

PIL204A Check and operate permaculture water systems

This competency standard covers the process of checking and operating permaculture water systems under routine supervision. It requires the ability to handle and shift equipment, follow property procedures relating to water management, identify adverse environmental impacts and take appropriate remedial action. Checking and operating permaculture water systems requires knowledge of natural water flows, productive aquaculture systems, dams and other earthworks for water systems, water collecting and recycling, waste-water systems, irrigation systems and water conservation.

Element	Performance Criteria
1 Set up water systems equipment	<p>1.1 Water systems equipment is handled safely in accordance with OHS practices</p> <p>1.2 Water systems equipment is positioned in accordance with enterprise requirements</p> <p>1.3 Pumps, bores and other water delivery mechanisms are checked for operation and action taken as required in accordance with enterprise policy and procedures</p> <p>1.4 Water control devices are positioned and secured as required in accordance with enterprise procedures</p>
2 Carry out water systems operations	<p>2.1 Gates and/or valves are opened and shut as necessary in accordance with enterprise procedures</p> <p>2.2 Required head and water levels are achieved and maintained to ensure sufficient water flow</p> <p>2.3 Progress of water flow including “no pipes” systems for nutrient catchment and water/terrace systems is monitored in accordance with enterprise procedures</p> <p>2.4 Water system changes are carried out and recorded as required</p> <p>2.5 Water system equipment is shifted as required in accordance with OHS guidelines</p>

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| 3 | Clean and store water system equipment | 3.1 | Equipment is cleaned and prepared for storage as necessary in accordance with property policy and procedures |
| | | 3.2 | Equipment is loaded for transport safely if necessary in accordance with OHS practices |
| | | 3.3 | Equipment is stored as required in accordance with property policy and procedures |

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 water systems are relevant to this standard?	<p>These may include irrigation, water collection and storage, recycling, waste-water systems, water conservation approaches, swales, dams, free-flowing water, extensive aquaculture systems and productive water bodies, earthworks for passive water catchment, storage and yield.</p> <p>Irrigation systems may range from manual operation and monitoring to fully automated with computer control and monitoring.</p>
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What might the OHS requirements be for carrying out irrigation activities?	<p>These may include safe systems and procedures for the operation and maintenance of machinery and equipment, for outdoor work (including protection from solar radiation, dust and noise), manual handling, prevention of electrical injury, handling, transportation, unwanted chemical substances from off the property source, cleaning of old chemical sites on the property and the use and maintenance of relevant personal protective clothing and equipment.</p>
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Evidence Guide

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

Competence in checking and operating permaculture water systems requires evidence that a person can set up, operate, check, clean and store water systems equipment and carry out all basic activities involved in operating and maintaining water systems under routine supervision.

The skills and knowledge required to check and operate permaculture water systems must be **transferable** to a different work environment. For example, this could include different systems, properties, water conservation and recycling approaches.

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:

- Permaculture principles and ethics
- Behaviour of water in the natural environment
- Basic operation of water systems used on permaculture properties
- Components of a water systems and their cleaning and storage requirements (eg roof, tank, dam, soil terraces, swales, drainage, disposal/reuse options)
- Water conservation and management principles and practices including working with passive systems, swales, terraces, dams and other earthworks
- Passive harvesting, movement and nutrient adding systems including appropriate earthworks
- Biological filtering of water into and out of a permaculture system

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 natural water flows
- Set up water systems
- Monitor water flow
- Place system components in a way which gives most effect and greatest yield
- Install earthworks for passive water catchment, storage and movement.

- Add and extract nutrients to water moving through the system.
- Follow OHS procedures relating to general activities involved in working with water systems on a permaculture property

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 (1) be applied?	Recording and reporting on work completed and through maps and diagrams to show component placement.
2. How can information be collected, analysed and organised (1) ?	By checking set up information and procedures for equipment and by using maps and diagrams to show component placement.
3. How are activities planned and organised (1) ?	According to instructions from supervisors and/or property owners.
4. How can team work (1) be applied?	Assisting communities with water systems work activities.
5. How can the use of mathematical ideas and techniques (1) be applied?	Estimating time and water levels for sufficient water flow.
6. How can problem solving skills (1) be applied?	In determining required action once set up information has been checked.
7. How can the use of technology (1) be applied?	Using a range of different water conservation and movement technologies.

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

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

For information about assessing this competency standard for consistent performance and

where and how it may be assessed, refer to the **Permaculture International Ltd Course Documentation**.
