Modification history

Release	Comments
Release 1	This version released with AHC Agriculture, Horticulture and Conservation and Land Management Training Package Version 6.0.

AHCGRI501	Design roof gardens
Application	This unit of competency describes the skills and knowledge required to design roof gardens in consultation with system/component suppliers, building and landscape design professionals and other landscape and horticultural specialists. It includes incorporating the principles, benefits and risks associated with roof gardens into designs that meet client requirements and comply with applicable building and relevant authorities' regulations and guidelines. The unit applies to individuals with existing horticultural, landscaping, landscape design and/or construction experience, who consult with green infrastructure and/or building and design specialists to apply knowledge and researched information to designing roof gardens for existing and/or new buildings. This unit of competency is suitable for individuals using their own judgment to deal with predictable and unpredictable problems and to decide on solutions to a range of complex problems during the design process. Roof garden design must meet all requirements of national, state, territory and local government authorities and building regulations, standards and codes. Licensing, legislative or certification requirements may apply to the work undertaken in this unit in some jurisdictions. Users are advised to check with the relevant regulatory authorities.
Prerequisite Unit	Nil
Unit Sector	Green Infrastructure (GRI)

Elements	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Research green infrastructure design information	1.1 Establish purpose, functions, benefits and risks associated with roof gardens 1.2 Access and interpret building regulations, standards and codes, and relevant national, state, territory and local authority policies, procedures and permits to determine applicable restrictions or limitations relating to roof gardens 1.3 Identify environmental and energy efficiency impacts of green infrastructure design 1.4 Identify factors that will impact roof garden designs
2. Scope project requirements	2.1 Consult with client to clarify type, purpose and preferences of roof garden to inform design features and requirements 2.2 Identify project location and complete site analysis 2.3 Confirm structural principles relating to roof gardens with architect, engineer and/or other relevant specialists

Elements	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
3. Design roof gardens	3.1 Acquire engineering plans to determine drainage outlets, available depths and weight limits 3.2 Measure and record overall dimensions of proposed green roof space 3.3 Design roof garden to utilise spatial availability, enable access and egress, and comply with building regulations, standards and codes 3.4 Consult growing media and/or horticulture specialist on selection of media and plants based on the location conditions and maintenance requirements 3.5 Document specifications for waterproofing, irrigation and drainage systems and/or lighting, including recommended suppliers 3.6 Calculate total weight of materials, components and water in consultation with suppliers, green infrastructure specialists and/or building professionals to ensure the total weight complies with parameters set by an engineer 3.7 Design plant and component anchoring system appropriate to project location and weather conditions in consultation with engineers and other building and/or landscape professionals 3.8 Prepare a design concept of proposed roof garden, confirm with specialists and/or building professionals, and present to client 3.9 Prepare design plans, specifications, maintenance program and estimated costs for roof garden for documenting by a qualified specialist, if required

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	• Research and analyse researched information to select materials and components for roof gardens
Writing	• Develop relevant documentation using digital technology
Oral communication	• Determine stakeholder requirements through open-ended questioning, active listening and summarising
Numeracy	• Apply decimals and percentages to estimate and calculate project costs • Use measurements and formulas to calculate length, area, volume and weight • Interpret data and numerical data displayed in graphs, charts and/or tables

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
AHCGRI501 Design roof gardens	Not applicable	The unit has been created to address an emerging skill or task required by industry	Newly created

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

TITLE	Assessment requirements for AHCGRI501 Design roof gardens

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 designed one compliant roof garden project with a minimum of 4 square metres and has:

- met client requirements
- consulted with green infrastructure specialists, building and/or landscape professionals
- complied with relevant regulatory authorities' policies and procedures, building regulations, standards and codes
- complied with the project design parameters set by an engineer
- used measurements and formulas to calculate material quantities, weights and estimated project costs
- incorporated provision of access and egress for construction and maintenance
- developed and documented a maintenance program to ensure sustainability of the green infrastructure.

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:

- professional practice requirements in green infrastructure design, including:
  - limitations and boundaries
  - roles and responsibilities of building professionals and authorities
- factors influencing roof garden design for existing and new buildings
- relevant legislation, standards and codes, including the National Construction Code (NCC)
- roof garden recirculating and non-recirculating/flood-drain systems
- site analysis, including:
  - climatic factors of wind, temperature, solar radiation, rainfall and irrigation
  - drainage
  - installation and ongoing maintenance access
  - receiving, location and storage of necessary construction equipment and materials
- reasons for creating roof gardens, including:
  - environmental
  - economic
  - social
- features, benefits and risks of roof gardens
- characteristics, properties and limitations of materials used for roof gardens, including:
  - water-proofing material
  - substrate
  - root barrier
  - drainage and irrigation systems
  - storing and recycling water systems
  - lighting systems
  - sensor equipment and integration with Building Information Management (BIM) systems
- characteristics, properties and limitations of plants used for roof gardens
- properties of green roofs, including:
  - extensive
  - intensive
- project cost estimating, including:
  - materials and labour
  - build costs, including transporting and storing materials and equipment, and provision of safety and equipment
  - ongoing maintenance.

Assessment Conditions

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

- physical conditions:
  - skills must be demonstrated in a design workplace or an environment that accurately represents workplace conditions
- specifications:
  - building regulations, standards and codes relevant to roof garden design
- relationships:
  - clients to discuss roof garden design requirements
  - building professional (engineer) to consult with on building roof garden and regulatory requirements.

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

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