



Australian Government

AHCARB609 Measure and improve the performance of urban forests

Release: 1

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Modification History

Release	Comments
Release 1	This version released with AHC Agriculture, Horticulture and Conservation and Land Management Training Package Version 5.0.

Application

This unit of competency describes the skills and knowledge required to research, analyse the values, analyse the performance, and develop management recommendations to improve the performance of an urban forest.

The unit applies to individuals with broad theoretical and technical knowledge of urban forest management. They have a broad range of cognitive, technical and communication skills and demonstrate autonomy and judgement for a defined area of responsibility, undertaking complex work with broad parameters to provide specialist advice and functions.

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

Pre-requisite Unit

Nil

Unit Sector

Arboriculture (ARB)

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. Research urban forest practices and applications	1.1 Research urban forest case studies and management reports 1.2 Review best management practices in urban forest planning and management 1.3 Research applications and functional tools for measuring benefits

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
	of urban forests
2. Analyse and report on urban forest benefits	2.1 Analyse economic, social and environmental benefits of urban forests 2.2 Document evidence-based research into a preliminary report on benefits of urban forests
3. Determine values of urban forest benefits	3.1 Conduct sampling analysis of specified urban forest 3.2 Determine required sample size to assess total tree population 3.3 Determine accuracy of sample size 3.4 Determine the quantitative values of urban forest environmental benefits 3.5 Identify base financial value for functional benefit 3.6 Calculate financial values of functional and environmental benefits of current tree population 3.7 Determine benefits of heat island modification of urban areas 3.8 Document a preliminary report on total asset valuation of an urban forest
4. Analyse and compile results	4.1 Analyse urban forest structure and function 4.2 Estimate life expectancy of tree population 4.3 Compile results of urban forest analysis
5. Determine and report on urban forests improvements	5.1 Identify urban forest issues within tree population sample area 5.2 Determine recommendations for tree species and diversity 5.3 Determine extent of current tree planting and replacement programs 5.4 Determine volume and rate of planting programs required for improvements to urban forest performance 5.5 Determine required modifications to planting practices 5.6 Determine targets for urban forest improvement 5.7 Document urban forest performance and provide recommendations for improvement in a report

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
Reading	Critically analyse and extract information from complex research materials for urban forest management and analysis to critique and formulate performance outcomes for urban forests
Writing	Demonstrate sophisticated writing skills by selecting appropriate conventions and stylistic devices to express precise meaning in urban forest performance reports
Numeracy	Select and apply a wide range of highly developed mathematical and problem-solving strategies and techniques to quantitatively analyse the financial, social and ecologic benefits of urban forests

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
AHCARB609 Measure and improve the performance of urban forests	AHCARB604 Measure and improve the performance of urban forests	Performance criteria clarified Foundation skills added Assessment requirements updated	Equivalent

Links

Companion Volumes, including Implementation Guides, are available at VETNet: - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=c6399549-9c62-4a5e-bf1a-524b2322cf72>

Assessment Requirements for AHCARB609 Measure and improve the performance of urban forests

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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 measured and improved the performance of an urban forest, including:

- researched urban forest case studies and management reports
- reviewed best management practices in urban forest planning and management
- researched applications and functional tools measuring benefits of urban forests
- analysed and documented a preliminary report of social and environmental benefits of urban forests
- conducted sampling analysis of a specified urban forest
- determined sample size required to accurately assess total tree population
- determined the quantitative values of urban forest, energy savings, environmental and amenity benefits for the following:
 - canopy cover
 - total carbon storage and annual carbon dioxide sequestration
 - rainfall interception
 - air pollution removal
- identified base financial value for each functional benefit
- calculated financial values of functional and environmental benefits of tree population
- determined benefits of urban heat island modification
- documented a preliminary report on total asset valuation of urban forest
- analysed urban forest structure and function, covering the following in the analysis:
 - urban tree population half-life
 - vacant planting ratio
 - species distribution
 - population diversity
- estimated life expectancy of tree population
- compiled results of urban forest analysis

- identified urban forest issues within tree population sample area
- determined recommendations for tree species and diversity
- determined extent of current tree planting and replacement programs
- determined volume and rate of planting programs required for improvements to urban forest performance
- determined required modifications to planting practices
- determined targets for urban forest improvement
- documented a report on urban forest performance and provided recommendations for improvement.

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:

- urban forests and their management, including:
 - sources of reports and case studies
 - best practices in urban forest planning and management
- measuring the performance of urban forests and their management
- applications and functional tools for measuring benefits of urban forests
- analysing the benefits of urban forests, including:
 - economic and political
 - physical and psychological on community
 - environmental and ecological
- evidence-based research, including what it is and how it is conducted
- sampling techniques and their analysis
- urban forests and their social, environmental and economic implications, including:
 - calculating canopy cover and estimating carbon storage and annual carbon dioxide sequestration
 - rainfall interception
 - air pollution removal
 - energy savings benefit
 - environmental benefits
 - amenity benefits
- valuing urban forests from an economic perspective, including:
 - financial value for functional benefits
 - calculations of financial values of functional and environmental benefits
 - concepts of urban heat island and its modification with urban forests
 - determining the total asset valuation
- the structure, function and faults of urban forests, including:
 - urban tree population life expectancy
 - vacant planting ratio

- species distribution and population diversity
- urban forest analysis techniques
- identifying urban forest issues within tree populations
- defining problems and compiling recommendations for tree species and diversity, including:
 - tree planting and replacement programs
 - volume and rate of planting programs
 - modifications to planting practices
 - targets for urban forest improvement
- report writing and structure of urban forest documents and reports.

Assessment Conditions

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

- physical conditions:
 - an urban forest
- resources, equipment and materials:
 - computer with word processing software and statistical analysis software
 - measurement and data collection tools
- specifications:
 - urban forest performance reports, research materials and case studies.

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

- arboriculture vocational competencies at least to the level being assessed
- current arboriculture industry skills directly relevant to the unit of competency being assessed.

Links

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