



Australian Government

AHCARB703 Research urban forest performance

Release: 1

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Modification History

Release	TP Version	Comment
1	AHCv1.0	Initial release

Application

This unit of competency describes the skills and knowledge required to research urban forest performance.

This unit applies to individuals with broad and coherent theoretical and technical knowledge with depth in one or more disciplines or areas of practice and cognitive, technical and communication skills to demonstrate autonomy, well developed judgement and responsibility in undertaking complex self-directed work and learning to provide specialist advice and functions.

The role involves the self-directed application of specialised knowledge in arboriculture with substantial depth in areas of urban forestry and climate change.

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

Pre-requisite Unit

Nil.

Unit Sector

Arboriculture (ARB)

Elements and Performance Criteria

Element	Performance criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1. Research urban forest processes	1.1 Research and define elemental components of urban forests 1.2 Research role of urban forests as a primary component of urban ecosystems 1.3 Research threats to and resilience of urban forests in cities 1.4 Research regulation of hydrological processes, retention of

Element	Performance criteria
	precipitation, mitigation of salinity and effects of trees on water quality 1.5 Research relationship of soil biological network, soil chemistry, soil structure and trees to soil structure stabilisation and erosion potential 1.6 Determine contribution of trees towards rhizosphere biodiversity, bioremediation and soil health
2. Evaluate benefits of urban forests	2.1 Research energy conservation and micro-climate modification systems of trees and urban forests 2.2 Research heat island analyses of an urban area 2.3 Evaluate health, social and psychological benefits of urban forests 2.4 Document evidence-based research into a preliminary report on benefits of urban forests
3. Analyse methods and document report	3.1 Research current methods and technologies for spatial mapping of urban forests 3.2 Analyse process of carbon sequestration in urban forests 3.3 Analyse methods for sampling urban forests 3.4 Evaluate urban forest valuation methodologies 3.5 Document a preliminary report on methods of valuation of an urban forest
4. Examine climate change mitigation	4.1 Research contribution of urban forest to carbon cycles 4.2 Determine local climate, soil factors and management factors affecting forest growth and sequestration 4.3 Research contribution of forest carbon sequestration to mitigation of climate change 4.4 Document an evaluation of forest mitigation on climate change
5. Compile and document reports	5.1 Document a report on the social, environmental, economic and climatic values of urban forests 5.2 Determine challenges of increased urbanisation and urban densification on urban forests 5.3 Determine potential benefit of urban forest to mitigate climate change 5.4 Compile preliminary reports and document a report describing multi-disciplinary solutions to challenges of urbanisation on urban forests

Foundation Skills

Foundation Skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Unit Mapping Information

Not in unit mapping for CfE, but is used in AHC80115 - no equivalent.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=c6399549-9c62-4a5e-bf1a-524b2322cf72>

Assessment Requirements for AHCARB703 Research urban forest performance

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Performance Evidence

The candidate must be assessed on their ability to integrate and apply the performance requirements of this unit in a workplace setting. Performance must be demonstrated consistently over time and in a suitable range of contexts.

The candidate must provide evidence for and demonstrate:

- researching and define elemental components of urban forests
- researching role of urban forests as a primary component of urban ecosystems
- researching threats to and resilience of urban forests in cities
- researching regulation of hydrological processes, retention of precipitation, mitigation of salinity, and effects of trees on water quality
- researching relationship of soil biological network, soil chemistry, soil structure and trees to soil structure stabilisation and erosion potential
- determining contribution of trees towards rhizosphere biodiversity, bioremediation and soil health
- researching energy conservation and micro-climate modification systems of trees and urban forests
- researching heat island analyses of an urban area
- evaluating health, social and psychological benefits of urban forests
- documenting evidence-based research into a preliminary report on benefits of urban forests
- researching current methods and technologies for spatial mapping of urban forests
- analysing process of carbon sequestration in urban forests
- analysing methods for sampling urban forests
- evaluating urban forest valuation methodologies
- documenting a preliminary report on valuation of an urban forest
- researching contribution of urban forest to carbon cycles
- determining local climate, soil factors and management factors affecting forest growth and sequestration
- researching contribution of forest carbon sequestration to mitigation of climate change
- documenting an evaluation of forest mitigation on climate change

- documenting a report on the social, environmental, economic and climatic values of urban forests
- determining challenges of increased urbanisation and urban densification on urban forests
- determining potential benefit of urban forest to mitigate climate change
- compiling preliminary reports and documenting a report describing multi-disciplinary solutions to challenges of urbanisation on urban forests.

Knowledge Evidence

The candidate must demonstrate knowledge of:

- elemental components of urban forests
- role of urban forests as a primary component of urban ecosystems
- threats to and resilience of urban forests in cities
- regulation of hydrological processes, retention of precipitation, mitigation of salinity, and effects of trees on water quality
- relationship of soil biological network, soil chemistry, soil structure and trees to soil structure stabilisation and erosion potential
- contribution of trees towards rhizosphere biodiversity, bioremediation and soil health
- energy conservation and micro-climate modification systems of trees and urban forests
- heat island analyses of an urban area
- health, social and psychological benefits of urban forests
- current methods and technologies for spatial mapping of urban forests
- process of carbon sequestration in urban forests
- methods for sampling urban forests
- urban forest valuation methodologies
- contribution of urban forest to carbon cycles
- local climate, soil factors and management factors affecting forest growth and sequestration
- contribution of forest carbon sequestration to mitigation of climate change
- evaluation of forest mitigation on climate change
- social, environmental, economic and climatic values of urban forests
- challenges of increased urbanisation and urban densification on urban forests
- potential benefit of urban forest to mitigate climate change
- multi-disciplinary solutions to challenges of urbanisation on urban forests.

Assessment Conditions

Assessment must be demonstrated consistently over time in a suitable range of contexts and have a productivity-based outcome. No single assessment event or report is sufficient to achieve competency in this unit.

Assessment may be conducted in a simulated or real work environment, however determination of competency requires the application of work practices under work conditions.

The mandatory equipment and materials used to gather evidence for assessment include:

- equipment:
 - computer
 - word processing software
 - statistical software
 - internet connection
 - measurement and data collection tools
- materials:
 - urban forest report

Assessors must satisfy current standards for RTOs in the assessment of arboriculture units of competency.

Assessment must be conducted only by persons who have:

- urban forestry vocational competencies at least to the level being assessed
- current urban forestry skills directly relevant to the unit of competency being assessed

Links

Companion Volume implementation guides are found in VETNet -

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