



Australian Government

Department of Education, Employment and Workplace Relations

AHCIRG421A Manage a sprinkler irrigation system

Release: 1

AHCIRG421A Manage a sprinkler irrigation system

Modification History

Not applicable.

Unit Descriptor

This Unit covers the process of managing a sprinkler irrigation system and defines the standard required to: develop procedures for system operation; troubleshoot faults and blockages; measure performance of the system; and benchmark energy and water efficiency of the system.

Application of the Unit

This Unit applies to irrigation managers in the amenity horticulture and food and fibre production industries.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

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 Ensure sprinkler irrigation system is prepared for operation	1.1 Staff are trained in carrying out pre-start checks and routine servicing 1.2 The irrigation controller is programmed and/or adjusted to meet the required schedule 1.3 Procedures are established for adjusting valves and checking filters and emitters
2 Develop and implement start-up and shutdown procedures for a sprinkler irrigation system	2.1 Start-up procedures for a sprinkler irrigation system are developed according to system specifications and technical manuals 2.2 Shut down sequence and isolation procedures are developed according to system specifications and technical manuals 2.3 Safety/security lock off devices and signage is installed according to enterprise policy and procedures
3 Carry out trouble shooting for faults and blockages	3.1 Access to faulty components and blockages is arranged 3.2 Faulty components are removed from the system, according to system specifications and technical manuals, and repaired or disposed of in an environmentally responsible way 3.3 Replaceable components are selected from manufacturer catalogues and procured using enterprise procedures 3.4 Replacement components are installed to meet system specifications according to technical manuals
4 Measure performance of a sprinkler irrigation system	4.1 Variations in pressures are identified and recorded in accordance with enterprise policy and procedures 4.2 Water flow rates are measured and recorded in accordance with enterprise policy and procedures 4.3 Variations in water flow and distribution are identified and recorded in accordance with enterprise policy and procedures 4.4 Pump performance parameters are measured as necessary and recorded in accordance with enterprise policy and procedures 4.5 Variations in pump performance parameters are measured where relevant and recorded in accordance with enterprise policy and procedures 4.6 Distribution and delivery systems are inspected and malfunctions in system are identified, fixed and actions recorded in accordance with enterprise policy and procedures 4.7 Factors external to the system that may cause interference are identified and recorded in accordance with enterprise policy and procedures
5 Review system	5.1 System pressures and variations are recorded in accordance with enterprise policy and procedures

- performance status
- 5.2 System flow rates and variations are recorded in accordance with enterprise policy and procedures
 - 5.3 Distribution uniformity and mean application rates are calculated and recorded in accordance with enterprise policy and procedures
 - 5.4 Watering depth is determined and recorded in accordance with enterprise policy and procedures
 - 5.5 Calculations are made for energy use and water efficiency and compared to industry benchmarks

Required Skills and Knowledge

This section describes the skills and knowledge required for this Unit.

Required skills include:

Ability to:

- develop and supervise procedures for starting up, carrying out operational checks and shutting down
- carry out operational tests
- measure, interpret and adjust flow rates and pressures
- operate, maintain and repair irrigation systems
- shut down and isolate components
- replace components
- access and prepare data records for both print-based and computer-based data
- use computers for recording and reporting data
- apply measuring and testing techniques
- measure output and efficiency of an irrigation system
- calculate pressure differentials, flow rates, crop yields, estimated water usage/actual water usage
- measure output and efficiency of an irrigation system
- use recorded information to review energy and water efficiency for an irrigation system
- identify adverse environmental impacts of irrigation activities and appropriate remedial action
- implement and follow relevant enterprise OHS and environmental policies and procedures.

Required knowledge includes:

Knowledge of:

- develop and supervise procedures for starting up, carrying out operational checks and shutting down
- monitor system effectiveness:
 - application rates
 - irrigation times
 - sprinkler coverage and output
 - soil moisture levels
 - pressure variations and blockages
 - salinity levels and water quality
 - depth of irrigation
 - infiltration and runoff
- measure, interpret and adjust flow rates and pressures
- sprinkler irrigation technologies
- component specifications

- pump types used in sprinkler irrigation systems and their output and efficiency ratings
- weather patterns
- soil moisture testing techniques
- irrigation schedules
- environmental impacts of irrigation using water from any ground or underground source
- best practices for reducing environmental impacts of irrigation
- water in soils and plants
- water requirements of plants/crops consistent with sound environmental management
- using records to review an irrigation system.

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	
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 workplace operations and satisfy holistically all of the requirements of the performance criteria and required skills and knowledge and include achievement of the following: • develop procedures for system operation • troubleshoot faults and blockages • measure performance of the system • benchmark energy and water efficiency of the system.
Context of and specific resources for assessment	Competency requires the application of work practices under work conditions. Selection and use of resources for some worksites may differ due to the regional or enterprise circumstances.

Range Statement

The range statement relates to the Unit of Competency as a whole. It allows for different 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.

Sprinkler irrigation systems may include:

sprinkler irrigation systems describe systems that use spray or rotor type sprinklers to distribute irrigation water at higher volume including pop-up sprinklers, fixed, and movable sprinklers (e.g. K Line and Ezy Shift).

Unit Sector(s)

Irrigation