Australian Government

Department of Education, Employment and Workplace Relations

RTE3611A Operate pressurised irrigation systems

Release: 1

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Modification History

Not applicable.

Unit Descriptor

This competency standard covers the process of operating pressurised irrigation systems including the use of pre-start checks, start-up, operation and inspection of the system, and shut down in response to irrigation indicators. It requires the ability to read and follow operations manual and irrigation schedules, measure and interpret flow rates and pressures, identify adverse environmental impacts of irrigation activities and take appropriate remedial action, and implement and follow relevant OHS and environmental policies and procedures. Operating pressurised irrigation systems requires knowledge of main components of pressurised irrigation systems, pump types and their operation, environmental impacts of irrigation, soil/plant/water relationships, and water requirements of plants/crops.

Application of the Unit

Not applicable.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

Not applicable.

Elements and Performance Criteria Pre-Content

Not applicable.

Elements and Performance Criteria

Elements and Performance Criteria

Element	Performance Criteria
1 Perform pre-start checks for pressurised irrigation system	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 valves and controls are open or closed as directed.
	1.3 Pressure and flow testing equipment are calibrated and available as required.
	1.4 Other pre-start system checks are carried out in accordance with manufacturers, **OHS** and enterprise procedures.
2 Start up and inspect system	2.1 Start up sequence is implemented in accordance with operations manual.
	2.2 All malfunctions, leaks and blockages are corrected or repaired immediately and reported in accordance with OHS and enterprise procedures.
	2.3 Pressure at the headworks and control valves is within design specifications indicating efficient filter operation, and water is distributed evenly to the targeted areas with minimal wastage and run-off.
3 Shut down system based upon irrigation indicators	3.1 Water is applied for sufficient time to allow amount of water necessary to achieve required soil moisture levels in accordance with irrigation schedule, **environmental considerations** and allowing for weather conditions.
	3.2 **System components** are shut down and drained in sequence in accordance with manufacturers, OHS and enterprise procedures.
	3.3 Drainage and treatment systems are checked in accordance with enterprise procedures.
	3.4 Irrigation activities are **recorded** and in reported accordance with regulatory requirements and enterprise procedures.

Required Skills and Knowledge

Not applicable.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in operating pressurised irrigation systems requires evidence that a person can perform pre-start checks, start, operate and inspect the system, and shut down in response to irrigation indicators.

The skills and knowledge required to operate pressurised irrigation systems must be **transferable** to a different work environment. For example, this could include different crops, pressurised irrigation systems, environmental parameters and enterprise procedures.

What specific knowledge is needed to achieve the performance criteria?

Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts, and to deal with unplanned events. The knowledge requirements for this competency standard are listed below:

general irrigation methods for pressurised systems

main components of pressurised irrigation systems

pump types used in pressurised irrigation systems and their operation

environmental impacts of irrigation using water from any ground or underground source

soil/plant/water relationships

water requirements of plants/crops consistent with sound environmental management

shutdown sequence

OHS, environmental and enterprise policies and procedures relating to the operation of pressurised irrigation systems.

What specific skills are needed to achieve the performance criteria?

To achieve the performance criteria, appropriate literacy and numeracy levels as well as some complementary skills are required. These include the ability to:

read and follow operations manual and irrigation schedules

measure and interpret flow rates and pressures

identify adverse environmental impacts of irrigation activities and appropriate remedial action

implement and follow relevant OHS and environmental policies and procedures relating to the operation of pressurised irrigation systems.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

1. How can **communication of ideas and information** (**2**) be applied?	Reporting irrigation activities.
2. How can **information be collected**, **analysed and organised** (**2**)?	Reading and interpreting flow rates and recording irrigation activities.
3. How are **activities planned and organised** (**2**)?	Performing shut down sequence.
4. How can **team work** (**2**) be applied?	Reporting malfunctions.
5. How can the use of **mathematical ideas and techniques** (**2**) be applied?	Measuring and interpreting pressure and flow rates.
6. How can **problem-solving skills** (**2**) be applied?	Identifying and correcting malfunctions, leaks and blockages.
7. How can the **use of technology** (**2**) be applied?	Using computerised equipment.

Are there other competency standards that could be assessed with this one?

This competency standard **could** be assessed on its own or in combination with other competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to the **Assessment Guidelines**. Further advice may also be sought from the relevant **sector booklet**.

Range Statement

Range of Variables

The Range of Variables explains the contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in training and assessment requirements may depend on the work situations available

What **pressurised irrigation systems** might be relevant to this standard?	Pressurised irrigation systems may include micro-irrigation systems and spray irrigation systems. Micro-irrigation systems may be mains pressure, low pressure, below or above ground, sprays systems, drip emitter trickle, t-tape, mini-sprinklers, and capillary. Spray irrigation systems may be travelling irrigators (soft hose, hard hose boom type), centre pivot, linear move, powered side roll hand shift permanent (installed), and bike shift/easy shift. Irrigation systems may range from manual operation and monitoring to fully automated with computer control and monitoring.
What **OHS** requirements are relevant to this standard?	These may include systems and procedures for the safe operation of irrigation equipment and to ensure protection against injury when working with pressurised equipment, the prevention of electrical type injury, manual handling and procedures for working outdoors, including protection from solar radiation, dust and noise.
What may need to be **inspected**?	This may include water flow, water quality and pressures at delivery points, lines for leaks and blocks, and drainage flow.
What **irrigation indicators** might be relevant to this standard?	These may include soil moisture and plant/crop condition.
What **environmental considerations** relate to this standard?	Environmental considerations may include efficient operation of the system to conserve water by identifying and repairing leaks, avoidance of over watering, and even distribution of water to targeted areas with minimal wastage and run-off.
What might **system components** include?	These may vary according to brand and

	supplier and may include pumps, tensiometers, probe tubes, flow meter, catch cans, pressure gauge, computer and/or other scheduling devices, recycling equipment and spray equipment.
What irrigation activities may be **recorded**?	These may include water used, time of shutdown, malfunctions, blockages, leaks and other faults requiring repair.

For more information on contexts, environment and variables for training and assessment, refer to the Sector Booklet.

Unit Sector(s)

Not applicable.