



Australian Government

FWPFGM6201 Plan a biochar storage system for carbon capture and storage

Release: 1

FWPFGM6201 Plan a biochar storage system for carbon capture and storage

Modification History

Release	Comment
1	Replaces superseded equivalent FPIFGM6201B Plan a bio-char storage system for carbon capture and storage, which was first released with FPI11 Forest and Forest Products Training Package Version 2.2.

Application

This unit of competency describes the outcomes required to implement a bio-char storage system at senior management or project management level in forest/farm forest, sawmilling or timber treatment settings.

The unit applies to job roles covering project, sustainability or environmental management.

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

Pre-requisite Unit

Nil.

Unit Sector

Forest Growing and Management

Sawmilling and Processing

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. Where bold italicised text is used, further information is detailed in the range of conditions.</i>
1. Assess bio-char carbon storage system feasibility	1.1 Research bio-char carbon storage systems. 1.2 Explore organisational need for bio-char carbon storage system and investigate context of requirements through consultation.

ELEMENTS	PERFORMANCE CRITERIA
	1.3 Investigate context of bio-char carbon storage system and clarify requirements with appropriate personnel. 1.4 Identify and document user requirements and environmental parameters. 1.5 Investigate bio-char carbon storage system options and identify installation, operation and maintenance requirements. 1.6 Make recommendations about need for and appropriate type of system based on findings.
2. Determine facility requirements	2.1 Select feed stock for bio-char process and calculate amount that can be obtained for pyrolysis. 2.2 Select method of pyrolysis based on feed stock and appropriate outputs. 2.3 Estimate costs of transporting liquid and solid by-products. 2.4 Assess amount of material to be processed and consider ability to feed into power grid. 2.5 Determine process conditions.
3. Design a bio-char carbon storage facility	3.1 Design facility to provide optimal conditions for carbon storage. 3.2 Identify and address legal requirements or government regulations impacting on proposed facility. 3.3 Document design specification and communicate relevant information. 3.4 Review overall operation and output of proposed facility for economic sustainability in line with long-term direction and purpose of organisation.
4. Plan implementation of bio-char carbon storage facility	4.1 Develop construction plan in line with accepted design principles. 4.2 Evaluate internal resource abilities and determine requirement for external expertise. 4.3 Record material, resource and supply provision requirements based on construction plan. 4.4 Estimate labour requirements based on work plans and schedules. 4.5 Calculate operating expense budget, indicating input and output costs applicable to proposed facility.

Foundation Skills

This section describes those core and employment skills that are essential to performance and are not explicit in the performance criteria.

Numeracy skills to:	• Complete a range of highly technical and complex calculations involving input and output volumes. • Develop complex budgets for the construction of bio-char storage systems.
Oral communication skills to:	• Hold high-level consultative discussions to generate ideas for and negotiate requirements for bio-char storage systems.
Reading skills to:	• Interpret complex information in a range of internal and external source documents to evaluate and establish bio-char storage system feasibility.
Writing skills to:	• Document complex information on feasibility of constructing bio-char systems including detailed recommendations. • Document complex data in design specifications and construction plans.
Technology skills to:	• Assess, design and implement a bio-char storage systems

Unit Mapping Information

FPIFGM6201B Plan a biochar storage system for carbon capture and storage

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=0d96fe23-5747-4c01-9d6f-3509ff8d3d47>

Assessment Requirements for FWPFGM6201 Plan a biochar storage system for carbon capture and storage

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1	Replaces superseded equivalent FPIFGM6201B Plan a bio-char storage system for carbon capture and storage, which was first released with FPI11 Forest and Forest Products Training Package Version 2.2. Assessment requirements now specify the performance and knowledge evidence, as well as assessment conditions for this unit of competency. These sections simplify and replace components used in the previous unit format, including 'Required Skills and Knowledge, Evidence Guide and Range Statement'.

Performance Evidence

A person demonstrating competency in this unit must satisfy all of the elements, performance criteria and foundation skills of this unit, and must be able to provide evidence that they can:

- Conduct a feasibility study for the design and construction of a bio-char carbon storage for one of the following users:
 - harvesting operators
 - forest owners
 - sawmill operators
 - timber processing and manufacturing facilities
 - industries supplying feedstock
 - government departments and councils
 - agricultural businesses
- Complete a report recommending the optimum type of system to meet the user's needs including the method of pyrolysis.
- Develop design specifications, a construction plan and budget for building the facility.

Knowledge Evidence

A person competent in this unit must be able to demonstrate knowledge of:

- Purpose and content, at an in-depth level of understanding, of mandated and voluntary industry codes of practice for operating bio-char storage systems.
- Carbon marketing principles.
- Quality management systems for chemical production.

- Fundamental principles of chemistry as they apply to the operation and stability of bio-char facilities.
- Features and uses of environmental protection monitoring systems associated with a bio-char facility.
- Common user needs and requirements for bio-char storage systems, including:
 - by-products of a pyrolysis system
 - waste management options
 - carbon sequestration priorities
 - land management priorities
 - development priorities
 - investor interests
 - financial returns
 - environmental outputs
 - social responsibility
 - sustainability
 - input usage
- Meaning of pyrolysis, differing methods and benefits of each , including:
 - slow pyrolysis
 - fast pyrolysis
 - intermediate pyrolysis
 - carbonisation
 - gasification
- Types of feedstock used for bio-char processes, characteristics and range of outputs associated with each, including:
 - wood products, including:
 - harvesting residues
 - green mill residue
 - dry mill residue
 - residue from other wood fibre processing operations
 - agricultural waste
 - crops grown for the consumption of bio-char plants
 - manure and waste from intensive animal farming systems
 - municipal waste
- Process conditions for bio-char systems, including:
 - temperature
 - residence time
 - heating rate
 - feed stock preparation
- Format, content and use of design specifications and construction plans.

Assessment Conditions

The following resources must be made available:

- Computers, keyboards, printers and software used to document plans and reports.
- Template feasibility reports, design specifications and construction plans.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessor requirements

Assessors must:

- Hold the appropriate assessor competency standards as outlined in regulations; and
- be able to demonstrate vocational competencies at least to the level being assessed; and
- be able to demonstrate how they are continuing to develop their VET knowledge and skills as well as maintaining their industry currency and assessor competence.

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