

Title	Maximise timber recovery in sawmill operations		
Level	5	Credits	25

Purpose	People credited with this unit standard are able to: manage safety when working in log yard and sawmill operations to maximise timber recovery; compare log supply with log specification; complete a sawing study; evaluate volume calculation methods and complete conversion, volume, and value calculations on logs; complete a sawing variation study; complete a study on the effect of feed and/or speed on sawing accuracy; and analyse sawmill operations for bottlenecks.
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Classification	Solid Wood Manufacturing > Sawmilling
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Available grade	Achieved
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Guidance Information

- 1 Legislation
Health and Safety at Work Act 2015.
Resource Management Act 1991.
- 2 Definitions
Accepted industry practice – approved codes of practice and standardised procedures accepted by the wider sawmilling industry as examples of best practice.
LED – large end diameter.
SED – small end diameter.
Workplace procedures refer to documented policies and procedures set by the organisation carrying out the work, and to documented or other directions provided to staff, and applicable to the tasks being carried out. They may include but are not limited to – standard operating procedures, site specific procedures, site safety procedures, equipment operating procedures, quality assurance procedures, product quality specifications, references, approved codes of practice, housekeeping standards, environmental considerations, on-site briefings, supervisor’s instructions, and procedures to comply with legislative and local body requirements relevant to the industry sector.
- 3 Assessment information
All activities and evidence must meet workplace procedures and accepted industry practice.

Outcomes and performance criteria

Outcome 1

Manage safety when working in log yard and sawmill operations to maximise timber recovery.

Performance criteria

- 1.1 Hazards associated with working in log yard and sawmill operations to maximise timber recovery are identified and actions to be taken to manage the hazards are described.
- Range hazards may include but are not limited to – moving equipment (cranes, chains, conveyors), machines, dust, mobile plant, noise, other people's actions.
- 1.2 Safe work practices used in log yard and sawmill operations are explained and applied.
- Range practices may include but are not limited to – isolation procedures, lock-outs, emergency stops, machine guarding, wearing appropriate safety equipment, reporting.

Outcome 2

Compare log supply with log specification.

Range evidence required of a minimum of three truckloads of logs with a mix of log grades.

Performance criteria

- 2.1 Documentation for sample loads is checked for grade and weight data.
- 2.2 Loads are measured and tallied.
- Range length, LED, SED.
- 2.3 Logs are graded using company log specifications, grades are compared with delivery documentation, and discrepancies are reported.
- 2.4 Under-bark volumes are calculated using the Smalian formula, and weight-to-volume conversions are calculated for each load.
- 2.5 Volume and weight data are analysed and reported.
- Range report includes any recommendation for improvement in the log supply.

Outcome 3

Complete a sawing study.

Range evidence of a minimum three separate batches, each consisting of a minimum of 15 logs is required.

Performance criteria

- 3.1 Sample logs and plant are prepared, and operating staff are briefed for the study.
- 3.2 Logs are monitored through the sawmill operation.
- 3.3 Green volumes are measured and recorded; grade values, conversion rates, and product yields are calculated and deviations from standards are reported.
- 3.4 Processing costs and revenues are calculated from specific mill processing costs and sales data.
- 3.5 Any recommendations for improvement in the sawing area are made from the results of the study.

Outcome 4

Evaluate volume calculation methods and complete conversion, volume, and value calculations on logs.

Performance criteria

- 4.1 Log volume calculations methods are evaluated, conversion values and a preferred method is identified and justified.
Range two methods.
- 4.2 Volume and value calculations are completed from collected data.
- 4.3 Log value calculations are completed from collected product mix data.

Outcome 5

Complete a sawing variation study.

Range evidence required of a minimum of three machine centres.

Performance criteria

- 5.1 Sample input materials and plant are prepared, and operating staff are briefed for the study.
- 5.2 Sawing operations are monitored, and conditions recorded.

5.3 Output materials are measured, and results recorded.

5.4 Data is analysed for within-board and between-board variation and potential causes are identified.

Range potential causes of variation is identified, any recommendations for improvements in sawing variation are made.

Outcome 6

Complete a study on the effect of feed and/or saw speed on sawing accuracy.

Range evidence is required of three speed settings.

Performance criteria

6.1 Sample input materials and plant are prepared, and operating staff are briefed for the study.

6.2 Sawing operations are monitored, and conditions recorded.

6.3 Output materials are measured, and results recorded for each speed setting.

6.4 Data is analysed for within-board and between-board variation and variations are reported.

6.5 Gullet loadings for the trial saw centre are calculated.

6.6 Any recommendations are made on feed or saw speed from the results of the study.

Outcome 7

Analyse sawmill operations for bottlenecks.

Performance criteria

7.1 Cutting schedule for a given sawmill operation is determined.

7.2 Sawmill machine activities per log are identified and recorded.

7.3 Human and machine activities are analysed to determine bottlenecks.

7.4 Sawmill operations are sketched with flows, process, merge and sort centres identified.

7.5 Any recommendations on improvements to process flow from the study are made.

Planned review date	31 December 2024
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	28 August 1996	31 December 2019
Review	2	10 February 1999	31 December 2020
Review	3	18 December 2006	N/A
Review	4	23 April 2020	N/A

Consent and Moderation Requirements (CMR) reference	0013
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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 Competenz qualifications@competenz.org.nz if you wish to suggest changes to the content of this unit standard.