

**Modification history**

Release	Comments
Release 1	This version released with FWP Forest and Wood Products Training Package Version 6.0.

<b>FWPFGM4XXX</b>	<b>Quality assure forestry data acquisition by unmanned aerial vehicle (UAV)</b>
<b>Application</b>	<p>This unit of competency describes the skills and knowledge required to quality assure forestry data acquisition by unmanned aerial vehicle (UAV). This includes establishing quality criteria for UAV data acquisition, conducting pre and post-flight quality assurance checks of UAV data acquisition and preparing UAV data acquisition quality assurance report.</p> <p>The unit applies to individuals whose work involves planning UAV collection of forestry data in a forest or plantation setting.</p> <p>No occupational licensing, legislative or certification requirements apply to this unit at the time of publication.</p>
<b>Prerequisite Unit</b>	Nil
<b>Unit Sector</b>	Forest Growing and Management

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. Establish quality criteria for UAV data acquisition	1.1 Confirm UAV data acquisition workflow according to workplace and end-user requirements 1.2 Identify common problems in UAV data acquisition 1.3 Confirm quality assurance checkpoints and associated quality criteria for UAV data acquisition
2. Check UAV data acquisition against quality criteria	2.1 Confirm UAV forestry data collection requirements and proposed UAV data collection method 2.2 Conduct project plan checks, including flight plan, sensor settings and ground control plan, before the flight and rectify non-compliances according to workplace procedures 2.3 Conduct post-flight quality assurance checks of UAV data acquisition, including standard data and UAV data specific checks, and identify measures to address non-compliances according to workplace procedures 2.4 Produce initial compliance and quality assurance report on UAV data highlighting areas of non-compliance, required remedial actions, and arrangements for repeating quality assurance checks according to workplace procedures
3. Prepare UAV data acquisition quality assurance report	3.1 Produce final compliance and quality assurance report to validate that UAV data is accurate, reliable and fit for use according to workplace procedures 3.2 Forward data files for processing according to workplace procedures

<b>Foundation Skills</b>	
<i>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.</i>	
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

<b>Foundation Skills</b>	
<i>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.</i>	
<b>Skill</b>	<b>Description</b>
	<ul style="list-style-type: none"> <li>Perform routine mathematical calculations related to time, speed, orientation, weight and distance</li> <li>Interpret graphical information related to time, speed, orientation, weight and distance</li> </ul>

<b>Unit Mapping Information</b>			
<b>Code and title current version</b>	<b>Code and title previous version</b>	<b>Comments</b>	<b>Equivalence status</b>
FWPFGM4XXX Quality assure forestry data acquisition by unmanned aerial vehicle (UAV)	Not applicable	New unit	No equivalent unit

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

<b>TITLE</b>	<b>Assessment requirements for FWPFGM4XXX Quality assure forestry data acquisition by unmanned aerial vehicle [UAV]</b>
<b>Performance Evidence</b>	
<p>An individual demonstrating competency must satisfy all of the elements and performance criteria in this unit.</p> <p>There must be evidence that the individual has planned, conducted and reported on pre and post-flight quality assurance checks of unmanned aerial vehicle (UAV) forestry data acquisition on three occasions.</p>	

<b>Knowledge Evidence</b>	
<p>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</p> <ul style="list-style-type: none"> <li>• problems associated with UAV data acquisition <ul style="list-style-type: none"> <li>• equipment and sensor</li> <li>• data</li> <li>• data collection</li> <li>• data management</li> </ul> </li> <li>• UAV project plan checks <ul style="list-style-type: none"> <li>• flight plan</li> <li>• sensor settings</li> <li>• ground control plan</li> </ul> </li> <li>• standard UAV data checks <ul style="list-style-type: none"> <li>• delivery completeness and file corruption</li> <li>• file naming, attributes and coordinate system</li> <li>• form comparison</li> <li>• classification statistics</li> <li>• accuracy of control network</li> </ul> </li> <li>• UAV data specific checks <ul style="list-style-type: none"> <li>• imagery resolution and overlap</li> <li>• image quality</li> <li>• imagery-survey control alignment</li> <li>• point cloud quality assessment and vertical accuracy</li> <li>• DSM quality assessment and accuracy</li> <li>• existence of data</li> <li>• data extent and coverage</li> <li>• internal voids</li> </ul> </li> <li>• file formats</li> <li>• compliance and quality assurance report <ul style="list-style-type: none"> <li>• format</li> <li>• procedures</li> </ul> </li> <li>• workflow for UAV data acquisition.</li> </ul>	

<b>Assessment Conditions</b>	
<p>Assessment of the skills in this unit of competency must take place under the following conditions:</p> <ul style="list-style-type: none"> <li>• physical conditions: <ul style="list-style-type: none"> <li>• skills must be demonstrated in a forestry or plantation setting</li> </ul> </li> <li>• resources, equipment and materials: <ul style="list-style-type: none"> <li>• computer hardware and software</li> <li>• Internet access</li> <li>• UAV data</li> </ul> </li> <li>• specifications: <ul style="list-style-type: none"> <li>• access to work order or instruction detailing requirements for planning, conducting and reporting on pre and post-flight quality assurance checks of UAV data acquisition</li> <li>• access to workplace policies and procedures which 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</li> </ul> </li> </ul>	

Assessment Conditions	
<ul style="list-style-type: none"><li>• access to workplace policies and procedures which cover current Environment Protection Acts, regulations and related industry standards and codes of practice applicable to UAV operations</li><li>• access to workplace safety and environmental protection plans</li><li>• access to site emergency procedure</li><li>• access to user manual for and technical instructions for UAV equipment and related software.</li></ul> <p>Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.</p>	
Links	Companion Volume implementation guides are found in VETNet - <a href="https://vetnet.education.gov.au/Pages/TrainingDocs.aspx?q=0d96fe23-5747-4c01-9d6f-3509ff8d3d47">https://vetnet.education.gov.au/Pages/TrainingDocs.aspx?q=0d96fe23-5747-4c01-9d6f-3509ff8d3d47</a>