



Australian Government

Department of Education, Employment and Workplace Relations

AHCIRG324A Operate surface irrigation systems

Release: 1

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Modification History

Not applicable.

Unit Descriptor

This Unit covers the process of operating surface irrigation systems and defines the standard required to: read and follow operations manual and irrigation schedules; use pre-start checks; operate and inspect the system; check pressure at the headworks and control valves; carry out running repairs on irrigation delivery and drainage systems; shut down in response to irrigation indicators.

Application of the Unit

This Unit applies to skilled workers in the irrigated food and fibre production industries, and is likely to be carried out under routine supervision within enterprise guidelines.

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 Carry out pre-start checks	1.1 Checks of water, power, fuel and lubricants ensure that all are available and the control system is operational 1.2 Pumps are primed, if necessary, and gates and controls are open or closed in accordance with enterprise procedures 1.3 Pipes, system equipment and outlets are positioned and set up in accordance with enterprise standards and OHS requirements
2 Operate and monitor the <i>surface irrigation system</i>	2.1 Syphons and other delivery mechanisms are primed and started in accordance with enterprise procedures 2.2 Start up sequence is implemented in accordance with operations manual and water levels, and pressure built up slowly as directed 2.3 Pressure at the headworks and control valves is checked 2.4 Water is distributed evenly to the targeted areas with minimal wastage and run-off 2.5 Area is irrigated in accordance with enterprise procedures, and time lag between shut down and end of watering is observed to minimise run-off and deep percolation 2.6 All malfunctions, leaks, damage to water courses and blockages are corrected or repaired immediately and reported in accordance with enterprise procedures
3 Measure and interpret water levels, flow rates and volume of water used	3.1 Head water levels are monitored and maintained 3.2 All water outlets are operating in accordance with operating procedures 3.3 Blocked inlets and outlets are replaced or cleared 3.4 Flow rates and water usage are measured and recorded 3.5 Irrigation changes are implemented in accordance with enterprise procedures
4 Monitor drainage and tailwater systems	4.1 Water intake, conveyance and distribution, drainage and tailwater is monitored 4.2 Water reuse systems are checked for clearance and freedom from weeds 4.3 If used, pumps are monitored during operation, rubbish is cleared from outlets, and pump is backflushed in accordance with enterprise procedures
5 Shut down surface irrigation in response to irrigation indicators	5.1 System <i>components</i> are shut down in sequence in accordance with manufacturer's and enterprise procedures 5.2 Irrigation activities are reported and recorded in accordance with regulatory requirements and enterprise procedures

Required Skills and Knowledge

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

Required skills include:

Ability to:

- carry out running repairs on irrigation delivery and drainage systems
- inspection procedures
- start up the system
- start and move syphons and spiles and check flow
- operate surface irrigation equipment
- check pressure at the head works and control valves
- carry out running repairs on irrigation delivery and drainage systems
- adjust and monitor check valves
- carry out shut down procedures, clean equipment and dispose of waste
- measure water usage
- identify variations in water flow and distribution.

Required knowledge includes:

Knowledge of:

- general irrigation methods for surface irrigation systems
- main components of surface irrigation systems
- possible environmental impacts of fertigation activities
- energy efficiency indicators/ benchmarks for surface irrigation
- soil characteristics
- soil/plant/water relationships
- water requirements of plants/crops consistent with sound environmental management
- critical measures for moisture availability
 - readily available water
 - water holding capacity
 - wilting point
 - field capacity
 - infiltration rates
 - evapotranspiration
- environmental impacts of irrigation, using water from any ground or underground source
- OHS, environmental and enterprise policies and procedures relating to the operation of gravity fed irrigation systems.

Evidence Guide

<p>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.</p>	
<p>Overview of assessment</p>	
<p>Critical aspects for assessment and evidence required to demonstrate competency in this Unit</p>	<p>Evidence is required in the process of operating gravity fed irrigation systems. 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:</p> <ul style="list-style-type: none"> • read and follow operations manual and irrigation schedules • use pre-start checks • operate and inspect the system • check pressure at the headworks and control valves • carry out running repairs on irrigation delivery and drainage systems • shut down in response to irrigation indicators.
<p>Context of and specific resources for assessment</p>	<p>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.</p>

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.

<i>Surface irrigation systems</i> may include:	any systems that apply water across the surface of a levelled or contoured area. These include furrow, border and basin irrigation.
<i>System components</i> may include:	<div> <p>diversion and conveyancing structures:</p> </div> <div> <ul style="list-style-type: none"> • intake structures • diversion weirs and gates </div> <div> <p>field distribution structures:</p> </div> <div> <ul style="list-style-type: none"> • canals • pipelines • drop structures and chutes • division boxes and turnouts • checks </div> <div> <p>crossing structures:</p> </div> <div> <ul style="list-style-type: none"> • flumes • culverts • inverted siphons • water measurement structures • weirs • parshall flumes • cut-throat flumes. </div>

Unit Sector(s)

Irrigation