

**Modification history**

Release	Comments
Release 2	This version released with AHC Agriculture, Horticulture, Conservation and Land Management Training Package Version 4.0.
Release 1	This version released with AHC Agriculture, Horticulture, Conservation and Land Management Training Package Version 1.0.

AHCIRG434	Manage surface irrigation systems
<b>Application</b>	<p>This unit of competency describes the skills and knowledge required to prepare surface irrigation system for operation, develop and implement start-up, shutdown and isolation procedures, trouble shoot for faults and blockages, and measure and review surface irrigation system performance.</p> <p>The unit applies to individuals who apply specialised skills and knowledge to the management of surface irrigation systems and have responsibility for the output of others. This includes applying and communicating non-routine technical solutions to predictable and unpredictable problems.</p> <p>No occupational licensing, legislative or certification requirements apply to this unit at the time of publication.</p>
<b>Prerequisite Unit</b>	Nil
<b>Unit Sector</b>	Irrigation (IRG)

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. Ensure the surface irrigation system is prepared for operation	1.1 Assess staff training needs for carrying out pre-start checks and routine servicing and arrange training for those that require it 1.2 Program or adjust the irrigation controller to meet the required schedule 1.3 Develop procedures for adjusting valves and checking filters and emitters
2. Develop and implement start-up and shut down procedures for a surface irrigation system	2.1 Develop start-up procedures 2.2 Provide training in priming pumps and setting gates to commence irrigating 2.3 Develop shut down sequence and isolation procedures 2.4 Specify soil conditions for operation and maintain tracks to reduce compaction
3. Measure performance of a surface irrigation system	3.1 Identify and record variations in pressures at the head works and control valves 3.2 Measure and record water flow rates according to workplace procedures 3.3 Identify and record variations in water flow and distribution 3.4 Measure and record pump performance parameters as necessary 3.5 Measure and record variations in pump performance parameters where relevant 3.6 Inspect distribution, drainage and water measurement systems 3.7 Identify and repair system malfunctions and record actions 3.8 Identify and record factors external to the system that may cause interference
4. Review system performance status	4.1 Record system pressures and variations 4.2 Record system flow rates and variations 4.3 Calculate and record distribution uniformity and mean application rates 4.4 Determine and record watering depth 4.5 Measure quantity and quality of tail water, and amount of reused water 4.6 Calculate and compare energy use and water efficiency to industry benchmarks

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<b>Foundation Skills</b>	
<i>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.</i>	
<b>Skill</b>	<b>Description</b>
Reading	<ul style="list-style-type: none"> <li>Identify and interpret information regarding managing surface irrigation systems</li> </ul>
Writing	<ul style="list-style-type: none"> <li>Develop surface irrigation system management procedures, and start-up, shut down and isolation procedures</li> <li>Record system performance and variations</li> </ul>
Numeracy	<ul style="list-style-type: none"> <li>Measure, calculate and record system pressure and variations, water flow rates, variations and distribution, tailing water quantity and quality, reused water quantity, and pump performance and variations</li> <li>Calculate energy use and water efficiency and compare to industry benchmarks</li> </ul>
Navigate the world of work	<ul style="list-style-type: none"> <li>Identify and describe own workplace requirements, including safety requirements, associated with own role and area of responsibility</li> </ul>

<b>Unit Mapping Information</b>			
<b>Code and title current version</b>	<b>Code and title previous version</b>	<b>Comments</b>	<b>Equivalence status</b>
AHCIRG434 Manage surface irrigation systems Release 2	AHCIRG434 Manage surface irrigation systems Release 1	Minor changes to performance criteria and foundation skills	Equivalent unit

<b>Links</b>	Companion Volumes, including Implementation Guides, are available at VETNet: <a href="https://vetnet.education.gov.au/Pages/TrainingDocs.aspx?q=c6399549-9c62-4a5e-bf1a-524b2322cf72">https://vetnet.education.gov.au/Pages/TrainingDocs.aspx?q=c6399549-9c62-4a5e-bf1a-524b2322cf72</a>
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<b>TITLE</b>	<b>Assessment requirements for AHCIRG434 Manage surface irrigation systems</b>
<b>Performance Evidence</b>	
<p>An individual demonstrating competency must satisfy all of the elements and performance criteria in this unit.</p> <p>There must be evidence that the individual has managed surface irrigation systems on at least two occasions and has:</p> <ul style="list-style-type: none"> <li>• developed procedures and provided staff training to: <ul style="list-style-type: none"> <li>• perform running repairs on irrigation delivery and drainage systems</li> <li>• carry out shut down procedures</li> <li>• check pressure at the head works and control valves</li> <li>• set up pipes, system equipment and outlets</li> <li>• use siphons</li> </ul> </li> <li>• developed procedures for surface irrigation system start up, shutdown and operational checks</li> <li>• identified and record variations in water flow and distribution</li> <li>• identified adverse environmental impacts of irrigation activities and taken appropriate remedial action</li> <li>• implemented and followed workplace health and safety and environmental requirements</li> <li>• measured and recorded water flow rates.</li> </ul>	
<b>Knowledge Evidence</b>	
<p>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:</p> <ul style="list-style-type: none"> <li>• principles and practices of surface irrigation management</li> <li>• calculating irrigation efficiency using records to review an irrigation system</li> <li>• critical measures for moisture availability: <ul style="list-style-type: none"> <li>• evapotranspiration</li> <li>• field capacity</li> <li>• infiltration rates</li> <li>• readily available water</li> <li>• water holding capacity</li> <li>• wilting point</li> </ul> </li> <li>• environmental impacts of irrigation using water from any ground or underground source</li> <li>• main components of surface irrigation systems</li> <li>• physical soil characteristics such as infiltration rate, water holding capacity and wetted volume in the root zone</li> <li>• pump types used in surface irrigation systems and their operating requirements</li> <li>• pump types used in surface irrigation systems and their operation</li> <li>• set up of headwater, tail water, channels and beds</li> <li>• soil moisture testing techniques</li> <li>• water in soils and plants</li> <li>• water requirements of plants and crops consistent with sound environmental management.</li> </ul>	
<b>Assessment Conditions</b>	
<p>Assessment of skills must take place under the following conditions:</p> <ul style="list-style-type: none"> <li>• physical conditions: <ul style="list-style-type: none"> <li>• a workplace setting or an environment that accurately represents workplace conditions</li> </ul> </li> <li>• resources, equipment and materials: <ul style="list-style-type: none"> <li>• surface irrigation system equipment and tools</li> <li>• surface irrigation system measuring, and recording equipment and procedures</li> </ul> </li> <li>• specifications: <ul style="list-style-type: none"> <li>• industry energy and water efficiency benchmarks</li> </ul> </li> <li>• timeframes: <ul style="list-style-type: none"> <li>• according to the job requirements.</li> </ul> </li> </ul>	

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