



Australian Government

FWPFRM5010 Plan unmanned aerial vehicle (UAV) collection of forestry data

Release: 1

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Modification History

Release	Comments
Release 1	This version released with FWP Forest and Wood Products Training Package Version 7.0.

Application

This unit of competency describes the skills and knowledge required to plan unmanned aerial vehicle (UAV) collection of forestry data. This includes preparing for UAV data collection, interpreting user requirements or specifications for spatial and environmental data collection, identifying the UAV platform and sensors required for the data collection task, and preparing a data collection plan.

The unit applies to individuals whose work involves planning UAV collection of forestry data in a forest or plantation setting.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Nil

Unit Sector

Forest Resource Management (FRM)

Elements and Performance Criteria

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Prepare for UAV collection of forestry data	1.1 Review work order, workplace health and safety, environmental protection and emergency procedures to determine job requirements and, where required, seek clarification from appropriate personnel 1.2 Identify and report hazards according to workplace health and safety requirements to maintain safe work practices

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
	1.3 Consult with appropriate personnel to ensure that work is coordinated effectively with others in the workplace 1.4 Confirm that planned forestry data collection activities comply with legislative, regulatory and workplace requirements
2. Plan UAV collection of forestry data	2.1 Locate, read and interpret user requirements or specifications for spatial and environmental data collection 2.2 Determine type and payload of UAV platform best suited to data collection task 2.3 Determine type and specification of sensors required for forestry data collection task 2.4 Determine ground control station (GCS) configuration according to manufacturer instructions and workplace procedures 2.5 Identify appropriate file formats 2.6 Establish time, frequency, location and optimal conditions for forestry data collection task 2.7 Plan flight path that meets data collection, regulatory and safety requirements 2.8 Implement protocols to ensure that forestry data collection activities meet privacy and data security regulations
3. Optimise UAV collection of forestry data	3.1 Identify and provide ways of overcoming potential delays and setbacks in UAV data collection 3.2 Plan workflow for managing UAV forestry data collection according to workplace procedures 3.3 Document forestry data collection plan according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential for performance in this unit of competency but are not explicit in the performance criteria.

Skill	Description
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Skill	Description
Reading	• Read complex text in print and electronic format
Writing	• Complete complex forms using routine and non-routine text
Oral communication	• Ask questions to clarify instructions, feedback or information
Numeracy	• Recognise metric units of measurement • Perform routine mathematical calculations related to time, speed, weight, volume and distance • Interpret graphical information related to time, speed, weight, volume and distance

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
FWPFRM5010 Plan unmanned aerial vehicle (UAV) collection of forestry data	Not applicable	The unit has been created to address a skill or task required by industry that is not covered by an existing unit	Newly created

Links

Companion Volumes, including Implementation Guides, are available at VETNet: -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=0d96fe23-5747-4c01-9d6f-3509ff8d3d47>

Assessment Requirements for FWPFRM5010 Plan unmanned aerial vehicle (UAV) collection of forestry data

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Performance Evidence

An individual demonstrating competency must satisfy all of the elements and performance criteria in this unit.

There must be evidence that the individual has planned and developed a written data collection plan for two different unmanned aerial vehicle (UAV) forestry data collection tasks.

In undertaking this activity, the individual has:

- reviewed work order, workplace health and safety, environmental protection and emergency procedures associated with work task
- selected type and payload of UAV platform best suited to data collection task
- planned UAV forestry data collection to comply with legislative, regulatory and workplace requirements
- identified contingency measures for minimising delays in UAV forestry data collection
- planned workflow for managing UAV forestry data collection
- prepared written forestry data collection plan.

Knowledge Evidence

An individual must be able to demonstrate the knowledge required to perform the tasks outlined in the elements and performance criteria of this unit. This includes knowledge of:

- benefits of using UAVs in forestry related spatial and environmental data collection
- types of forestry data collected by UAVs:
 - plantation forestry
 - inventory management
 - tree height mapping
 - tree survival counts
 - identification and mapping of cutover areas
 - mapping of wind damage
 - plantation health and disease

- communication of forest change
- post-planting stocking and survival
- weed mapping and classifying species
- analysis of regeneration
- monitoring fire and its impact
- quantifying gaps
- post-harvest waste assessment and soil displacement estimation
- types, designs, components and capabilities of UAVs:
 - fixed-wing
 - single-rotor
 - multi-rotor
 - hybrid systems
- UAV payloads:
 - active
 - passive
- types and capabilities of UAV sensors used in forestry:
 - LiDAR
 - multispectral
 - hyperspectral
 - RGB
- UAV ground control station (GCS):
 - basic GCS capabilities
 - peripheral components
 - support equipment
 - mission software tools
 - GCS configuration
- integration of unmanned aerial vehicle and sensors
- file formats
- procedures for workflow planning
- factors impacting on UAV data collection
- regulatory restrictions on UAV use and data collection
- types and ways of overcoming potential delays and setbacks in UAV data collection.

Assessment Conditions

Assessment of the skills in this unit of competency must take place under the following conditions:

- physical conditions:
 - skills must be demonstrated in a forest work environment or an environment that accurately represents workplace conditions
- resources, equipment and materials:

- computer hardware and software
- internet access
- specifications:
 - work order or instruction detailing requirements for forestry-related spatial and environmental data collection
 - workplace policies and procedures that cover current Work Health and Safety Acts or Occupation Health and Safety Acts, regulations and related industry standards and codes of practice applicable to UAV operations
 - workplace policies and procedures that cover current Environment Protection Acts, regulations and related industry standards and codes of practice applicable to UAV operations
 - workplace safety and environmental protection plans
 - user manual and technical instructions for UAV equipment and related software.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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