

Modification history

Release	Comments
Release 2	This version released with AHC Agriculture, Horticulture and 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.

AHCIRG334	Operate and maintain gravity fed irrigation systems
Application	<p>This unit of competency describes the skills and knowledge required to install, operate and maintain gravity fed irrigation systems.</p> <p>The unit applies to individuals who operate and maintain gravity fed irrigation systems under broad direction and take responsibility for their own work.</p> <p>No occupational licensing, legislative or certification requirements apply to this unit at the time of publication.</p>
Prerequisite Unit	Nil
Unit Sector	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. Install gravity fed irrigation systems	1.1 Check water supply is compatible with system specifications 1.2 Select and use required materials, tools equipment and machinery and check for safe operations 1.3 Interpret plan, including identifying potential hazards and risks and implementing safe working practices to manage risks 1.4 Select, fit, use and maintain safety and personal protective equipment applicable to the task 1.5 Mark out structures and peg earthworks 1.6 Prepare and maintain beds, diversion and conveyancing structures 1.7 Install diversion and conveyancing structures, channels and beds 1.8 Prepare bed surface with roto-buck 1.9 Test structures for configuration, flow rates and capacity
2. Complete water measurement and tail-water works	2.1 Install water measurement structures 2.2 Install channels and tail water storages 2.3 Install pumping equipment, lines and filters 2.4 Confirm that the system configuration and capacity matches the installation plan 2.5 Complete earthworks and structures
3. Operate pumps and siphons	3.1 Prime pumps and open or close valves and controls 3.2 Position and set up pipes, system equipment and outlets 3.3 Prime and start siphons and other delivery mechanisms 3.4 Implement start up sequence and slowly build up water levels and pressure 3.5 Check pressure at the head-works and control valves 3.6 Distribute water evenly to the targeted areas with minimal wastage and run-off 3.7 Irrigate area and observe time lag between shut down and end of watering to minimise run-off and deep percolation
4. Measure and interpret water levels, flow rates and volume of water used	4.1 Monitor and maintain head water levels 4.2 Confirm that all water outlets are operating correctly 4.3 Replace or clear blocked inlets and outlets 4.4 Measure and record flow rates and water usage 4.5 Implement irrigation changes as required

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
5. Monitor drainage and tail-water systems	5.1 Monitor water intake, conveyance and distribution, drainage and tail-water 5.2 Check water reuse systems for clearance and freedom from weeds 5.3 Monitor pumps, if used, during operation, clear rubbish from outlets and backflush pump
6. Inspect and maintain a gravity fed irrigation system	6.1 Record damage and blockages with contaminants by damage type, location and the section of the system affected 6.2 Record and report damaged or faulty pumps, valves, electrical components and computer control systems and take action to effect repairs 6.3 Service water measuring, diversion and conveyancing, and distribution structures 6.4 Carry out vegetation control to keep all system components clear 6.5 Service and repair machinery according to operation and maintenance manual 6.6 Record machinery service and repair according to operation and maintenance manual 6.7 Collect, treat and dispose of or recycle waste

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	<ul style="list-style-type: none"> Interpret textual information from a range of sources to identify relevant and key information about workplace operations
Writing	<ul style="list-style-type: none"> Document gravity fed irrigation system damage and blockages Document mechanical equipment service and repair
Oral communication	<ul style="list-style-type: none"> Initiate discussions with supervisor using clear language to communicate damage and blockages
Numeracy skills	<ul style="list-style-type: none"> Measure water levels Record water flow rates and water usage
Navigate the world of work	<ul style="list-style-type: none"> Recognise and follow workplace requirements, including safety requirements, associated with own role and area of responsibility
Interact with others	<ul style="list-style-type: none"> Use appropriate language and communication skills to disseminate information about system damage and blockages

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
AHCIRG334 Operate and maintain gravity fed irrigation systems Release 2	AHCIRG334 Operate and maintain gravity fed irrigation systems Release 1	Minor changes to performance criteria and foundation skills	Equivalent unit

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

TITLE	Assessment requirements for AHCIRG334 Operate and maintain gravity fed irrigation systems
Performance Evidence	
<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 operated and maintained gravity fed irrigation systems on at least one occasion and has:</p> <ul style="list-style-type: none"> • adjusted and monitored check valves • built and maintained irrigation structures, channels and beds • carried out running repairs on irrigation delivery and drainage systems • carried out shut down procedures, cleaned equipment and disposed of waste • checked pressure at the head works and control valves • checked the serviceability of siphons • identified variations in water flow and distribution • inspected irrigation systems • installed pumps and pipelines • measured water usage • performed system commissioning tasks • prepared irrigation beds • removed and replaced gates, slides and doors • removed and replaced valves and filters • start and moved siphons and spiles and checked flow • start up the system • undertaken minor repairs of equipment • used roto-buck for bed preparation. 	
Knowledge Evidence	
<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"> • safe working practices applicable to operating and maintaining gravity fed irrigation systems • machinery operation and maintenance manual • behaviour of water on varying terrain and soil types • calculations for installing surface irrigation systems • characteristics and operation of components • components of a surface irrigation system • environmental impacts of surface irrigation installation • soil characteristics • soil water retention testing techniques • water quality and water filtration techniques • common operational and maintenance problems • common operational problems • environmental impacts of irrigation maintenance • maintenance requirements – routine and end of season • surface irrigation system components • weed control methods. 	
Assessment Conditions	
<p>Assessment of skills must take place under the following conditions:</p> <ul style="list-style-type: none"> • physical conditions: <ul style="list-style-type: none"> • a workplace setting or an environment that accurately represents workplace conditions • resources, equipment and materials: <ul style="list-style-type: none"> • work instructions and workplace procedures applicable to operating and maintaining gravity fed irrigation systems • gravity fed irrigation system materials, tools equipment and machinery • gravity fed irrigation pump system tools and equipment and procedures 	

Assessment Conditions

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| <ul style="list-style-type: none">• personal protective equipment applicable to operating and maintaining gravity fed irrigation systems• specifications:<ul style="list-style-type: none">• machinery operation and maintenance manual• environmental procedures for collection, treatment, disposal or recycling of waste• timeframes:<ul style="list-style-type: none">• according to job requirements. |
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Assessors of this unit must satisfy the requirements of assessors in applicable vocational education and training, legislation, frameworks and/or standards.
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