May 2020	N/A
Rollover	4	26 April 2024	N/A

Consent and Moderation Requirements (CMR) reference	0173
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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 Muka Tangata - People, Food and Fibre Workforce Development Council qualifications@mukatangata.nz if you wish to suggest changes to the content of this unit standard.