



Australian Government

Department of Education, Employment and Workplace Relations

FPIFGM4209B Interpret and use aerial photographs for forest management

Release: 1

FPIFGM4209B Interpret and use aerial photographs for forest management

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit describes the outcomes required to use aerial photography as a tool to assist with forest management in both plantation and native forests

General workplace legislative and regulatory requirements apply to this unit; however there are no specific licensing or certification requirements at the time of publication

This unit replaces FPIFGM4209A Interpret and use aerial photographs for forest management

Application of the Unit

Application of the unit

The unit involves interpreting and using aerial photographs for forest management in a forest environment setting

The skills and knowledge required for competent workplace performance are to be used within the scope of the person's job and authority

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Not Applicable

Employability Skills Information

Employability skills This unit contains employability skills

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan aerial photography	1.1. Applicable occupational health and safety (OHS), environmental, legislative and organisational requirements relevant to interpreting and using aerial photographs for forest management are identified and followed 1.2. Forest management objectives are established in line with organisational requirements 1.3. Available aerial photographs are located and obtained in line with standards and requirements and organisational guidelines 1.4. Factors and type of photography appropriate for current forest management application are determined 1.5. Aerial photographs are assessed for suitability and selected to meet forest management application
2. Interpret forest management information from aerial photographs	2.1. Aerial photographs are positioned for viewing and scale is calculated and documented in line with site procedures 2.2. Key aspects of aerial photographs are established and documented in line with site procedures 2.3. Type of photography suitable for forest management application is identified using established stratification in line with site procedures and environmental requirements 2.4. Photomapping standards are interpreted and applied for consistent data-gathering 2.5. Forest attributes are identified and required forest management information is derived and interpreted in line with interpretation convention and guidelines 2.6. Aerial photographs are interpreted and mapped in line with organisational guidelines 2.7. Field observations, verification and validation are recorded and reported in appropriate formats in line with organisational guidelines
3. Update maps and plans from aerial photographs	3.1. Maps and plans are assessed and updated as required, using appropriate symbols, colours and conventions, to meet forest management project requirements 3.2. Appropriate tools are used to transfer data in line with manufacturer recommendations 3.3. Documentation is completed, processed and

ELEMENT**PERFORMANCE CRITERIA**

maintained in line with organisational requirements

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level required for this unit.

Required skills

- Technical skills sufficient to use and maintain relevant equipment and materials; interpret forest area detail from a map; identify disease symptoms in trees and forest areas using aerial photographs; identify vegetation characteristics on an aerial photograph; locate required photographs from appropriate records (flight plan map)
- Communication skills sufficient to use appropriate communication and interpersonal techniques with colleagues and others
- Literacy skills sufficient to record, report and maintain information, including details of forest attributes and topographic information; read and interpret complex information, including charts, tables, maps and flight plans; identify and interpret title panel information on an aerial photograph; maintain documentation
- Numeracy skills sufficient to apply appropriate mathematical techniques to calculate scale of an aerial photograph, scale distances for a map, and calculate and manipulate height and area information; identify map type and map features, including topographic map features
- Problem solving skills sufficient to identify problems; demonstrate appropriate response procedures; follow procedures in interpreting forest management information

Required knowledge

- Applicable commonwealth, state or territory legislation, regulations, standards, codes of practice and established safe practices relevant to the full range of processes for interpreting and using aerial photographs for forest management
- Environmental protection requirements, including the safe disposal of waste material
- Organisational and site standards, requirements, policies and procedures for interpreting and using aerial photographs for forest management
- Environmental risks and hazards
- Using energy effectively and efficiently
- Using material effectively and efficiently
- Common scales used on maps and plans, and procedures for their use and manipulation

REQUIRED SKILLS AND KNOWLEDGE

- Forest types and structures
- Representation of topographic features on maps and plans
- Range of photographic film, and photo types
- Care and storage of aerial photographs
- Established communication channels and protocols
- Problem identification and resolution strategies, and common fault finding techniques
- Types of tools and equipment, and procedures for their safe use and maintenance
- Appropriate mathematical procedures for estimating and measuring, including calculating time to complete tasks
- Procedures for recording and reporting workplace information

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

A person who demonstrates competency in this unit must be able to provide evidence that they can derive and interpret information from an aerial photograph for forest management purposes according to organisational guidelines

Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to, and satisfy, all of the requirements of the elements of this unit and include demonstration of:

- following applicable commonwealth, state or territory legislative and regulatory requirements and codes of practice relevant to interpreting and using aerial photographs for forest management
- following organisational policies and procedures relevant to interpreting and using aerial photographs for forest management
- sourcing and obtaining suitable aerial photographs appropriate to forest management project requirements
- establishing key aspects of aerial photographs
- deriving and interpreting information from forest topographic features
- documenting and maintaining data and information
- interpreting forest area detail from a map and scale distances, and calculating height and area information

Context of and specific resources for assessment

- Competency is to be assessed in the workplace or realistically simulated workplace
- Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
- Assessment of required knowledge, other than confirmatory questions, will usually be conducted in an off-site context
- Assessment is to follow relevant regulatory or Australian Standards requirements
- The following resources should be made available:

EVIDENCE GUIDE

- workplace location or simulated workplace
- materials and equipment relevant to undertaking work applicable to this unit
- specifications and work instructions

Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of the FPI11 Training Package
- Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of required knowledge
- Assessment must be by direct observation of tasks, with questioning on required knowledge and it must also reinforce the integration of employability skills
- Assessment methods must confirm the ability to access and correctly interpret and apply the required knowledge
- Assessment may be applied under project-related conditions (real or simulated) and require evidence of process
- Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances
- Assessment may be in conjunction with assessment of other units of competency
- The assessment environment should not disadvantage the candidate
- Assessment practices should take into account any relevant language or cultural issues related to Aboriginality, gender or language backgrounds other than English
- Where the participant has a disability, reasonable adjustment may be applied during assessment
- Language and literacy demands of the assessment task should not be higher than those of the work role

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different

RANGE STATEMENT

work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

OHS requirements:

are to be in line with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:

- personal protective equipment and clothing
- safety equipment
- first aid equipment
- fire fighting equipment
- hazard and risk control
- fatigue management
- elimination of hazardous materials and substances
- safe forest practices, including required actions relating to forest fire
- manual handling including shifting, lifting and carrying

Environmental requirements may include:

- legislation
- organisational policies and procedures
- workplace practices

Legislative requirements:

are to be in line with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice and may include:

- award and enterprise agreements
- industrial relations
- Australian Standards
- confidentiality and privacy
- OHS
- the environment
- equal opportunity
- anti-discrimination
- relevant industry codes of practice
- duty of care

Organisational requirements may include:

- legal
- organisational and site guidelines

RANGE STATEMENT

	• policies and procedures relating to own role and responsibility • quality assurance • procedural manuals • quality and continuous improvement processes and standards • OHS, emergency and evacuation procedures • ethical standards • recording and reporting requirements • equipment use, maintenance and storage requirements • environmental management requirements (waste minimisation and disposal, recycling and re-use guidelines)
Available aerial photographs may include:	• photographs, which may be: • held by the organisation • required to be purchased • borrowed from another organisation
Standards and requirements include:	• scale • flying height and focal length • required percent endlap and sidelap • orientation • location and number of flight lines required • total number of photographs required • allowable drift, crab, tilt and image motion • camera characteristics, including format, lens quality, shutter speed and aperture, film and filter characteristics • acceptable seasons of the year, time of day, allowable present cloud cover and hot spots
Factors:	to be considered when selecting photography for a project are: • colour or black and white • date of acquisition • scale • minimum mappable area • actual smallest operational unit area • scale of mapping relative to scale of presentation
Types may include:	project, mapsheet, spot and stratigraphic:

RANGE STATEMENT

- of photographic classes, including terrestrial, vertical and oblique
- of aerial photographic film, including black and white, black and white infra-red, colour, colour infra-red

Applications

of aerial photographs to natural resource management include:

- road or plantation design
- field navigation and interpretation of forest types
- forest structure
- environmental processes, such as salinity discharge
- ecological vegetation communities, such as coastal heathlands
- land capability classes
- remnant vegetation (roadside vegetation)
- diseased vegetation classes, such as *Eucalyptus* dieback from *Phytophthora*

Positioning may include:

- orienting and aligning a pair of overlapping aerial photographs for stereoscopic viewing

Key aspects include:

- determining north and flight line path

and may include:

- mapsheet
- flight orientation
- photography type
- focal length
- film number
- run number
- frame number
- height above sea level
- photography date

Forest attributes may include:

topographic features, such as:

- roads and tracks
- watercourses
- ridges and spurs
- saddles
- peaks and knobs

Forest management

derived from photo may include:

RANGE STATEMENT

information:

- area
- height
- species
- crown cover
- crown form
- disturbance
- aspects to be considered as part of the environmental management process

Interpretation may include:

basic principles, such as:

- absolute and relative size and shape
- shadow
- tone or colour
- texture
- pattern and location
- association and convergence of evidence

Guidelines may include:

- predetermined classes
- stratification

Field verification includes:

- accuracy of all mapped topographic information
- measure of accuracy of associated base topographic or digital base map
- spatial accuracy of strata
- measure of accuracy of content of strata

Maps and plans may include:

- cadastral plans
- topographic maps
- locality plans
- site plans
- maps and plans generated through the use of geographic information systems (GIS)

Updating

of maps and plans may be:

- manual
- electronic (digital)
- using data transfer technology

Tools may include:

- electronic data transfer technology
- manual light tables
- mechanical light tables, including Omnigraph, Kartoflex, Zoom Transfer Scope, Artiscope and Sketchmaster

Transferring data may include:

- rescaling from one source to another

RANGE STATEMENT

- transferring from map to map
- transferring from photograph to map or diapositive to map

Unit Sector(s)

Not Applicable

Competency field

Competency field Forest Growing and Management