

<b>Title</b>	<b>Demonstrate knowledge of and analyse forest operations supply chains</b>		
<b>Level</b>	<b>5</b>	<b>Credits</b>	<b>10</b>

<b>Purpose</b>	People credited with this unit standard are able to: explain supply chain management in forestry operations; describe the principles of forestry operations inventory management; describe the nature of sales arrangements employed in New Zealand forestry; describe log dispatching systems used in forest operations; describe New Zealand log export operations; analyse given forestry supply chains and recommend the most efficient option; explain monitoring in a forest operations supply chain.
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<b>Classification</b>	Forestry > Forestry Business Management
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<b>Available grade</b>	Achieved
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### Guidance Information

- 1 The quality of an operation is assessed on factors such as overall efficiency, financial efficiency, waste minimisation, time management, resource management, output quality, level of re-work required, safety record, and teamwork demonstrated.
- 2 References  
 Colley, M. *Forestry handbook / New Zealand Institute of Forestry Inc.* (4<sup>th</sup> ed). (2005). Christchurch: New Zealand Institute of Forestry Inc.  
 McLaren, J.P. *Radiata Pine Growers Manual.* (1993). FRI Bulletin 184. Rotorua, New Zealand: New Zealand Forest Research Institute.  
 Ministry of Primary Industries. *Situation and Outlook for New Zealand Agriculture and Forestry*, available at [www.mpi.govt.nz](http://www.mpi.govt.nz).  
 New Zealand Forest Owners Association, the Wood Processors Association of New Zealand, and the Ministry of Primary Industries. *New Zealand Forest Industry Facts & Figures*, available at [www.nzfoa.org.nz](http://www.nzfoa.org.nz). The *New Zealand Forest Industry Facts & Figures* is published yearly and candidates must use the most recent publication.
- 3 Definition  
*Forestry operations* refer to all activities forming a part of the work carried out in a forest including: forest establishment, silviculture, harvesting, forest inventory, and forest and crew management.

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## Outcomes and performance criteria

### Outcome 1

Explain supply chain management in forestry operations.

#### Performance criteria

1.1 Terminology used in supply chain management in a forestry operation is explained in accordance with the reference texts.

Range includes but is not limited to – demand, demand planning, market segments, channels, production, make to order, make to stock, supply, order acceptance, order fulfilment, distribution.

1.2 Planning hierarchies used in forestry supply chain management are described in accordance with the reference texts.

Range strategic, tactical, operational.

1.3 An example of a forestry supply chain is described and end-to-end costs explained in accordance with the reference texts.

### Outcome 2

Describe the principles of forestry operations inventory management.

#### Performance criteria

2.1 The objectives of inventory management are explained in accordance with the reference texts.

Range maximise customer service, minimise inventory holding cost, maintain stock quality, maximise production efficiency, maximise transport efficiency.

2.2 The costs of inventory are explained in accordance with the reference texts.

Range capital, storage, deterioration, production efficiency, obsolescence.

2.3 Features of an inventory management system used in forestry operations are described in accordance with the reference texts.

Range fluctuation in supply and demand, stock rotation, anticipation of future demand, capacity, stock in transit, tracking systems, product identification.

2.4 Log inventory locations used in forestry operations are explained and the costs of the different locations are compared.

Range forest, yard, port, customer, intermediate locations.

**Outcome 3**

Describe the nature of sales arrangements employed in New Zealand forestry.

**Performance criteria**

3.1 Marketing relationships in New Zealand forestry are described in accordance with the reference texts.

Range traders, agencies, in-market representation.

3.2 Description differentiates different contract arrangements.

Range may include but is not limited to – short-term, long-term, fixed volume, take or pay.

3.3 Points of sale terms commonly used in sales arrangements are defined in accordance with the reference texts.

Range stumpage, at road side, on truck, at mill, at wharf gate, free along side, free on board, Cost and Freight.

3.4 Contract terms commonly used in commercial forestry are defined in accordance with the reference texts.

Range may include but is not limited to – pricing mechanisms, terms of payment, documentation, adjustments and indexing, quality penalties.

**Outcome 4**

Describe log dispatching systems used in forest operations.

**Performance criteria**

4.1 Systems used to manage the dispatch of log trucks are identified and described in accordance with the reference texts.

4.2 Types of log distribution documentation are identified and the function of each document is explained in accordance with the reference texts.

Range load delivery docket, weighbridge docket, tare weight certificate, loader printout, weighbridge certification.

4.3 The key performance indicators (KPIs) for measuring performance in log distribution are explained in accordance with the reference texts.

Range productivity, efficiency, utilisation, delivery in full on time, percentage loaded running, demurrage, average small end diameter.

**Outcome 5**

Describe New Zealand log export operations.

**Performance criteria**

5.1 Ports in New Zealand that export logs and wood products are identified and constraints of operation are described in accordance with the reference texts.

Range may include but is not limited to – ship size, port constraints, storage space.

5.2 The operations involved in log exports and the functions of port staff are explained in accordance with the reference texts.

Range unloading, storage, scaling, biosecurity, quality control, marshalling, stevedoring, shipping.

5.3 Two factors that impact on shipping costs to New Zealand exporters are identified and described in accordance with the reference texts.

**Outcome 6**

Analyse given forestry supply chains and recommend the most efficient option.

Range domestic direct, export direct, domestic via yard, export via yard.

**Performance criteria**

6.1 The structure of each supply chain is described, including each step in the supply chain process, in accordance with the reference texts.

6.2 Information requirements for each step of the supply chain are described in accordance with the reference texts.

Range orders, production, inventory, procurement, transport capacity.

6.3 Options using given costs and volumes for the supply chain are compared.

Range truck configuration, utilisation, productivity, cost.

6.4 The supply chain plan that best meets customer requirements at least total cost is identified in accordance with the reference texts.

**Outcome 7**

Explain monitoring in a forest operations supply chain.

**Performance criteria**

- 7.1 KPIs for each step of the supply chain are described in accordance with the reference texts.
- Range production, procurement, transport, inventory management.
- 7.2 The way to improve the effectiveness of a supply chain through the implementation of a monitoring system is described.
- Range log inventory in forest, yards, and port; log deliveries to port and domestic customers; customer service; processing; added value and cost.
- 7.3 The impact of changes to variables on the supply chain plan is explained.
- Range variables include – customer orders, lead times, production volumes, grade out-turn, transport availability.
- 7.4 Remedial actions used to correct variances against KPIs are described in accordance with the reference texts.

<b>Planned review date</b>	31 December 2022
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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

<b>Consent and Moderation Requirements (CMR) reference</b>	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 at Competenz [qualifications@competenz.org.nz](mailto:qualifications@competenz.org.nz) if you wish to suggest changes to the content of this unit standard.