



Australian Government

Department of Education, Employment and Workplace Relations

RTE5606A Manage water systems

Release: 1

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Modification History

Not applicable.

Unit Descriptor

This competency standard covers the process of strategically managing an integrated system involving relationships between irrigation, drainage and environmental systems. This includes determining the feasibility of using or up-grading an irrigation system, installing or modifying the system as necessary, managing water systems, and evaluating irrigation system outputs. Managing irrigation systems requires knowledge of plant requirements, water quality, environmental impacts of irrigation, using water from any ground or underground source, cost/benefit analysis, and enterprise policies and procedures.

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 Determine the feasibility of using or up-grading irrigation system	1.1 Water resources and drainage implications are assessed to determine suitability for irrigation. 1.2 Water quality and treatment requirements are determined. 1.3 Water requirements and most suitable application systems are determined for each crop/plant type and area, and for each soil type. 1.4 Other water requirements, such as climate control, are determined. 1.5 Soil types are assessed to determine suitability for irrigation and the range of crop/plant types that could be grown. 1.6 Drainage requirements are determined in relation to each soil and crop/plant type and type of irrigation system. 1.7 Performance data, audit reports, environmental and OHS data for existing systems are assessed if available. 1.8 Information is obtained from irrigation specialists on all relevant aspects of irrigation design. 1.9 Available irrigation system types and components are assessed and costed, and a decision is made on the particular system to be used or upgrades to existing system.
2 Install or modify an irrigation and drainage system as necessary	2.1 Materials and equipment making up the system are determined and acquired. 2.2 Irrigation system is installed using advice, as necessary, from irrigation specialists. 2.3 Checking of irrigation and drainage systems are supervised to ensure there are no leaks or blockages, that the water is being evenly distributed, that drainage is effective, and the

system is in good working order.

3 Evaluate irrigation system performance

3.1 Plant growth/yield increases from irrigation are determined and valued

3.2 Costs of irrigation are calculated

3.3 Cost benefit of irrigation is determined and compared with alternative systems/approaches

Required Skills and Knowledge

Not applicable.

Evidence Guide

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

Competence in managing irrigation systems requires evidence that a person can determine the feasibility of using or up-grading an irrigation system, install or modify an irrigation and drainage system as necessary, manage the irrigation and drainage system, and evaluate irrigated production system outputs.

The skills and knowledge required to manage irrigation systems must be **transferable** to a different work environment. For example, this could include different irrigation systems, enterprise procedures, environments and plant types.

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:

- plant requirements

- water quality

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

- cost/benefit analysis

- enterprise policies and procedures.

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:

- identify adverse environmental impacts of irrigation activities and appropriate remedial action
- analyse performance and audit data
- calculate costs and benefits
- evaluate irrigation system performance
- strategically manage irrigated production systems
- develop and implement relevant enterprise OHS and environmental procedures.

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.

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| 1. How can communication of ideas and information (2) be applied? | Participating in discussions with suppliers, staff, installers and technical experts. |
| 2. How can information be collected, analysed and organised (3)? | Analysing and interpreting productivity/increased growth and systems information. |
| 3. How are activities planned and organised (3)? | Organising irrigation system installation. |
| 4. How can team work (3) be applied? | Allocating and co-ordinating activities of staff, technical experts and advisors. |
| 5. How can the use of mathematical ideas and techniques (2) be applied? | Calculating costs and estimating benefits. |
| 6. How can problem-solving skills (3) be applied? | Determining technical, environmental and financial solutions. |
| 7. How can the use of technology (2) be applied? | Assessing alternative irrigation-related technology. |

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 factors might be taken into account in **assessing water resources**?

Factors may include water quantity and quality, availability throughout year, and long-term impact on water resources.

What **OHS** requirements may be relevant to this standard?

OHS requirements may include safe systems and procedures for handling, transporting and storing hazardous substances; selection, use and maintenance of personal protective clothing and equipment; protection against chemical residues including that in/on foliage, water, soil and other items; and safe systems and procedures for outdoor work, including protection from solar radiation, dust and noise.

What **irrigation system types** might be assessed?

These may include flood, furrow, micro-sprinklers, pop-ups, impact sprinklers, low-level lines, overhead sprinklers, drippers and micro-jets.

What factors might be considered in costing **irrigation system types**?

Factors may include capital costs, operating costs, availability of labour to meet the increased labour demand, and long-term impacts on soils and on water resources.

What **irrigated systems** are relevant to this standard?

Irrigated systems may involve water harvesting, delivery, drainage collection, drainage storage and treatment as well as natural drainage and treatment systems involving the removal of pollutants through evaporation, and/or clearance by filtration through surface layers.

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

Unit Sector(s)

Not applicable.