

## PIL404A Plan for the implementation of permaculture works

This competency standard covers the planning and preparation required to implement permaculture works. Planning will involve liaison with the client/project manager, use of contract documents and specifications of works, complying with statutory obligation and responsibilities, preparation of a program of works to ensure sequential allocation of resources, and efficient use of contractors. Planning the implementation of permaculture works requires a broad range of skills and requires the application of horticultural, natural science and environmental skills. Additionally, costing, estimating and basic budgeting skills will be needed. Planning is likely to be undertaken with minimal guidance and requires responsibility for the management of timelines, and the purchasing and ordering of materials to meet contract requirements and sequences of tasks.

Element	Performance Criteria
1 Carry out preliminary planning activities for permaculture works	<p>1.1 <b>Client preferences and contract requirements</b> including the scope of the work for the permaculture project are confirmed and verified.</p> <p>1.2 <b>Specific statutory obligations and site responsibilities</b> that may affect the implementation of works are identified.</p> <p>1.3 An initial site visit is conducted to verify the <b>biophysical and other factors</b> of the project area including <b>environmental considerations</b> and <b>historical modifications</b>.</p> <p>1.4 OHS obligations associated with the permaculture works are identified, <b>OHS hazards</b> are assessed and <b>controls</b> developed, costed and documented in the implementation plan according to enterprise guidelines.</p> <p>1.5 The availability, quantity and costs of <b>plants</b> and other materials listed in the project schedules are verified.</p>
2. Prepare a staged plan of works	2.1 Resources, <b>tools and equipment</b> required for <b>permaculture works</b> and ongoing maintenance of the site are identified, costed and availability confirmed with suppliers, contractors and appropriate personnel.

- 2.2 Site access and establishment issues are investigated to consider and plan for the **environmental impacts** of site work practices, avoid safety hazards to workers or the public, and minimise disruption to site works during the construction period.
- 2.3 A program of works is prepared to provide a sequential allocation of resources and work tasks to meet the project contract **timelines**.
- 2.4 Timelines are developed for site establishment, the **establishment period** and maintenance of works.
- 2.5 Seasonal factors and impacts are incorporated in the staging strategy to allow for planting supply and care, wet day access, machinery use, fire hazards and establishment period.
- 2.6 Where required, special project works related to habitat resource development and enhancement are included in the **staged implementation plan**.

## 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 particular training and assessment requirements may depend on the work situations available.

Who may be referred to as a <b>client</b> ?	Clients may include a private individual, company, community group, government agency or a combination of these entities.
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What <b>preferences and contract requirements</b> may clients have?	Project works will be described in the contract specification of works documents which identifies the clients requirements on how and when works will be carried out, identifies performance conditions and expected standards of work, lists timelines, and sets out schedules of proposed materials and their unit costs.
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What <b>specific statutory obligations and site responsibilities</b> may apply?	Statutory obligations require compliance with legislation, ordinances, regulations or by laws relating to the works or the work site such as prohibited plant species, restricted plant species, land use restrictions, processes and requirements for site development and work activities. Site responsibilities include OHS, industrial relations and equal opportunity and employment.
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<p>What <b>biophysical and other factors</b> may affect the site to be revegetated?</p>	<p>Biophysical factors may include the location of the site, site boundaries, environmental considerations, access issues, potential hazards, utility services availability and locations, adjacent landholder considerations, security issues, aspect of the site, rainfall, humidity, wind and sunlight intensity, soil types, nutrients and deficiencies, slope, natural and artificial watercourses, outcrops and the presence of indigenous or other significant vegetation whether indigenous or otherwise, plants that may become a weed problem- and animals that may become a management issue, whether feral species or otherwise.</p>
<p>What <b>environmental considerations</b> may affect the work priorities?</p>	<p>This includes the use of materials that come from sustainable sources, duty of care in conserving sites natural values, and involves work practices that will not pollute, damage or degrade the sites natural resources, biological processes and biodiversity. While site works involve disturbance and impacts, the use and movement of machinery, storage of materials, removal of weeds and movement of soil into, across and beyond the site, must be subject to control to avoid introduction or transfer of soil-borne plant or animal pathogens and which minimise or remove the risk of soil erosion.</p>
<p>What <b>historical modifications</b> may influence the plan for permaculture works?</p>	<p>Historical modifications may include human intervention such as clearance, earthworks, commercial grazing and cultivation practices, fire management, buildings and structures, natural events such as wildfire, flooding, drought, and the effects of modifications at environmentally linked sites.</p>
<p>What <b>OHS hazards</b> may be identified as part of the planning for permaculture works?</p>	<p>Hazards may include disturbance or interruption of services, solar radiation, dust, noise, air and soil borne micro-organisms, chemicals and hazardous substances, sharp hand tools and equipment, manual handling, moving vehicles, machinery and machinery parts, slippery and uneven surfaces.</p>
<p>What <b>controls</b> may be introduced to minimise the risk of OHS hazards?</p>	<p>Controls used should be in accordance with enterprise OHS policies and procedures and may include identifying hazards, assessing and reporting risks, cleaning, maintaining and storing tools, equipment and machinery, appropriate use of personal protective equipment including sun protection, safe operation of tools, equipment and machinery, safe handling, use and</p>

	<p>storage of chemicals and hazardous substances, correct manual handling, appropriate use of safety equipment such as signage and protective barriers, basic first aid available on site, personal hygiene, and reporting problems to supervisors.</p>
<p>Why is forward planning required for <b>plant</b> availability?</p>	<p>The forward planning for supply of plants is critical to ensure that species are ready and mature for planting, and that they satisfy the planting works program. Seed resources may need to be collected well in advance before works commence or purchased from a reputable source. Nursery orders need to be organised to allow for propagation and hardening off.</p>
<p>What <b>tools and equipment</b> may be required for the permaculture works?</p>	<p>Tools, equipment and machinery may include knives, trowels, spades, forks, rakes, hoes, shovels, buckets, brooms, wheelbarrows, hoses and hose fittings, tree-planters, secateurs or snips, and machinery such as tractors and 3-point linkage or trailed equipment, and fertiliser application machinery, pesticide and fertiliser application machinery or backpacks.</p>
<p>What <b>permaculture works</b> may be applied to this standard?</p>	<p>Permaculture procedures may include soil treatments including stabilising materials such as dead vegetative material, mulch and weed mats or conditioning additives to effect a change in the water holding capacity of the soil, pH, organic components, soil structure and texture, preparation of soil surfaces for permaculture works, installation of irrigation and/or drainage systems including earthworks, planting methods such as hand sowing, direct seeding, tube planting, hand or machine assisted planting of seedlings, planting of divisions, transplanting and natural regeneration, fencing of stock and pest animals, the chemical, cultural or biological control of weeds and feral animals, protection of plants by staking, tying and guarding, and the retention of site debris.</p>
<p>What <b>environmental impacts</b> may be associated with a permaculture works project?</p>	<p>Environmental impacts resulting from the development of a permaculture project will be directly beneficial to the surrounding environment.</p> <p>Beneficial impacts may include the extension of native corridors for the travel and breeding expansion of local native flora and fauna, improved uptake of water at the site, and reduction in the destructive effects of a rising watertable at the site or environmentally linked sites,</p>

	increases in carbon fixing, long-term vegetation, and the stabilisation of existing native vegetation, soil and waterways with ground covers, understorey and top storey vegetation.
What may be considered when developing <b>timelines</b> for site establishment?	Ordering of materials, site protection and access, storage of materials, pre-treatment of site soils, weed management, and specific environmental amelioration.
What may be included as the <b>establishment period</b> ?	This is the period of time required by the contract to ensure that planting materials have successfully taken root and will continue to grow. This period can vary due to the size of plant materials, environmental conditions (such as soils, water supply, wind, sun exposure, season), and budget resources allocated.
What is included under <b>habitat resource development</b> ?	Habitat resources are the specific individual and integrated materials and food and water supply required to sustain insects and animals. These include adequate leaf litter, fallen logs or standing trunks for nest sites, leaving animal “highways” undisturbed, encouraging certain insect populations, nesting materials encouragement of fauna corridors, and territorial space.  Habitat resource development may involve the introduction of natural or other materials to provide animal shelters, nesting places, promote food production, and to enhance micro and macro environmental conditions for species.
What specifications for <b>staged implementation</b> may apply to this standard?	These may include gradual replacement of habitat, planting at different times, and provision of access for future works.

## Evidence Guide

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

Competence in planning the implementation of permaculture works requires evidence that a person can assess site factors, interpret contract documentation, determine resources and equipment for planting and maintenance, and prepare permaculture staging plans and schedules. The skills and knowledge required to plan the implementation of permaculture works must be **transferable** to a different work environment. For example, this could include different sites, permaculture techniques and environments.

### What specific knowledge is needed to achieve the

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

**performance criteria?**

requirements for this competency standard are listed below:

- Permaculture principles and practices
- Permaculture design techniques including zone and sector planning
- Practical understanding of the environmental issues associated with undertaking permaculture works
- Principles of ecology including specific plant and animal relationships and habitat requirements.
- Identification, propagation and establishment techniques of specific plant species.
- Site evaluation techniques including methods of analysing soils, waterways and their condition.
- Practical understanding of the advantages and disadvantages of a range of permaculture procedures.
- Appropriate control techniques against unwanted plant/animal species. weed and pest animal control techniques.
- Soil conservation and enhancement techniques and their advantages and disadvantages in reference to specific sites and habitats.
- Soil erosion control and stormwater water management techniques.
- Selection and use of appropriate combinations of machinery to complete the work in the most effective and efficient way
- Maintenance requirements and practices for plants and animals prior to and after initial establishment.
- Growth habits and cultural requirements of specific plants and animals under a range of soil and environmental conditions.
- OHS hazards associated with undertaking permaculture works and the controls necessary to remove or minimise risks associated with them.
- Contract documents including specifications, plans of permaculture works, services, supplies and surveyors documents.

**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:

- Research, communicate orally and in writing, negotiate, document plans and write reports for the understanding of supervisors, clients and contractors.
- Assess a site for opportunities and constraints associated with implementation of permaculture works.
- Prepare schedules for implementation of permaculture works.

### 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 <b>communication of ideas and information (3)</b> be applied?       | Results of the analysis of the site, and works proposals should be communicated with the client orally and in writing. There is likely to be negotiation between the developer of the permaculture plan and the client to achieve objectives.  |
| 2. How can <b>information be collected, analysed and organised (3)</b> ?       | Some information will need to be researched and/or obtained from test results. Information addressing the specific requirements of the permaculture works should be analysed and outcomes discussed with the client and other members of the work team. Information about permaculture works should be organised and presented as a strategy plan. |
| 3. How are <b>activities planned and organised (3)</b> ?                       | The planning process should proceed in an orderly and efficient manner. Timely and appropriate information needs to be available for decision-making. The plan for permaculture works should reflect the activities required to implement the works.   |
| 4. How can <b>team work (3)</b> be applied?                                    | Planning the implementation of permaculture works may involve working with other members of a team to achieve the desired outcomes.  |
| 5. How can the use of <b>mathematical ideas and techniques (3)</b> be applied? | Mathematical concepts will be required to measure quantities, distances, depth, and calculate areas, resources, costs, ratios, scales, planting and application rates. Also, calculating volumes of soil to  |

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	be stored replaced or removed.
6. How can <b>problem-solving skills (3)</b> be applied?	Problems relating to vagaries of the planting site, plant and animal health, planting and maintenance techniques, workplace safety, tools, equipment and machinery, team members, inclement weather, hazardous situations and environmental issues may arise during planning for the permaculture works.
7. How can the <b>use of technology (3)</b> be applied?	Technology will be required to record, store and communicate ideas and information, and for a knowledge of different tools and machines, their capabilities and capacities. It will also be used to research relevant information, obtain and analyse data from site evaluation tests, and to produce the permaculture plan for permaculture works.

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**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.

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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**.

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**RTD4510A****Supervise natural area restoration works**

This competency standard covers the process of supervising natural area restoration works. It requires the ability to read and interpret documentation, calculate material and resource requirements, coordinate a team to achieve optimum performance, communicate with personnel at all levels, and minimise environmental disturbance. Supervising natural area restoration works requires knowledge of strategies to achieve natural area restoration and avoid negative environmental impacts, work programming, responsibilities and requirements of contracts, OHS and team leadership.

<b>Element</b>	<b>Performance Criteria</b>
1 Identify scope of <b>natural area restoration works</b>	<p>1.1 Nature of restoration works and extent of responsibilities are identified and checked against relevant contract <b>documentation</b>.</p> <p>1.2 Personnel and other resources (in-house or by contractor) required to undertake restoration works are identified according to the scope of the project and relevant documentation provided.</p> <p>1.3 A work program is developed according to the needs of management and/or the client to ensure that project outcomes are reached within designated time lines.</p> <p>1.4 <b>Potential environmental impacts</b> of the proposed restoration works is determined and advised to manager/client.</p> <p>1.5 <b>OHS hazards</b> are identified, risks assessed and <b>suitable controls</b> planned,</p>
2 Coordinate the supply of materials/equipment	<p>2.1 Material quantities and equipment requirements are calculated and coordinated to ensure an on-going work program is maintained according to the scope of the project.</p> <p>2.2 Materials are ordered, checked for specified quantity and quality then stockpiled according to</p>