

Demonstrate knowledge of vegetation fire behaviour

Level 5

Credits 8

Purpose This unit standard is for people with responsibilities for vegetation fire pre-suppression preparedness planning functions and/or for managing vegetation fire fighting operations and/or prescribed burning.

People credited with this unit standard are able to demonstrate knowledge of: 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 NZFDRS; principles of extreme fire behaviour; and documentation of wildfire behaviour and suppression effectiveness.

Subfield Fire and Rescue Services

Domain Fire and Rescue Services - Vegetation

Status Registered

Status date 20 November 2009

Date version published 20 November 2009

Planned review date 31 December 2014

Entry information 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.

Accreditation Evaluation of documentation and visit by NZQA and industry.

Standard setting body (SSB) Fire and Rescue Services Industry Training Organisation

Accreditation and Moderation Action Plan (AMAP) reference 0039

This AMAP can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

Special notes

- 1 Compliance with the fire and rescue service provider's Health and Safety policy and procedures is mandatory.

- 2 The primary reference for this unit standard is: *Intermediate Fire Behaviour Course Materials*, NRFA (Wellington: Scion and NRFA, 2009). This reference is available from the NRFA, PO Box 2133, Wellington 6140.
- 3 Performance of the elements and performance criteria during assessment against this unit standard must be in accordance with the primary reference.

Elements and performance criteria

Element 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.

Element 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 New Zealand Fire Danger Rating System (NZFDRS) are explained.

Range weather station instruments, measurement standards, installation standards.

Element 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 Ability to calculate fire intensity is demonstrated.
- Range Byram's Formula, a field formula.

Element 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.

Element 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.

Element 6

Demonstrate knowledge of 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.

Element 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.

Please note

Providers must be accredited by NZQA, or an inter-institutional body with delegated authority for quality assurance, before they can report credits from assessment against unit standards or deliver courses of study leading to that assessment.

Industry Training Organisations must be accredited by NZQA before they can register credits from assessment against unit standards.

Accredited providers and Industry Training Organisations assessing against unit standards must engage with the moderation system that applies to those standards.

Accreditation requirements and an outline of the moderation system that applies to this standard are outlined in the Accreditation and Moderation Action Plan (AMAP). The AMAP also includes useful information about special requirements for organisations wishing to develop education and training programmes, such as minimum qualifications for tutors and assessors, and special resource requirements.

Comments on this unit standard

Please contact the Fire and Rescue Services Industry Training Organisation info@frsito.org.nz if you wish to suggest changes to the content of this unit standard.