

Title	Calculate, plan, and use advanced rigging, and describe speed line system installation in arboriculture tree work		
Level	5	Credits	10

Purpose	People credited with this unit standard are able to: calculate and plan a tree rigging job; select rigging system equipment and prepare for use under load; tie, dress and use knots for sectional rigging; use rigging systems to lower timber sections; and describe installation of speed line systems to lower sections of timber.
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Classification	Horticulture > Arboriculture
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Available grade	Achieved
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Guidance Information

- 1 Legislation, standards and codes relevant to this standard includes but is not limited to:
 - Health and Safety at Work Act 2015;
 - Resource Management Act 1991;
 - BS 3998:2010, *Tree work. Recommendations*, available from www.britishstandard.org.uk;
 - ANSI A300, *Standards for Tree Care Operations* (Parts 1 – 7) and their subsequent amendments, available from www.isa-arbor.com;
 - WorkSafe New Zealand, *Approved Code of Practice Safety and Health in Arboriculture* (2012), available from www.worksafe.govt.nz/worksafe;
 - WorkSafe New Zealand, *Approved Code of Practice for Safety and Health in Tree Work Part 2: Maintenance of trees around power lines* (1996), available from www.worksafe.govt.nz/worksafe;
 - WorkSafe New Zealand, *Best Practice Guidelines - Mobile Elevating Work Platforms* (2017), available from www.worksafe.govt.nz/worksafe;
 - WorkSafe New Zealand, *Approved Code of Practice (ACOP) for safety and health in forest operations* (2012), available from www.worksafe.govt.nz/worksafe;
 - WorkSafe New Zealand, *Guide for Safety with Underground Services* (2002), available from www.worksafe.govt.nz/worksafe;
 - New Zealand Arboricultural Association Inc. (NZ Arb), *Best Practice Guide (BPG) for Safety Requirements in New Zealand Arboricultural Operations* (2017), available from www.nzarb.org.nz; and any subsequent amendments.

2 Definitions

Rigging refers to systems used for felling or limb removal.

Workplace procedures refer to the policies and procedures on safety and operation set down by the employer or organisation. Workplace procedures should reflect industry best practice, the GPG, equipment manufacturers' requirements, and current legislation.

- 3 For the purposes of assessment evidence must be presented in accordance with workplace procedures.

Outcomes and performance criteria

Outcome 1

Calculate and plan the tree rigging job.

Performance criteria

- 1.1 Calculate the masses of given timber sections.
- 1.2 Calculate the load of a known mass of timber falling a known distance.
- 1.3 Calculate the forces on each component of the rigging system when under load.
- 1.4 Plan how the tree rigging will be conducted with reference to these calculations.

Outcome 2

Select rigging system equipment and prepare for use under load.

Performance criteria

- 2.1 Identify and select suitable equipment and techniques for an arboriculture rigging system.

Range evidence of five items of equipment is required.
- 2.2 Identify and manage hazards involved in the work and at the site.
- 2.3 Describe the safe working load and breaking strain of the equipment selected and determine the weakest component of the system.
- 2.4 Establish communication systems with the groundperson.

Range may include but is not limited to – radio communication, hand signals, verbal communication; evidence of two is required.
- 2.5 Brief ground staff on the removal procedure.

Range method and sequence of work, individual responsibilities.

Outcome 3

Tie, dress and use knots for sectional rigging.

Range running bowline, cow hitch, clove hitch, timber hitch, and one of alpine butterfly or bowline on a bight.

Performance criteria

3.1 Identify the knots used for sectional rigging.

3.2 Select the appropriate knot for each component of the rigging system.

Range mid-line knot, anchor attachment, timber being lowered, tensioning knot.

3.3 Tie and dress knots.

3.4 Use knots in sectional rigging situations.

Outcome 4

Use rigging systems to lower timber sections.

Range from above 10 metres, sections minimum weight 50 kg, from a mature tree.

Performance criteria

4.1 Identify section to be removed and attach to rigging system.

4.2 Adopt a safe working position.

Range anchor points, double tie in, work position stable and safe.

4.3 Remove timber sections in a safe and controlled manner.

Range vertical and horizontal timber sections.

4.4 Lower timber sections under climber's directions.

Outcome 5

Describe installation of a controlled speed line system to lower sections of timber.

Performance criteria

5.1 Describe the procedures for selecting anchor points and establishing a speed line.

- 5.2 Describe techniques for attaching timber to the speed line in terms of maximum timber sizes, and speed line configuration.

Range tip rope, butt rope, cradle.

- 5.3 Describe how to lower timber down the speed line in a controlled manner.

Planned review date	31 December 2026
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	11 December 2009	31 December 2019
Review	2	26 April 2018	31 December 2024
Review	3	24 June 2021	N/A
Revision	4	27 January 2022	N/A

Consent and Moderation Requirements (CMR) reference	0032
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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.