

Title	Demonstrate knowledge of vegetation fire behaviour		
Level	5	Credits	8

Purpose	<p>This unit standard is for people with responsibilities for vegetation fire pre-suppression preparedness planning functions and/or for managing vegetation firefighting operations and/or prescribed burning.</p> <p>People credited with this unit standard are able to demonstrate knowledge of:</p> <ul style="list-style-type: none"> - the vegetation fire environment; - New Zealand weather that affects vegetation fire; - fire science that relates to vegetation fire behaviour; - fire behaviour information for fire pre-suppression and suppression planning; - the New Zealand Fire Danger Rating System (NZFDRS); - the principles of extreme fire behaviour; and - documentation of wildfire behaviour and suppression effectiveness.
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Classification	Fire and Rescue Services > Fire and Rescue Services - Vegetation
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Available grade	Achieved
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Guidance Information

- 1 Recommended: Unit 14556, *Apply Fire Weather Index System data for fire reduction and readiness measures*; and Unit 14564, *Demonstrate knowledge of the fire environment on vegetation fire behaviour*, or demonstrate equivalent knowledge and skills.
- 2 Compliance with the fire and emergency agency's Health and Safety policy and procedures is mandatory.

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of the vegetation fire environment.

Performance criteria

- 1.1 The fire environment concept is defined and explained.

- 1.2 The effects and influences that topographic features have on vegetation fire behaviour are explained.
- 1.3 Physical characteristics of vegetation fuel complexes are explained.
- 1.4 The fuel moisture content relationships of dead and live fuels are explained.
- 1.5 The effects and influences that weather elements have on vegetation fire behaviour are explained.

Outcome 2

Demonstrate knowledge of New Zealand weather that affects vegetation fire.

Performance criteria

- 2.1 Characteristics of New Zealand's weather are explained.
- 2.2 Information contained on a weather map and within a weather forecast is explained.

Range prognosis, synopsis chart.
- 2.3 Methods of measuring weather elements for the NZFDRS are explained.

Range weather station instruments, measurement standards, installation standards.

Outcome 3

Demonstrate knowledge of fire science that relates to vegetation fire behaviour.

Performance criteria

- 3.1 Principles of combustion in vegetative fuels are explained.

Range ignition requirements, burning stages, heat transfer mechanisms, combined effects.
- 3.2 The mechanisms of fire spread and fire growth are explained.
- 3.3 Fire intensity is calculated.

Range Byram's Formula, a field formula.

Outcome 4

Demonstrate knowledge of fire behaviour information for fire pre-suppression and suppression planning.

Performance criteria

- 4.1 The importance of elapsed time since ignition is explained.
- 4.2 Limitations of fire suppression methods related to fire intensity are explained.
- 4.3 Fire suppression strategies and tactics are explained in relation to levels of fire intensity.
- 4.4 Fire suppression resource requirements are explained in relation to fire behaviour.
- 4.5 Initial attack planning requirements are explained.

Outcome 5

Demonstrate knowledge of the NZFDRS.

Performance criteria

- 5.1 Principles of fire danger rating are explained.
- 5.2 Anticipated fire control impacts are predicted for given fire weather index codes and indices.
- 5.3 The use of the NZFDRS in making seasonal and daily fire prevention decisions is explained.
- 5.4 The uses of the NZFDRS in pre-attack preparedness planning and in fire suppression operations are explained.
- 5.5 Collection, evaluation, and recording of fire intelligence data for pre-attack planning for wildfire incidents is explained.

Outcome 6

Demonstrate knowledge of the principles of extreme fire behaviour.

Performance criteria

- 6.1 Extreme fire behaviour is defined and explained.
- 6.2 Characteristics of extreme fire behaviour conditions are explained.

Outcome 7

Demonstrate knowledge of documentation of wildfire behaviour and suppression effectiveness.

Performance criteria

- 7.1 The need to document fire behaviour and suppression effectiveness at wildfires is explained.
- 7.2 The factors that need to be recorded and measured to describe the fire environment at a wildfire are explained.
- 7.3 The factors that need to be recorded and measured to describe fire behaviour at a wildfire are explained.
- 7.4 The factors that need to be recorded for the fire suppression effectiveness are explained.

Planned review date	31 December 2023
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	18 June 1995	N/A
Revision	2	21 May 1998	N/A
Review	3	25 March 2004	N/A
Review	4	20 November 2009	N/A
Revision and Rollover	5	30 September 2021	N/A

Consent and Moderation Requirements (CMR) reference	0039
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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 The Skills Organisation reviewcomments@skills.org.nz if you wish to suggest changes to the content of this unit standard.