

Rivers to Ranges Network
Environmental Works Toolkit

Works Planning Guide

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Acknowledgements

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Further information

For further information on the Rivers to Ranges Project or the Environmental Works Toolkit, visit the Nillumbik Shire Council Website at www.nillumbik.vic.gov.au or contact the project coordinator, Stacey Warmuth at Nillumbik Shire Council on 9433 3184 or stacey.warmuth@nillumbik.vic.gov.au.

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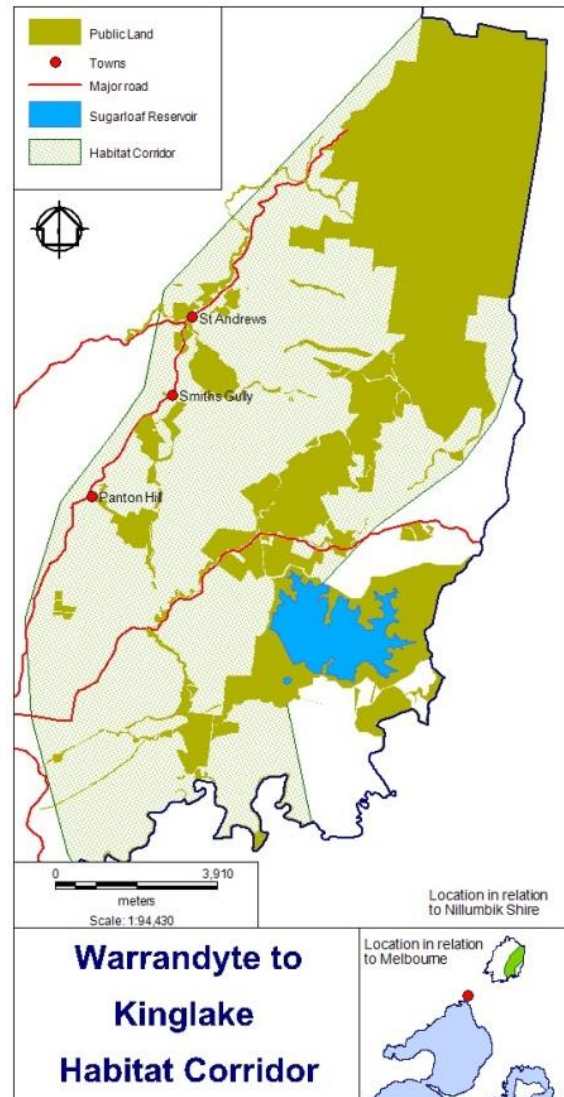


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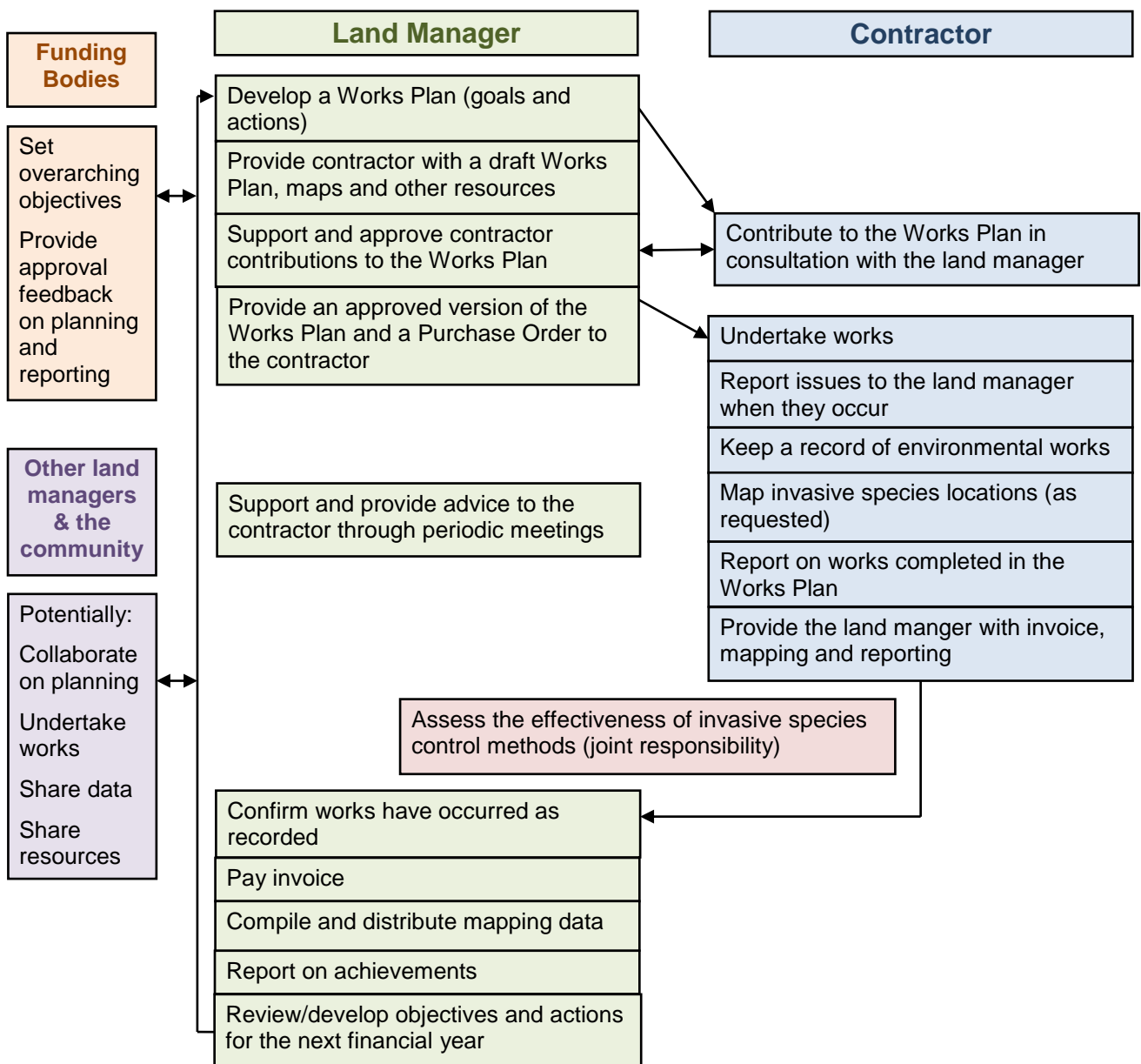


1 Introduction

This document forms part of the *Environmental Works Toolkit*. It is a manual for land managers developing Works Plans for reserves, wetlands, rivers or roadsides. It assumes you have a contractor to do the works. However, these plans are also suitable for land managers who also do on-ground work.

The document works alongside the *Environmental Works Plan Template* and the *Environmental Works Contractor Reporting Procedure*.

Figure 1: Environmental Works Procedure



2 Works Planning Overview

Works Plans define specific goals and actions for an area of land.

By having standard methods and templates for developing works plans, land managers can compare works in different reserves, properties and projects and share information with the various people conducting on-ground work in the same area.

Wording of goals and actions in the works plans is very important to make sure the plan is implemented effectively and that land managers can monitor the success of their plans.

The toolkit's Works Plan Template also provides sections for reporting on works completed. This helps land managers monitor contractors, track invoices and plan works.

Figure 2: Planning component of Works Plan

Section 1					Section 2				Section 3				Section 4
Works plan					Annual works plan				Contractor planning (cost and time works)				Actual Works
Works ID	Responsible Group	Weed/Threat/Activity	Location	Five year goal	Action	Control Method/s	Budget (exGST)	Funding Source	Suggested changes to actions or control methods	Timing	Est. hours	Est. cost (exGST)

Figure 3: Reporting component of the Works Plan

Section 4					
Actual Works					
Progress	Comments	Suggested follow-up works	Actual hours	Actual Cost (exGST)	Invoice number/s



3 Managing Contractors

Provide your contractor with the following resources:

- Environmental Works Contractor Reporting Procedure
- Works Plan
- Weed mapping and control works field recording sheet
- Rabbit mapping and control works field recording sheet
- Weed data collection – quick reference
- Rabbit data collection – quick reference
- Reserve maps (as required)
- Existing weed/rabbit mapping data (as available/required)

Table 1 outlines the data management requirements of the contractor. For more information see the *Environmental Works Contractor Reporting Procedure*.

Table 1: Contractor data management requirements

Works Planning	<ol style="list-style-type: none"> 1. Prior to starting on-ground works, work with the land manager to develop a Works Plan for the year. You are required to provide estimated timing, hours and costs. 2. Return the Works Plan to the land manager for approval. Note: You are authorised to start works once the land manager provides you with the approved Works Plan and a purchase order.
Implementation	<ol style="list-style-type: none"> 3. Record and map locations of weed & rabbit control works and (when requested in the Works Plan) uncontrolled weed infestations. 4. Report against the Works Plan.
Invoicing and Reporting	<ol style="list-style-type: none"> 5. With each invoice, send the land manager the most up-to-date Works Plan with a record of completed on-ground works.
Final Reporting and Data Submission	<ol style="list-style-type: none"> 6. With the final invoice for the current financial year’s budget, send the land manager the completed Works Plan, any records of weed and rabbit control works/locations and all associated mapping data.



4 Set Levels of Service

When managing across a large area or a number of reserves Levels of Service are useful for providing guidance on the actions to take at any location. Levels of Service might be action-based, such as if revegetation would occur or not. Or they may be outcome-based, such as the tolerance for certain weed types.

Levels of service could be set for any of the following work types:

- Conservation Management Plans
- Site inspections
- Monitoring & mapping
- Weed control
- Pest animal control
- Other threats
- Habitat Enhancements
- Revegetation
- Friends Groups
- Tree disease control
- Tree hazards
- Infrastructure
- Amenity works
- Bushfire mitigation
- Slashing/mowing
- Wetland and WSUD maintenance
- Trails
- Fire recovery
- Litter, dumped rubbish, cubbies and bmx jumps
- Encroachment

Different levels can be set for different priority areas, either prioritisation of reserves or roadsides, or prioritisation of management zones within reserves.

Levels of Service are also very useful for ensuring the Biosecurity approach is appropriately applied for weeds and pest animals.

Table 2: Example Levels of Service

Work Type	Location	Level of Service
Conservation Management Plans	All	Develop a Conservation Management Plan and review every 5 years
Site inspections	Priority 1	At least six times a year
	Priority 2	At least four times a year
	Priority 3	At least three times a year
	Priority 4	At least twice a year



Work Type	Location	Level of Service
	Priority 5	At least once a year
Monitoring & mapping	Priority 1, 2 and 3	<ul style="list-style-type: none"> • Set up photopoints and retake photos every two years or as required • Map all high threat weed infestations (through the works program) • List all other weeds present • Monitor and map for changes in presence, cover and extent of new and emerging and high threat weeds at least every two years (through the works program) • Observe changes in weed presence, cover and extent during site inspections • Undertake fauna and flora monitoring
	Priority 4 & 5	<ul style="list-style-type: none"> • Set up photopoints and retake photos every five years or as required • List all high threat weeds present • Survey for new and emerging weeds at least every two years • Observe changes in weed presence, cover and extent during site surveillance visits



Work Type	Location	Level of Service
Weed control	All reserves	<p>Control, prune or slash weeds that:</p> <ul style="list-style-type: none"> pose a risk to public safety limit access and egress along trails <p>Manage weeds to meet the Municipal Fire Management planning objectives</p> <p>To meet the requirements of the Catchment and Land Protection Act 1994 (CaLP Act):</p> <ul style="list-style-type: none"> control noxious weeds when given notice by Department of Economic Development, Jobs, Transport and Resources (DEDJTR) control all known infestations of regionally prohibited weeds prevent the growth and spread of regionally controlled weeds by applying a Shire-wide biosecurity approach <p>Manage early invaders according to regional priorities (e.g. South African Orchid, Chilean Needle-grass)</p> <p>Respond to customer service requests to control high threat weeds for the protection of private properties on a case-by-case basis. These will be assessed on the following criteria:</p> <ul style="list-style-type: none"> Council has identified the weed as a priority for control in that location, or the weed control will result in the protection of a high value environmental or agricultural asset, and <ul style="list-style-type: none"> it is apparent the weed has or could spread, and when the infestation crosses property boundaries, complementary weed control is occurring on adjacent land, and it is feasible to control the weed, and the budget allows <p>May control weeds on behalf of Friends groups using Friends Group secured funding upon request</p> <p>Minimise impacts on priority biodiversity assets</p>
	BH	<p>As practicable and required for the protection of the biodiversity asset:</p> <ul style="list-style-type: none"> Reduce the cover of high threat weeds to less than 1% by 2030



Work Type	Location	Level of Service
	CH	<p>As practicable:</p> <ul style="list-style-type: none"> Reduce cover of high threat woody weeds to less than 5% by 2030 Reduce cover of high threat herbaceous weeds to less than 5% by 2030 Prevent cover of high threat grassy weeds increasing Prevent new weed species from establishing Prevent high threat weeds from entering Biodiversity Hotspots
	NCH & HDH	<p>As practicable:</p> <ul style="list-style-type: none"> Prevent high threat weeds from entering Biodiversity Hotspots and Core Habitat
	AZ	<p>To be determined through consultation with Open Space</p> <p>As practicable:</p> <ul style="list-style-type: none"> Prevent high threat weeds from entering Biodiversity Hotspots and Core Habitat
	LEZ	<p>When required to achieve levels of service, land managers will work with government officers supporting private land managers to control weeds (e.g. LMIP, Streamside Frontage grants)</p>
		<p>Note:</p> <p>High threat weeds are non-indigenous plants that under the current conditions will over time out-compete, suppress and replace indigenous species. The level of threat that a weed poses depends on the risk of a weed invading bushland and the impact it has on the biodiversity values present. Species considered high threat will vary across locations and in different climatic conditions. Council has a list of weeds present in Nillumbik that are likely to be high threat in most locations.</p> <p>It may not be practically possible to eliminate or reduce the extent of some grassy, herbaceous or difficult to control weeds. When this is the case, the target will be no change in extent.</p> <p>Elimination may be a more cost effective target in some circumstances.</p> <p>Levels of service may vary depending on the feasibility of the action and the biodiversity assets present on site.</p>



Work Type	Location	Level of Service
Pest animal control	All reserves	<p>As practicable manage pest animal threats posing a risk to public safety</p> <p>As practicable for the protection of Eltham Copper Butterfly and public safety control all European Wasp nests</p> <p>As practicable and focusing on BH, CH and Priority 1, 2 & 3 reserves,</p> <ul style="list-style-type: none"> Seek collaboration within the local area to achieve integrated pest animal management Manage pest animal threats according to regional priorities If feasible, consider rabbit proof fencing to protect specific biodiversity values
Other threats	All reserves	<p>Minimise impacts on specific biodiversity values</p> <p>Manage according to regional priorities</p>
Habitat Enhancements /Revegetation	Priority 1 & 2	<ul style="list-style-type: none"> • Plan and undertake planting or habitat enhancements to restore diversity and structure within priority areas, to buffer and connect priority areas and/or provides habitat for threatened species • Support works undertaken by Friends Groups
	Priority 3 & 4	<ul style="list-style-type: none"> • Plan and undertake planting or habitat enhancement in partnership with active Friends Groups • Focus on planting which contributes to regional priorities by increasing habitat connectivity or providing habitat for threatened species
	Priority 5	<ul style="list-style-type: none"> • Limited or no revegetation or habitat enhancement works
Friends Groups	Priority 1, 2 and 3	<ul style="list-style-type: none"> • Support the efforts of existing Friends Groups. • Encourage and support the formation of new Friends Groups. • Develop Friends Group Works Plans in partnership with the group.
	Priority 4	<ul style="list-style-type: none"> • Support the activities of existing Friends Groups. • Encourage existing Friends Groups to work within priority areas of the reserve • Develop Friends Group Works Plans in partnership with the group.
	Priority 5	<ul style="list-style-type: none"> • Except in particular circumstances no new friends groups in these reserves. Where it is deemed suitable a timeframe and clear allocation of limited resources should be identified prior supporting the work of groups. • Encourage new Friends Groups to work within higher priority reserves.
Tree disease control	All reserves	<ul style="list-style-type: none"> • Tree diseases – Refer to Arboriculture if tree is significant



Work Type	Location	Level of Service
Tree hazards	All reserves	<ul style="list-style-type: none"> • Refer to Arboriculture • Note: each year ahead of the ECB larvae counts it has become essential for the safety of the public to do hazardous tree works in the ECB reserves. Management of Red Stringy die back has become a significant and costly issue in these reserves.
Infrastructure	All reserves	<ul style="list-style-type: none"> • Fences, signs, seating, etc: Refer to Assets • Biodiversity fences • Orchid cages • Nest boxes
Amenity works	All reserves	<ul style="list-style-type: none"> • Refer to Landscape Maintenance
Bushfire mitigation	All reserves	<ul style="list-style-type: none"> • As per the Environmental Works Bushfire Mitigation Plan (under development) • Minimise impacts on public safety and assets • Minimise impacts on specific biodiversity values
Additional Slashing/mowing	All reserves	<ul style="list-style-type: none"> • Refer to Mowing
Wetland and WSUD maintenance	All wetlands and WSUD	<ul style="list-style-type: none"> • As per the Wetlands and WSUD maintenance guidelines
Trails		<ul style="list-style-type: none"> • See Trail Policy
Fire recovery	All reserves	<ul style="list-style-type: none"> • As per the Environmental Works Bushfire Response and Recovery Plan
Litter, dumped rubbish, cubbies and bmx jumps	All reserves	<ul style="list-style-type: none"> • Refer to Roads • Where evidence is available, refer to Regulatory Services for investigation.
Encroachment	All reserves	<ul style="list-style-type: none"> • TBD



5 Mapping

Action

1. Map your management zones.
2. Create a map of your reserve as a jpeg.

Figure 4: Example map – Challenge Street Reserve. Some reserves will be very simple with only one or two zones, while others may have many zones.



Management zones are areas of distinct habitat quality, which are managed for a particular purpose and to a particular level of service. Each management zone will have one or more five year goals.

Note: Zones may change over time as new information emerges or quality changes.

Biodiversity Hotspots (BH)

Biodiversity Hotspots are small and clearly defined areas vital for maintaining biodiversity within the landscape. They include one or more of the following attributes:

- Support the most sensitive or threatened species (such as EPBC listed species or species at risk of local extinction; e.g. Rosella Spider Orchid or Clover Glycine)



- Support habitat for the most sensitive or threatened fauna species (such as EPBC listed species; e.g. Eltham Copper Butterfly)
- Contain a particularly high diversity of indigenous plants
- Support an intact patch of a particularly rare or threatened vegetation type

Biodiversity Hotspots generally require intensive management to protect and promote a particular biodiversity asset. Depending on the biodiversity asset, management may include, grazing management through fencing or cages, zero tolerance for weeds, assisted pollination, planting of pollinator or food species, reintroductions and/or ecological thinning.

Core Habitat (CH)

Areas of Core Habitat provide refuge for indigenous plants and animals to live, reproduce and flourish. Protecting, improving and connecting core habitat is vital to maintain ecological function at a landscape scale.

They include one or more of the following attributes:

- Support a diversity of indigenous species
- Support relatively intact native vegetation
- Provide habitat for a range of indigenous fauna species
- Provide an important habitat link (even if relatively disturbed) in a habitat corridor



Core Habitat generally requires a moderate level of management to maintain biodiversity. Management may include, landscape scale pest animal control, reduction of high threat weed cover, supplementary planting of absent or structural species, revegetation to improve connectivity, maintenance of existing revegetation, artificial habitat creation (nest boxes, dunnart tiles) and/or ecological burning.

Non-Core Habitat (NCH)

Non-Core Habitat are areas of lower quality bushland compared to Core Habitat. They contain only a low diversity and/or cover of indigenous plants or are newly rehabilitated from significant disturbance (such as a paddock area that has been revegetated). Non-Core Habitat is generally not vital for the movement of indigenous fauna.

Management may include, pest animal or weed control to prevent spread into Core Habitat and Biodiversity Hotspots, and/or maintenance of existing revegetation. It may also aim to aid rehabilitation depending on the resources available.



Highly Degraded Habitat (HDH)

Highly Degraded Habitat are cleared or degraded areas that support mostly exotic and few native plants. Management may include pest animal or weed control to prevent spread into Core Habitat and Biodiversity Hotspots.



Amenity Zones (AZ)

Amenity Zones are vegetated areas managed for community amenity following horticultural practices.

Landholder Engagement Zones (LEZ)

Landholder Engagement Zones are areas of private land surrounding an area of public land where landholders are engaged to complement works. Management focuses on preventing pest animal or weed spread into Core Habitat and Biodiversity Hotspots on the public land and to protect biodiversity or agricultural assets on the private land.

Fuel Management Zone (FMZ)

Fuel management zones are areas managed to mitigate bushfire risk. Fuel Management Zones generally overlap other management zones.



6 Works Plan

The *Environmental Works Plan Template* (Excel) includes the following worksheets

- Overview of management zones and goals
- Works Plan for works planning and reporting (including multiple years to show history of works and future direction)
- Weed Record for recording mapping and control works
- Rabbit Record for recording mapping and control works
- Species Record for recording significant incidental native species observations
- Chemical Record sheets (optional for assisting contractor record keeping)

This section will explain how to complete the overview sheet and works plan sheets to provide to the contractor. Further detail on how to complete the works sheets are provided in the *Environmental Works Contractor Reporting Procedure*.

6.1 Overview sheet

The overview sheet provides a quick reference for the land manager and contractor on the intended direction for the management of the reserve.

Action

1. Enter the reserve name.
2. Insert your map (deleting the example).
3. In the zone descriptions and goals table create a line for each zone (examples are given – delete any you are not using).
4. Name your zone – BH1, CH1, CH2 etc. are good, but you might like to call it something like “CH1 River”, “CH2 Grassland” if that helps.
5. Insert a brief description (i.e. vegetation type, key threatened species, key weed threats, management objective).
6. Set goals for the reserve and each zone considering the weed’s levels of service (see Section 4).
 - a. The overview has example weed goals. They might not be achievable for your reserve. The first step is to change the cover to something more achievable. You may need to reword the goal. Appendix 7.1 provides a guide to wording goals.
 - b. You may have zones with no goal.

6.2 Works Plan sheet

Planning

The Works Plan is the core of the planning for the reserve. A Works Plan can be created for every year. Keeping past works plans gives you a history of works as well as providing useful information for a new land manager taking over the reserve.

You will likely develop your Works Plan in consultation with your contractor. A simple way to do this is to start the planning and then discuss and adapt the plan during a site meeting.



When planning works consider any specific issues or risks arising from works and how you will manage them. For example, contractor safety, public safety (such as pine trees falling after being drilled and filled, people eating sprayed blackberries), untested control methods, cultural heritage, damage to native vegetation, removal of habitat, weed reinvasion following removal, waterway pollution by herbicide runoff, *Phytophthora cinnamomi* infection, erosion and fire hazards.

If a control method has not been proven or there are specific risks (e.g. off-target damage), consider how the effectiveness of the control method will be assessed.

Figure 5: Planning component of Works Plan

Section 1					Section 2				Section 3				Section 4				
Works plan					Total Budget:												
					Annual works plan				Contractor planning (cost and time works)				Actual Works				
Works ID	Responsible Group	Weed/Threat/Activity	Location	Five year goal	Action	Control Method/s	Budget (exGST)	Funding Source	Suggested changes to actions or control methods	Timing	Est. hours	Est. cost (exGST)				

Action

1. Enter the reserve name and year at the top of each works plan.
2. Set actions for year one (see Table 3 for descriptions of each column, see Appendix 7.1 for a guide to wording actions):
 - a. For each action link it to one or more goals from your overview.
 - b. The actions in the template are examples only. You can adapt them to suit your reserve. A small or simple reserve might have only a few actions. Make sure that your actions contribute to achieving the goal you have set.
 - c. Within the action column you can be more specific about where the works are taking place and you could refer to a map.
3. Enter your total budget at the top of the sheet and divide it between the actions (you may need to wait for the site meeting). Hide the Budget column if requesting a quote.
4. Copy actions into subsequent years and adapt, building towards achieving the goal. Actions and costs will need to be reviewed over time. Costs on some actions may reduce allowing you to add new actions. Don't worry too much about getting Years 2–5 perfect. They will change based on the first year's works and environmental conditions.
 Note: the only difference in the examples between sheets is the action for the landholder engagement zones.
5. Provide the Works Plan with the Environmental Works Contractor Reporting Procedure for the contractor to make comment and cost works.



Once the Contractor has provided comment and costed works:

Action

6. Integrate any suggested changes you agree with into the annual works plan.
7. Check you are happy with the contractor's allocation of funds and make any changes in consultation with the contractor.
8. Hide the Budget, funding source and suggested changes columns (right click column and select "Hide").
Note: As needed you can unhide these columns later, but hiding them will make sure the contractor only sees the agreed works and estimated costs.
9. Provide the approved Works Plan to the contractor with a purchase order.

Table 3: Works Plan details

Field	Details
Section 1: Overall Works Plan – Land manager to complete.	
Works ID	Number created by the land manager. Use to reference works in the weed record and rabbit record worksheets. (e.g. Zone Code-Number (with actions in each zone starting at Number 1)) (e.g. BH1-1, CH1-1, CH1-2, etc)
Responsible Group	Group/organisation responsible for the works (e.g. Contractor, Friends Group, Land Manager, CCS Crew, etc). If a works plan includes works by multiple parties take care not to share a contractors rates with others.
Weed/ Threat/ Activity	Weed species or other threatening process (e.g. rabbit control or erosion) you are going to manage, or activity you are going to undertake (e.g. revegetation or fencing). Group different weed species together if you are going to control them together and they have similar cover and environmental impacts.
Location	The management zone for the weed/threat/activity. You can include more detail on the location of the works in the Action.
Five year goal	Five year goal for each weed, threat or activity. This is what you are working towards.
Section 2: Annual Works Plan – Land manager to complete for each year.	
Action	The action/s planned for that weed, threat or activity in that year.
Control Method/s	The planned control method/s for the weed (e.g. cut and paint, drill and fill, hand pull, etc.).
Budget (exGST)	This column may not be visible if there is a total budget for all works or if the land manager is requesting a quote. The total budget will be listed next to the worksheet title.
Funding Source	Funding source of budget. Works may be funded by recurrent funding or grants.
Section 3: Contractor Planning – to allow contractors to make suggestions to the Works Plan and to cost and time actions.	



Field	Details
Suggested changes to actions or control methods	Space for the contractor to suggest changes to the actions or the control methods.
Timing	Space for the contractor to plan the timing of the action/s (e.g. which season or months).
Estimated Time (hrs)	Space for the contractor to estimate the number of man hours the action/s will take.
Estimated Cost (exGST)	Space for the contractor to estimate the cost of the action/s.

Reporting

At the end of the year the contractor should provide you with the Works Plan with completed reporting. The *Environmental Works Contractor Reporting Procedure* also asks the contractor to provide the Works Plan with progress reporting with each invoice.

Figure 6: Reporting component of the Works Plan

Section 4

Actual Works					
Progress	Comments	Suggested follow-up works	Actual hours	Actual Cost (exGST)	Invoice number/s

Action

10. Check that the contractor has completed the reporting section – send it back if they haven't.
11. Check you are happy with the progress of works and that the works match the works you have observed on-ground. If there is a problem you can use the Works Plan as tool to start this conversation with the contractor.
12. Copy the Weed, Rabbit and Species Records into mapping databases. Hide the rows or delete once you have.
13. Use the mapping and reporting (including the suggested follow-up works) to write or adapt your plan for the next year.



Table 4: Details of the reporting component of the Works Plan

Field	Details
Section 4: Actual works – to allow contractors to report on works completed. Also allows the land manager to report on actions completed in-house.	
Progress	Progress towards completing the action selected from a dropdown menu including: Not started; In progress; Partially completed action; Completed action; Exceeded action. In progress should only be included in interim reporting.
Comments	Comments. Particularly if the action wasn't fully completed or was exceeded.
Suggested follow-up works	Suggestions for works in the following years. Use the responses in this section when planning future works.
Actual Hours	Number of man hours the action took.
Actual Cost (exGST)	The actual cost of completing the works – as reflected in the contractor's invoicing.
Invoice number/s	A reference to the invoices of the works. Use this section to reconcile accounts.



7 Appendices

7.1 Setting Work Plan goals and actions

The *Environmental Works Plan Template* has examples of goals and actions you can use to start setting your own.

Setting Goals

Outcome based goals

Goals specify the outcome you expect at the end of a particular timeframe (such as the five-year timeframe of a Conservation Management Plan).

When setting goals, consider the overall goals/levels of service for your area (Section 4) and the biosecurity approach (Section 7.2). Set goals that are S.M.A.R.T (**S**pecific, **M**easurable, **A**chievable, **R**elevant and **T**ime-bound). Goals should reflect the outcomes you want to achieve. You may vary your goals from the level of service depending on the:

- natural values to be protected
- vegetation type
- slope
- level of threat
- current availability of resources (\$, time)
- weed or pest animals ecology
- ease of control
- accessibility
- your ability to control external weed sources, pest animals and threatening processes

Make sure you have a good understanding of the ecology of a weed or pest animal before setting control goals.

Wording goals

The language used when setting goals is very important because they provide a benchmark to monitor the success of your project. Goals need to make it very clear what you intend to achieve and where.

Following is a list of example weed management goals:

- Reduce cover of Chilean Needle Grass to less than 1% (long term goal to eliminate)
- Prevent new weed species from establishing
- Reduce cover of Woody Weeds to less than 5%
- Reduce cover of Herbaceous Weeds to less than 5%
- Engage adjacent landholders for the complementary management of weeds

Don't use the word 'eradicate' unless dealing with a small infestation of a high threat new and emerging weed (such as a state controlled weed), as it is defined as complete and permanent removal of a weed. For most weeds even once all plants are eliminated, seeds or propagules will remain in the soil or will be able to enter the site from nearby populations.

Instead use cover as a proxy: <1% is negligible levels, at most times no weeds will be present, although a once or two yearly search is required to catch any new infestations or emergent plants from the seedbank. <5% is low levels, the weed (or weed category) in most circumstances will have minimal impact on the site, but will still be present and require on-going control to maintain the low levels.



Setting Actions

Input based actions

Unlike a goal which is outcome based, actions should be input based, relating to what you want done on or for the site. Outcomes are difficult to measure over a single year due to environmental variability and variable responses of weeds to control. Input-based actions make it clear what you want done, make it easier for contractors to cost works and can be measured in the short term.

Wording actions

Writing clear, unambiguous actions is important to provide a clear line of communication with contractors and allow you to assess if the action is completed. Use words like treat, systematically search, map and engage:

- **Treat:** Use the word 'treat' to represent any control activities – the specific method can be included in the control method column. Specify the lifeform and location – for example: "Treat all mature sweet pittosporum in the rehabilitation area".
- **Systematically search:** For example: "Systematically search an area of a reserve and treat all infestations found". This builds surveillance into your action and gives you some certainty that areas are weed free.
- **Map:** Sometimes mapping is required to plan and prioritise future actions.
- **Engage:** You may wish to specify how you want to engage a landholder, although as a different department or organisation than the land manager (you) often delivers programs available to assist landholders, you may wish to leave the action vague and provide details in the comments section at the end of the year.

Dividing up actions over the length of a project

- Consider the sequence of actions required to achieve your goals.
- Consider budget and resource availability.
- For revegetation consider:
 - Ordering plants
 - Preparing the site
 - Planting
 - Watering
 - Follow up weed control
 - Removing guards
- For weeds consider:
 - The ecology of the weed. For example: Boneseed's seed can remain viable in the soil for up to 10 years. It reaches maturity at 18-24 months, flowers in autumn, fruits in winter-spring and seeds are mostly dispersed locally. Therefore, a systematic search and treatment of all plants every 2 years in autumn, when the plant is flowering, should reduce the seed bank to negligible levels within 10 years.
 - How the weeds will respond to other actions such as rabbit control, weed control or ecological and fuel reduction burns.
 - What plants may grow in the spaces created by treated weeds. Think about how you can stagger works or change control methods to prevent re-infestations of the treated weed or infestations by new weeds.



- How weeds may spread if you don't do a particular action. Plan the actions first that protect a biodiversity asset or prevent a situation worsening.
- Sometimes a big push in the early years, particularly if there are lots of mature seeding plants, can allow you to get ahead of a weed.
- In more degraded areas staggered removal of weeds is often desirable to allow natural regeneration of native species. Staggered removal may also be appropriate in more intact areas to make sure you don't impact too heavily on fauna populations that might be using weeds for habitat.
- It may take treatment of the same area over several years to exhaust a seed bank – consider the length of time seed remains viable in the soil.
- Even once you reach your goal you will probably still need to systematically search for and treat new infestations and emerging seedlings.
- When planning across a number of years be aware that you may need to adapt your actions as environmental conditions change.

7.2 Biosecurity Approach

The biosecurity approach supports the management of invasive species at all stages of invasion – from preventing the entry of new species to managing widespread infestations. It acknowledges that economic returns for managing pest plants and animals are much higher when infestations are new or small, thus the old adage: prevention is better than cure.

When managing established pest plants and animals, the biosecurity approach prioritises the protection of areas with the greatest biodiversity or agricultural values that are at the highest risk of damage. This also involves managing pest animals and high threat weeds growing outside these areas, if they are likely to spread into these high priority areas.

In practical terms, the biosecurity approach can include the following actions for weed management:

1. **Prevention:** Prevent the spread of invasive species from areas where they are present into areas where they are not.
 - Identify and manage sources of invasive species
 - Prioritise management of new and emerging invasive species
 - Manage threatening processes that encourage the growth and spread of invasive species
2. **Eradication:** Eradicate small infestations of invasive species.
 - Target invasive species when numbers are low
3. **Asset protection:** Manage existing infestations to minimise impact on biodiversity and agricultural values.
 - Prioritise the protection of areas with the greatest biodiversity and agricultural values at the highest risk of damage from invasive species
 - Target pest animal populations that are directly impacting biodiversity or agricultural values
 - Remove weeds that are smothering or otherwise directly impacting indigenous plants



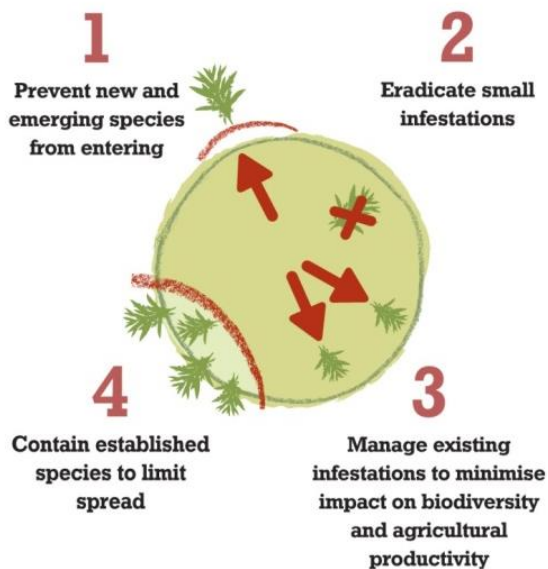
- Use structures to protect significant biodiversity values (e.g. rabbit proof fencing, orchid cages), particularly when grazing pressure is high
- Stagger weed removal, allowing natural regeneration to maintain habitat value and prevent new weeds emerging
- Manage vegetation to increase the protective habitat for native animals from predators like foxes and cats

4. **Containment:** Contain established species to limit spread.

- Eradicate/remove isolated infestations
- Target mature reproducing individuals
- Prevent seed set (weeds)
- Reduce the size of infestations at a rate that allows natural regeneration (weeds)

Some notes on the biosecurity approach for weeds

Figure 7: A biosecurity approach to weed management (adapted from Department of Environment and Primary Industries publications)



Weed lists

The toolkit advocates developing two weed lists:

- Weeds present that pose a high threat to biodiversity and agricultural values
- Weeds that have the potential to invade and if present would pose a high threat to biodiversity or agricultural values

These lists will vary with location.

New and emerging weeds

The Victorian Government (2010) defines a new and emerging weed as:

A recognised weed that has recently been detected, or a plant species that has been known in the area for some time, but has only recently been recognised as having invasive properties.



Consider which weeds are new and emerging at all scales. Thus a weed could be considered new and emerging if it is new to a Shire, a Landcare area, a reserve or a property.

The biosecurity approach gives priority to preventing new and emerging weeds establishing and, if possible, eradicating small infestations for the most cost-effective and long-term result. As a first defence against weeds, it is a priority to monitor for new and emerging weeds and budget for their management.

Established weeds

Weeds that are already established in an area are less cost effective to manage, but may pose a significant threat to biodiversity or agriculture values.

Some weeds pose a higher threat to native vegetation than others. The level of threat that a weed poses depends on the risk of a weed invading bushland or agriculture and the impact it has on the values present (biodiversity or agricultural).

Following the biosecurity approach, it is a priority to contain the extent of established weeds and minimise their impact on biodiversity and agricultural values.

Weed pathways of threat

Weeds disperse from many sources and by many processes. Without managing these pathways of threat, weed control works may be ineffective in the long-term. Weed mapping and monitoring should aim to identify where weeds are dispersing from to help land managers determine which weed sources are practical to manage. The biosecurity approach prioritises the prevention of weeds.

