Weed and Disease Management Plan:

Tippogoree Hills Trail Network

George Town Mountain Bike Trail Development

Prepared by

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Document Control

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Contents

Glossary

Abbreviations	Definitions
CEMP	Construction and Environmental Management Plan
DPIPWE	Department of Primary, Industries, Water and Environment
EPA	Environment Protection Agency
EPBCA	Commonwealth Environment Protection and Biodiversity Conservation Act 1999
ECOtas	Environmental Consulting Options Tasmania
GTC	George Town Council
LIST	Land Information System Tasmania
NVA	DPIPWE's Natural Values Atlas
TSPA	Tasmanian Threatened Species Protection Act 1995
WoNS	Weed of National Significance
WDMP	Weed and Disease Management Plan

1.0 Introduction

1.1 Purpose and Scope

This Weed and Disease Management Plan (WDMP) outlines the weeds present within the project area, and recommends management treatments under the relevant legislation during both the construction phase and operational phase of the George Town Mountain Bike Trail Development.

This WDMP is specifically the Tippogoree Hills Trail Network area.

1.2 Background, Aims and Objectives

This WDMP details the methodology for mitigating risks and managing impacts associated with the presence, emergence and spread of weeds for the project construction period and into the operational period.

In both cases, the objectives of this WDMP are to: -

- Record the presence and distribution of weeds declared under the Weed Management Act 1999;
- Record the presence and distribution of significant, non-declared, environmental weed species;
- Record the presence and presence and distribution of pathogens;
- Provide control measures for identified weeds and pathogens and prevent new weeds and pathogens from establishing and spreading
- Establish an ongoing monitoring and control program for weeds and pathogens into the future for the site.

1.3 Site Description and Location

Trail Alignments

The Tippogoree Hills Network design offers approximately 46.3km over 35 trails width an average width ranging between of 1-2m, with a mix of trail build styles and difficulty ratings, catering for a wide range of users.

The primary access point (commonly referred as a trail head) will be located Lauriston Park on the corner of East Tamar Highway and Bridport Road. The trail head will provide carparking for approximately 40-60 vehicles, and include an information board displaying maps, code of conduct, emergency contact details, advance notice of trail closures, and importantly, information to educate users about bicycle cleanliness and weed hygiene awareness. Lauriston Park has also been assessed for the presence of weeds species.

Lauriston Park is already a publicly accessible recreational space with vehicular access, although no other facilities or infrastructure exists.

The network will also be accessible via a service access road from Bridport Road, which will be gated, locked, and only accessible by a small number of maintenance vehicles and commercial shuttle service operators.

A map of the trail network layout can be seen on the next, followed by a summary of the trail breakdown.

Image 1: Tippogoree Hills Trail Network

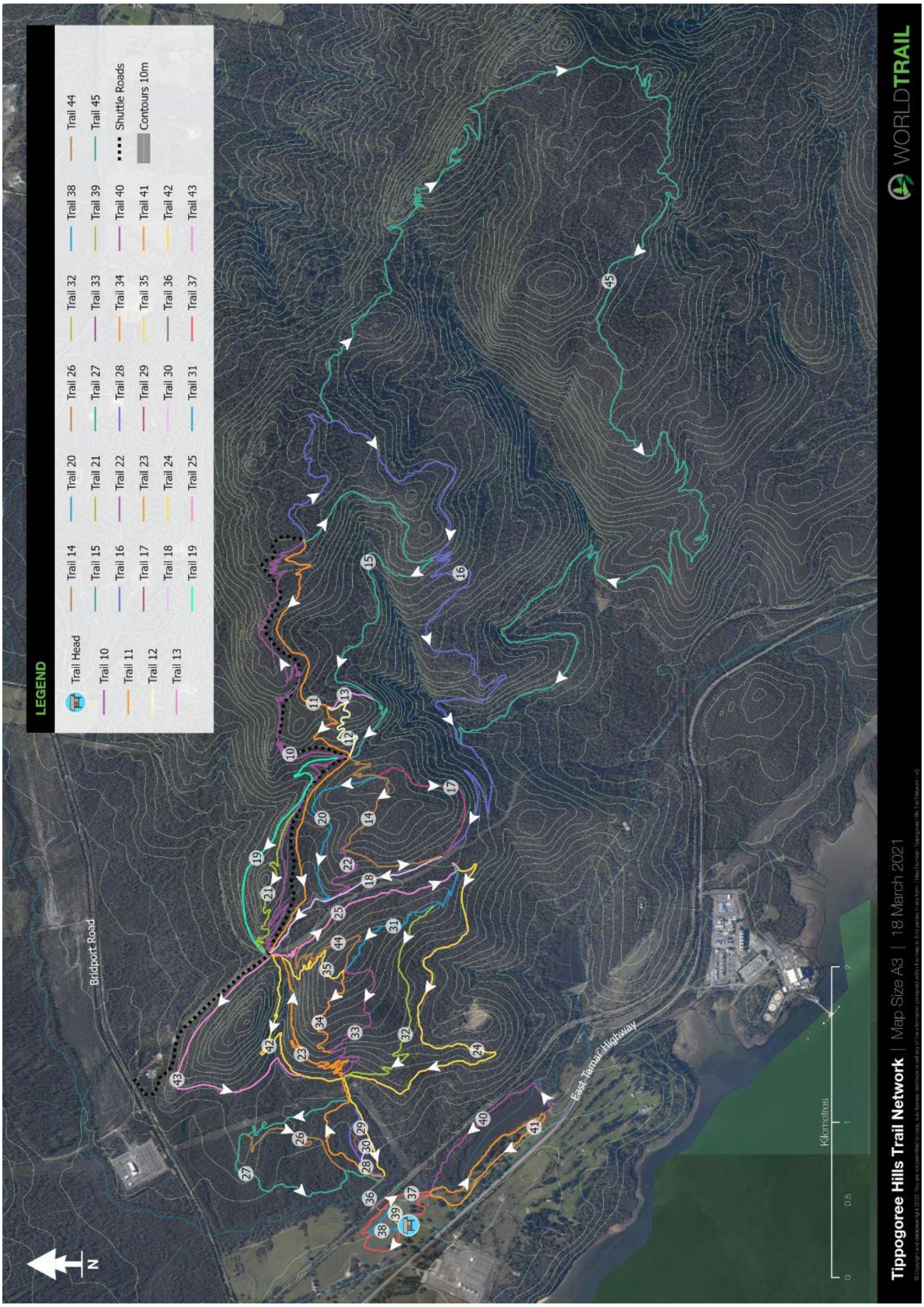


Table 1: Trail Summary Breakdown

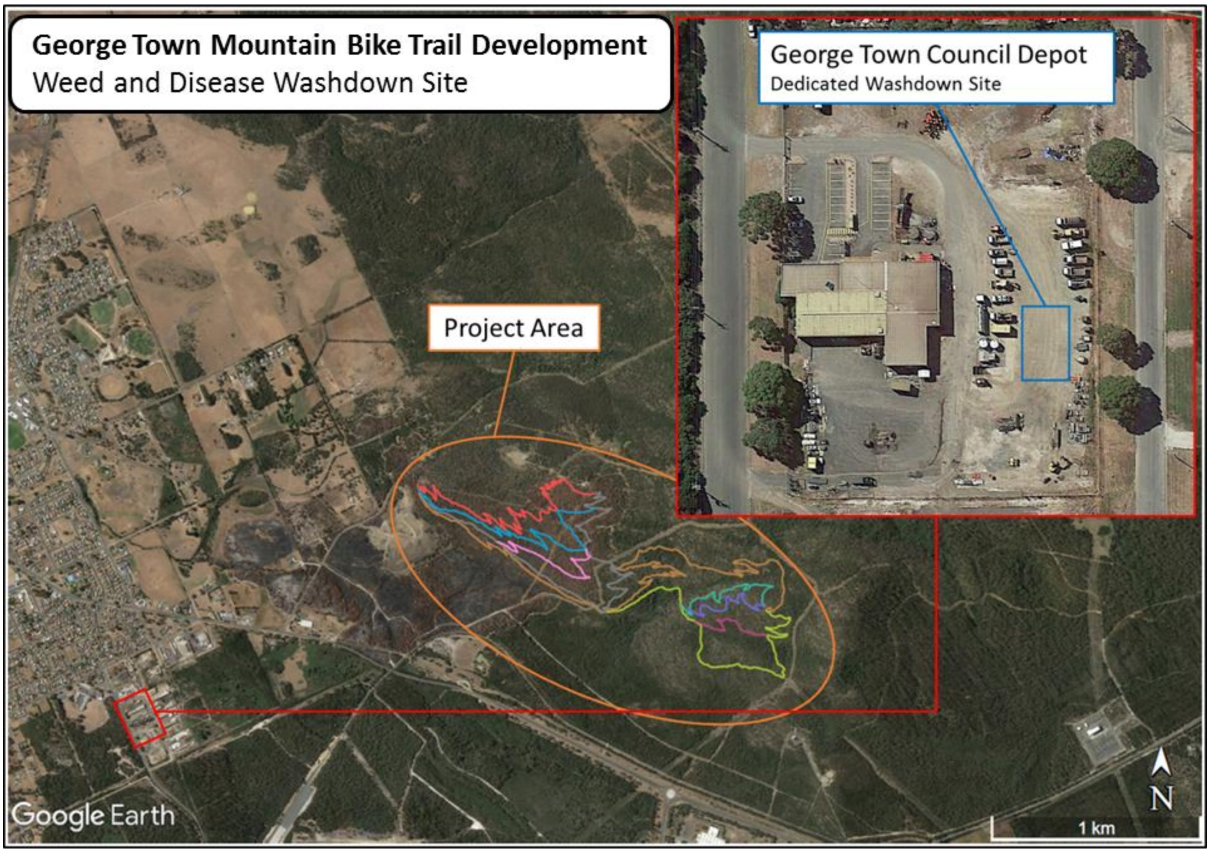
Trail No.	Type	Difficulty Rating	Trail Style	Length (m)
Trail 10	MTB Trail	Easy	Adventure	4278
Trail 11	MTB Trail	Intermediate	Airflow	2830
Trail 12	MTB Trail	Intermediate / Difficult	Airflow	639
Trail 13	MTB Trail	Intermediate / Difficult	Gravity	261
Trail 14	MTB Trail	Intermediate	Adventure	1426
Trail 15	MTB Trail	Intermediate	Gravity	2854
Trail 16	MTB Trail	Easy	Adventure	5632
Trail 17	MTB Trail	Intermediate	Airflow	801
Trail 18	MTB Trail	Easy / Intermediate	Airflow	1017
Trail 19	MTB Trail	Easy / Intermediate	Airflow	1335
Trail 20	MTB Trail	Easy / Intermediate	Airflow	947
Trail 21	MTB Trail	Easy / Intermediate	Airflow	1011
Trail 22	MTB Trail	Easy / Intermediate	Airflow	501
Trail 23	MTB Trail	Intermediate	Adventure	2219
Trail 24	MTB Trail	Easy / Intermediate	Gravity	2997
Trail 25	MTB Trail	Easy / Intermediate	Adventure	1187
Trail 26	MTB Trail	Easy	Adventure	834
Trail 27	MTB Trail	Easy / Intermediate	Gravity	1831
Trail 28	MTB Trail	Easy / Intermediate	Gravity	432
Trail 29	MTB Trail	Intermediate	Gravity	160
Trail 30	MTB Trail	Intermediate	Gravity	114
Trail 31	MTB Trail	Intermediate	Adventure	981
Trail 32	MTB Trail	Intermediate	Adventure	1368
Trail 33	MTB Trail	Intermediate / Difficult	Gravity	1068
Trail 34	MTB Trail	Difficult	Gravity	648
Trail 35	MTB Trail	Difficult	Gravity	716
Trail 36	MTB Trail	Easy / Intermediate	Pathway	481
Trail 37	MTB Trail	Easy	Airflow	1144
Trail 38	MTB Trail	Easy / Intermediate	Airflow	386
Trail 39	MTB Trail	Easy / Intermediate	Airflow	186
Trail 40	Shared-use	Easy / Intermediate	Adventure	982
Trail 41	Shared-use	Very Easy	Pathway	1543
Trail 42	MTB Trail	Intermediate / Difficult	Gravity	1178
Trail 43	MTB Trail	Easy	Airflow	1538
Trail 44	MTB Trail	Difficult	Adventure	803
Trail 45	MTB Trail	Easy / Intermediate	Wilderness	10835
			TOTAL	57307

Vehicle and Machinery Washdown Site

An existing dedicated washdown site is located at the George Town Council Depot. The site is in a clear and open location on a concrete pad, has access to high-pressure washing facilities, and serviced by a compliant mains drainage system. This site is to be used as the washdown site for the duration of the project when vehicles and machinery are moving between sites with known weeds and diseases present. Before the project commences, all vehicle and machinery require pre-construction washdown at a commercial cleaning facility, or to the satisfaction of council.

A map showing the location of the dedicated washdown facility in relation to the project area can be seen below.

Image 2: Weed and Disease Washdown Site



A temporary washdown site may be installed on the main firebreak which dissects the project area to avoid moving vehicles in and out of the site too frequently, which in itself can increase the potential of weeds spreading into weed free areas. The need for this will be determined through discussion with landowners.

2.0 Legislation, Strategies and Plans

This report has been prepared with consideration given to the following legislation, and guiding strategies and plans in the table below.

Table 2: Supporting/Guiding Documentation

Document	Application
Tasmanian Weed Management Act 1999	This Act is the primary legislation relating to declared weeds in Tasmania.
Statutory Weed Management Plan: Blackberry	Outlines the legal responsibilities of landholders and other stakeholders in dealing with Blackberry.
Statutory Weed Management Plan: Gorse	Outlines the legal responsibilities of landholders and other stakeholders in dealing with Gorse.
Statutory Weed Management Plan: Erica	Outlines the legal responsibilities of landholders and other stakeholders in dealing with Erica species. (document under review and not currently available)
Weed and Disease Planning and Hygiene Guidelines (DPIPWE 2015)	The present WDMP is structured on this set of guidelines.
Keeping it Clean – A Tasmanian Field Hygiene Manual to Prevent the Spread of Freshwater Pests and Pathogens (Allan & Gartenstein 2010)	Provides guidance on hygiene management and to reduce the risk of spreading environmental diseases.
Washdown Procedures for Weed and Disease Control. Edition 1. (DPIPWE 2004)	Guidelines for washdown and its application where codes of practice or environmental management plans are not in place.
Interim Phytophthora Cinnamomi Management Guidelines. (DPIPWE 2005)	Advice on the management of Phytophthora cinnamomi in Tasmania.
Ride Clean – Information Sheet by Tasmanian NRM regions	Wash your bike every time you ride it information sheet provides a guide on the way to keep your bike and equipment clean.
Natural Values Assessment of Mountain Bike Trail Project, Upper Tippgoree Hills, George Town (ECOtas)	Provides an overview of the ecological (natural values) issues identified from the upper Tippgoree Hills project area.
George Town Mountain Bike Trail - Trail Maintenance Plan	Provides details of the Maintenance activities and timing of these activities of the trail network once operational.
George Town Mountain Bike Trails: Construction and Environmental Management Plan	Prepared by World Trail to guide construction activities associated with the construction of the George Town Mountain Bike Trails to minimise impacts to the environment and ensure compliance with all permits, approvals and legislative requirements.
Declared Weeds Index: Blackberry (DPIPWE)	Guiding information and useful links for Blackberry. (https://dpipwe.tas.gov.au/invasive-species/weeds/weeds-index/declared-weeds-index/blackberry)
Declared Weeds Index: Gorse (DPIPWE)	Guiding information and useful links for Gorse. (https://dpipwe.tas.gov.au/invasive-species/weeds/weeds-index/declared-weeds-index/gorse
Declared Weeds Index: Erica (DPIPWE)	Guiding information and useful links for Erica species. (https://dpipwe.tas.gov.au/invasive-species/weeds/weeds-index/declared-weeds-index/erica)

3.0 Existing and Potential Weed and Disease Issues

Weeds, diseases and other pests have the potential to establish and/or spread across the project site during construction. Increased weed colonisation can impact on the ecological values of vegetation through displacement of native species and degradation of fauna habitat.

The primary activities associated with the construction and operation of mountain bike trail networks at risk of introducing or spreading weeds and diseases are: -

- During construction and maintenance works where vehicles, machinery, equipment, and clothing and shoes of personnel, carrying soil or plant materials and freshwater water which may be contaminated;
- Imported construction and maintenance materials that may be contaminated (soil, sand, and gravel or others, including water); and
- Trail users and their bikes spreading weeds or diseases along the trail networks or introducing them once the trail network is operational.

Parts of the land in which the trails are being constructed has been illegally accessed for many years by other users for the purposes of rubbish dumping, wood collecting, four-wheel driving, and trail bike riding. This illegal use of the land may have already negatively impacted on the environmental values. Council cannot be held solely responsible for the potential weed and disease risks associated with these external and illegal uses.

Additionally, several easements exist, neighbour, and dissect the trail network, some of which have heavy infestations of weeds and present a greater risk of spreading into the project area (and in some cases already have).

3.1 General Vegetation

A natural values assessment was undertaken by ECOtas on the project area, which was found to support the following TASVEG mapping units: -

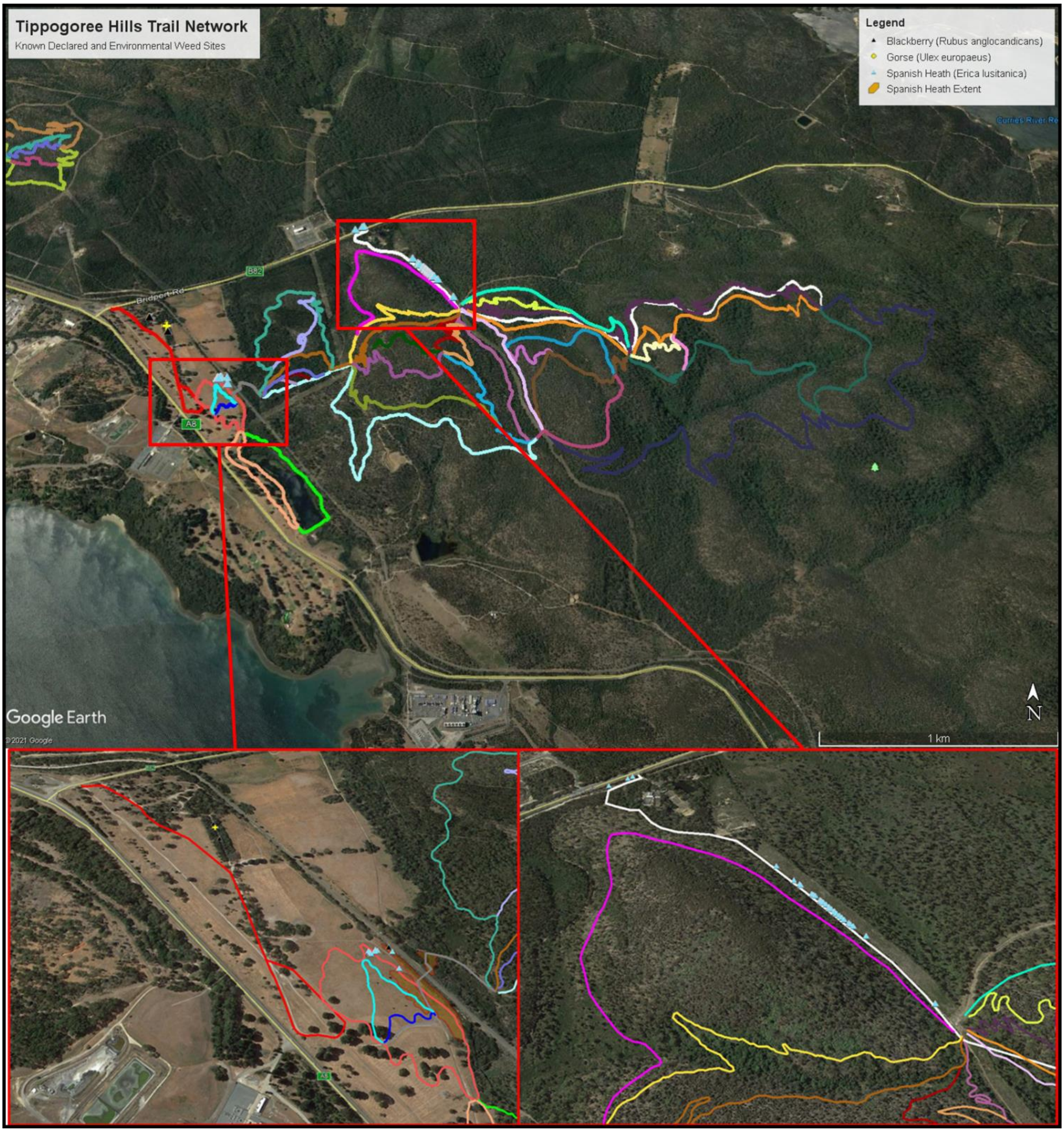
- Eucalyptus amygdalina forest and woodland on dolerite (TASVEG code: DAD);
- Eucalyptus obliqua dry forest (TASVEG code: DOB);
- Eucalyptus ovata forest and woodland (TASVEG code: DOV);
- Eucalyptus amygdalina-Eucalyptus obliqua damp sclerophyll forest (TASVEG code: DSC);
- Eucalyptus obliqua forest with broad-leaf shrubs (TASVEG code: WOB);
- Allocasuarina verticillata forest (TASVEG code: NAV);
- Bursaria-Acacia woodland and scrub (TASVEG code: NBA);
- Melaleuca ericifolia swamp forest (TASVEG code: NME);
- Broad-leaf scrub (TASVEG code: SBR);
- Extra-urban miscellaneous (TASVEG code: FUM);
- Permanent easements (TASVEG code: FPE);
- Plantations for silviculture-hardwood (TASVEG code: FPH);
- Unverified plantations for silviculture (TASVEG code: FPU);
- Weed infestation (TASVEG code: FWU); and
- Water, sea (TASVEG code: OAQ).

3.2 Recorded Weed Species

The natural values assessment undertaken by ECOtas on the project area included the identification and recording of declared and environmental weed species.

The map below indicates the locations of weed species observed in the project area.

Image 3: Known Declared and Environmental Weed Sites



3.2.1 Declared Weeds

Declared weeds in Tasmania are plants that have been declared under the Weed Management Act 1999. The legislation requires that these species be contained or eradicated according to the relevant statutory management plan.

Three plant species classified as declared weeds within the meaning of the Tasmanian Weed Management Act 1999 were detected from within and adjacent to the project area and have been listed in the table below.

Table 3: Existing Declared Weeds

Declared Weeds	**Notes**
Blackberry (Rubus anglocandican)	Isolated occurrences near the proposed trail head access road.
Gorse *(Ulex europaeus)*	Isolated occurrences at proposed trail head and along trail corridor.
Spanish Heath (Erica lusitanica)	Widespread infestations through the municipality along roadsides.

3.2.2 Environmental Weeds

Although many common weeds are not listed under legislation and are therefore not legally required to be controlled, they have the potential to pose a threat to the ecological and agricultural assets present in the project area, and interfere with different stages of the development.

No non-declared and potentially invasive environmental weed was detected within the project area, and have been listed in the table below.

Table 4: Existing Environmental Weeds

Environmental Weeds	**Notes**
N/A	None found

3.2.3 Weeds of National Significance

Weeds of National Significance (WoNS) are a list of the most problematic plant species found in Australia based on an assessment on their invasiveness, potential for spread and environmental, social and economic impacts

One WoNS detected within the project area although only in small occurrences, and has been listed in the table below.

Table 5: Existing Weeds of National Significance

Weeds of National Significance	**Notes**
Blackberry (Rubus anglocandican)	Isolated occurrences near the proposed trail head access road

3.2.4 High-Alert Weeds

High-alert weeds is in an internally referenced title applicable to the project, and refers to declared weeds that, whilst are not located within the project area, have infestations occurring throughout the municipality. A summary of deemed high-alert weeds has been provided in the table below.

Table 6: Existing High-Alert Weeds

High-Alert Weeds	Notes
All other declared weeds species	No occurrences within the project area, but some infestations occur in other parts of the municipality.

3.3 Recorded Diseases or Symptoms

No disease, pathogens or recorded symptoms were observed within the project area, a summary of which has been provided in the table below.

Table 7: Diseases and Pathogens the Area Was Assessed For

Recorded Diseases / Symptoms	Notes
Phytophthora cinnamomi	Vegetation types in the study area not recognised as being susceptible to Phytophthora cinnamomic, and no evidence of the pathogen was observed. No special management is recommended although weed hygiene measures for construction and maintenance should be implemented.
Myrtle wilt	Only affects Nothofagus cunninghamii, which is entirely absent from the project area. No special management is required.
Myrtle rust	No myrtle rust was noted. No special management required.
Chytrid fungal disease	The project area not known to support frog chytrid disease and there is limited potential habitat for amphibian species within the project footprint (generally very well-drained terrain).

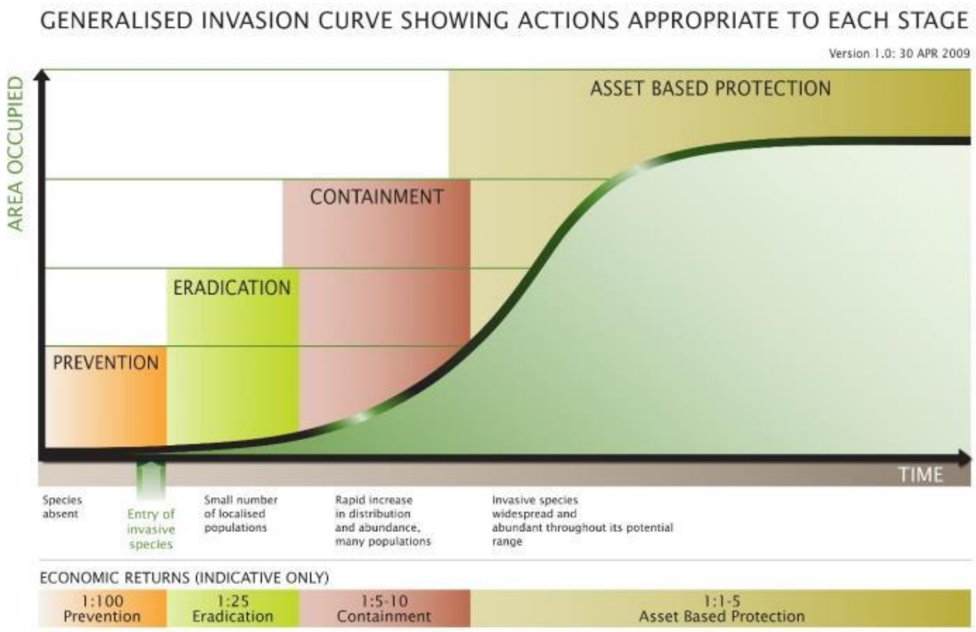
4.0 Identify Management Priorities

The primary principle for all activities during construction and operation of the trail network is to: -

- Prevent the spread of existing declared and environmental weeds and diseases;
- Control of existing declared and environmental weeds within the project area; and
- Prevent the introduction of new weeds and diseases into the project area.

Depending on the degree and rate of weed and disease infestation, a different management priority has been assigned to each weed species noted within the project area. The four management strategies are defined as: Prevention; Eradication; Containment; and Asset Based Protection. The degree of weed and disease infestation that triggers each management strategy can be seen in the image below.

Image 4: Management Strategies in Relation Weed Occurrences (Source: www.dpipwe.tas.gov.au)



The four management strategies have been detailed in the table below.

Table 8: Weed Management Strategies

Management Strategy	Details
Prevention	Most cost-effective form of weed control as weeds are absent and monitoring is the control method
Eradication	Most cost-effective form of weed control for a new introduction of weed species and where weeds are present in small numbers of localised populations. Once eradicated, prevention is the ongoing control method.
Containment	Most appropriate control method to manage the impacts of a rapidly increasing or abundant weed species infestation at risk of spreading into weed free areas.
Asset Based Protection	Most appropriate control method when a weed is widespread and abundant.

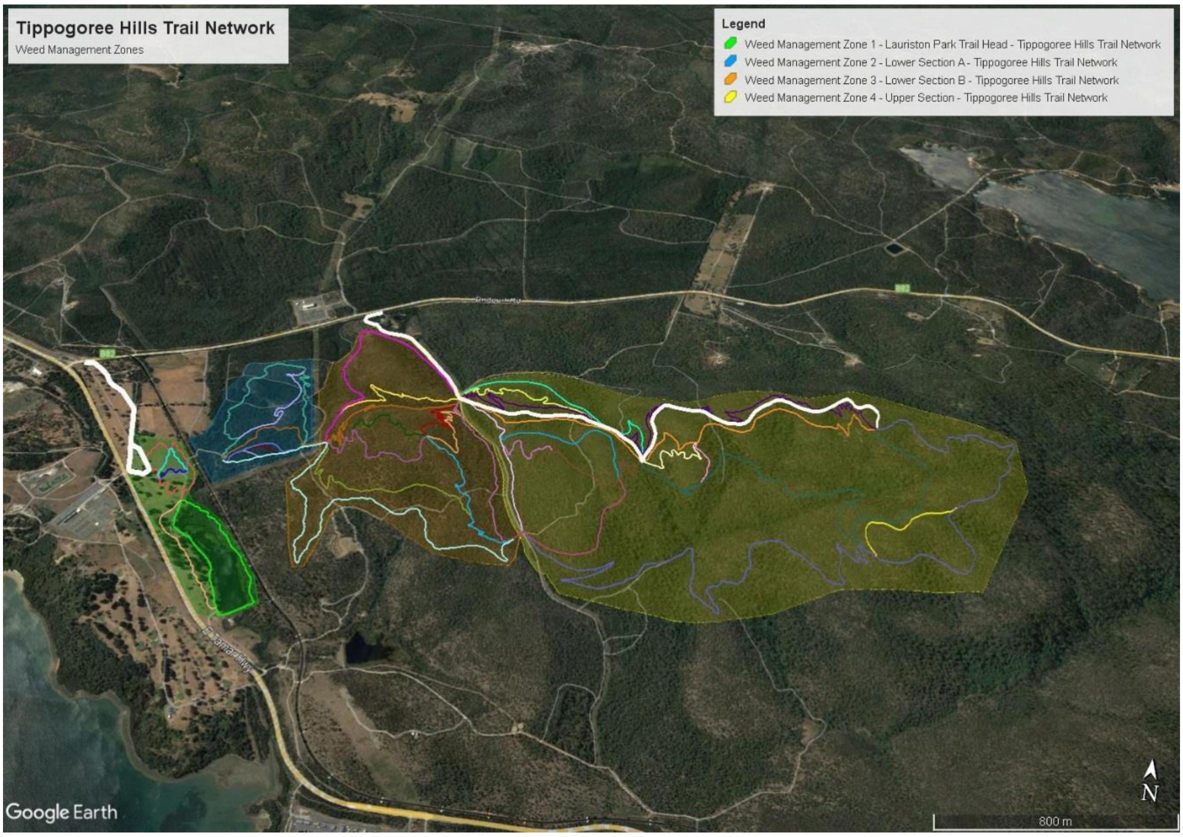
4.1 Weed Management Zones

For the purpose of weed management, the Tippogoree Hills Trail Network has been segregated into four separate weed management zones: -

- Weed Management Zone 1 - incorporates the trails, the access road, and the carparking area within the zone, with active weed management strategies applicable to an area of 10m either side of the trail and road centreline, and a 20m perimeter of the carparking and trail head area;
- Weed Management Zone 2 - incorporates the trails within the zone, with active weed management strategies applicable to an area of 10m either side of the trail centreline. The zone also included the 20m trail corridor where it crosses the rail line easement, although additional approvals are required before active weed management strategies can occur within the easement;
- Weed Management Zone 3 - incorporates the trails within the zone, with active weed management strategies applicable to an area of 10m either side of the trail centreline. The zone also included the 20m trail corridor where it crosses the Basslink transmission tower easement, although additional approvals are required before active weed management strategies can occur within the easement.
- Weed Management Zone 4 - incorporates the trails, and the service access road within the zone, with active weed management strategies applicable to an area of 10m either side of the trail and road centreline.

A map indicating the weed management zones is provided in the image below.

Image 5: Weed Management Zones - Tippogoree Hills Trail Network



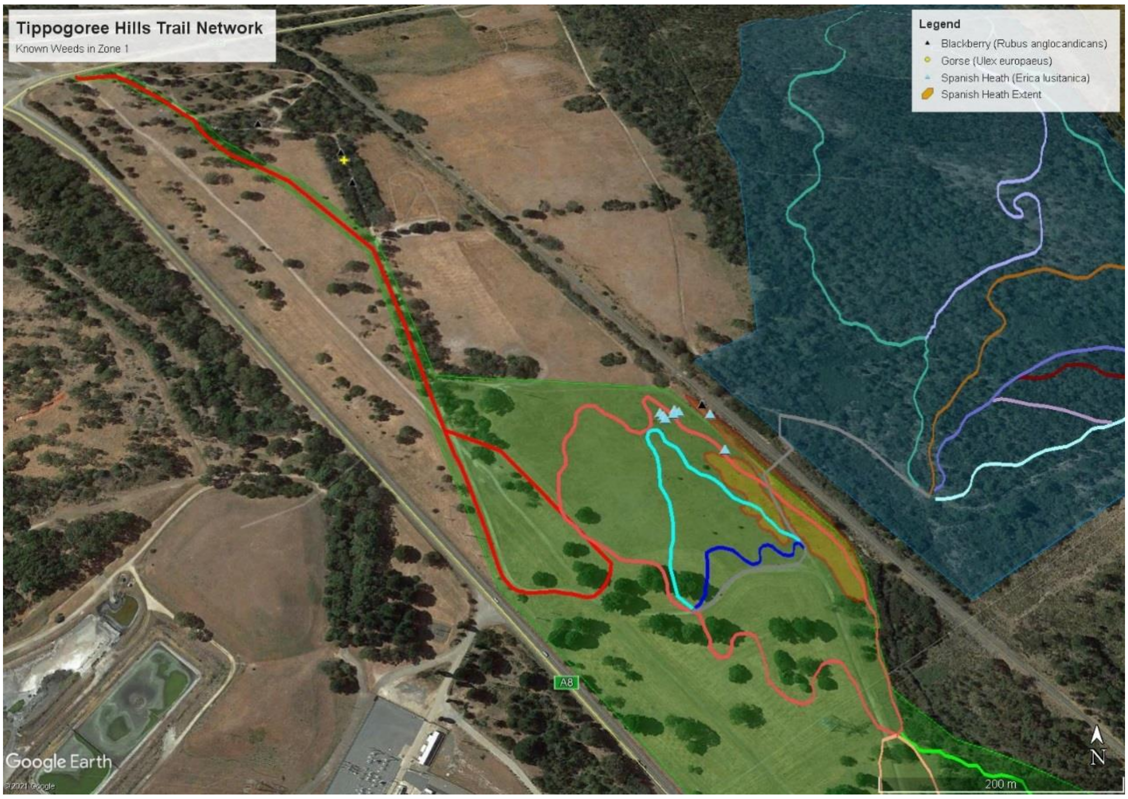
In the following sections, each Weed Management Zone within the Tippogoree Hills Trail Network has been detailed with the weeds present, prescribed management strategy, and determined priority. Specific weed and site management controls will be further detailed in section 5.0.

4.1.1 Management Zone 1 - Lauriston Park Trail Head

Weed Management Zone 1 incorporates the trails, the access road, and the carparking area within the zone, with active weed management strategies applicable to an area of 10m either side of the trail and road centreline, and a 20m perimeter of the carparking and trail head area. It is the only zone where public vehicular access is possible, and where users other than those using the trail network can interact with the trail network infrastructure.

A map of Weed Management Zone 1 and the weeds contained within the zone boundaries can be seen in the image below.

Image 6: Weed Management Zone 1 - Lauriston Park Trail Head



Weed Management Zone 1 contains three identified weed species within the project area. The zone represents the primary access point for users of the mountain bike trails, and therefore presents as a higher risk area for the introduction of weeds to weed free areas. It is worth noting that not all users accessing Lauriston Park will also be accessing the trail network.

The zone neighbours the railway easement for the Bell Bay Rail Line, owned and managed by TasRail, which contains a very heavy infestation of weed species which appear to have spread into the project area.

A list of the weeds identified within the area are listed in the table on the next page, along with statutory management requirements (if applicable), and localised management strategies.

Table 9: Weed Management Zone 1 Strategies

Weed Present	Notes	Statutory Requirements	Management Strategy	Priority
Declared Weeds				
Spanish Heath *(Eric lusitanica)*	Isolated occurrences within project area, but heavy infestation in neighbouring land.	George Town Council is in Statutory Weed Management Zone B for Spanish Heath stipulating Containment.	Zone B municipalities - containment: Containment is the most appropriate management objective for Zone B municipalities which have problematic infestations but no plan and/or resources to undertake control actions at a level required for eradication. The management outcome for Zone B municipalities is ongoing prevention of the spread of Erica from existing infestations to areas free or in the process of becoming free of Erica.	High
Blackberry *(Rubus anglocandican)*	Isolated occurrences.	George Town Council is in Statutory Weed Management Zone B for Blackberry stipulating Containment.	Zone B municipalities - containment: Containment is the most appropriate management objective for Zone B municipalities which have problematic infestations but no plan and/or resources to undertake control actions at a level required for eradication. The management outcome for Zone B municipalities is ongoing prevention of the spread of blackberry from existing infestations to areas free or in the process of becoming free of blackberry. Blackberry is also a Weed of National Significance (WONS).	High
Gorse *(Ulex europaeus)*	Isolated occurrences.	George Town Council is in Statutory Weed Management Zone B for Gorse stipulating Containment.	Zone B municipalities - containment: Containment is the most appropriate management objective for Zone B municipalities which have problematic infestations but no plan and/or resources to undertake control actions at a level required for eradication. The management outcome for Zone B municipalities is ongoing prevention of the spread of gorse from existing infestations to areas free or in the process of becoming free of gorse.	High
Environmental Weeds				
N/A	N/A	N/A	N/A	N/A
High-Alert Weeds				
All other declared weeds species	No occurrences within the project area, but some infestations occur in other parts of the municipality.	*Various*	Prevention should be a primary focus, achieved through continuous monitoring.	Low

4.1.2 Management Zone 2 - Lower Section A - Tippogoree Hills Trail Network

Weed Management Zone 2 refers to the trails that occur within land owned by Bell Bay Aluminium. Active weed management only occurs within the 20m trail corridor (10m either side of the trail centreline). The zone also includes trails that pass-through rail line corridor, which require additional permits from TasRail before any weed management can commence within the rail line corridor boundaries.

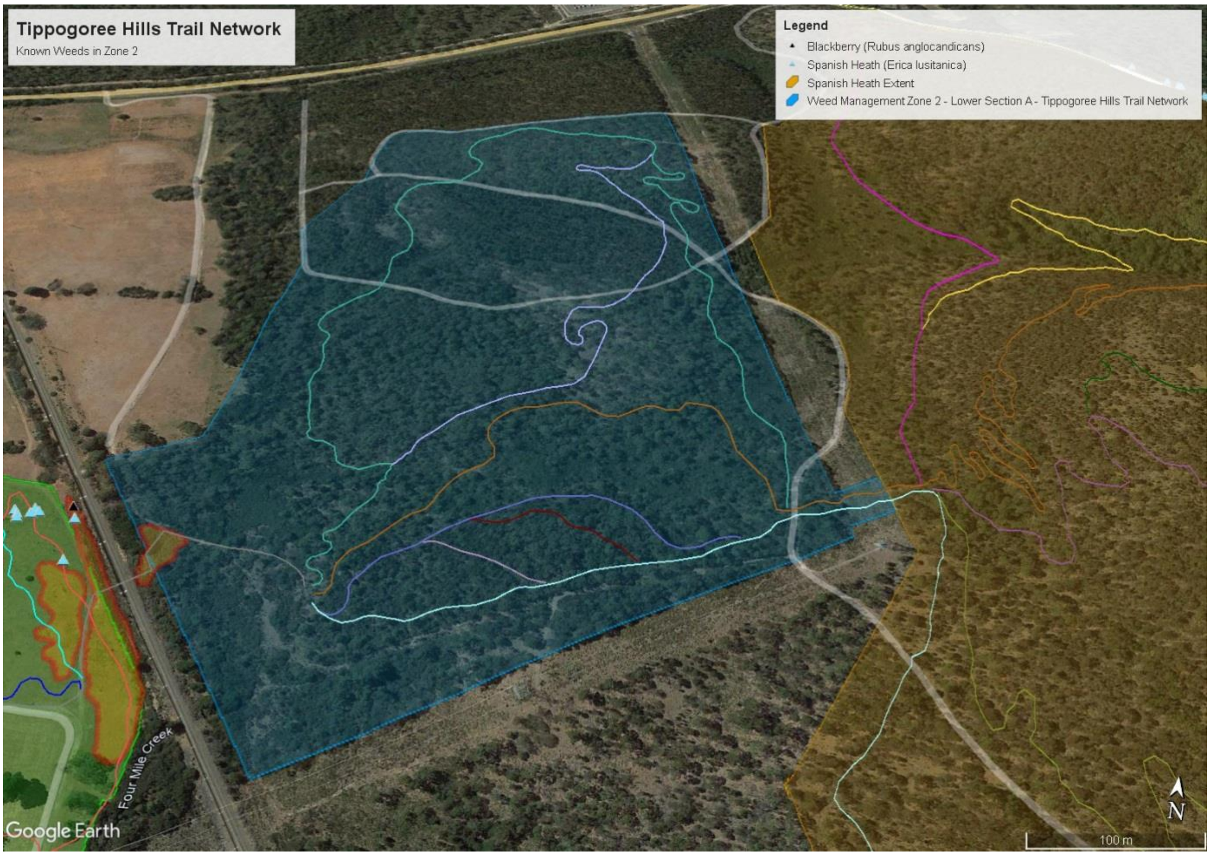
Weed Management Zone 2 contains an identified weed species within the project area. The area contains a heavy infestation of spanish heath immediately the east of the Bell Bay Rail Line.

The zone neighbours the railway easement for the Bell Bay Rail Line owned and managed by TasRail, which is known to contain a very heavy infestation of weed species which have spread into the project area, and presents as an ongoing risk for the spread of weeds into weed free areas.

The zone also neighbours the Bass Link transmission easement which contains heavy infestation of weed species on the northern end near Bridport Road and the western end where it meets the rail line easement. Whilst there are no signs of weed species spreading into the project area, it does present as an ongoing risk for the spread of weeds into weed free areas.

A map of Weed Management Zone 2 and the weeds contained within the zone boundaries can be seen in the image below.

Image 7: Management Zone 2 - Lower Section A - Tippogoree Hills Trail Network



A list of the weeds identified within the area are listed in the table below, along with statutory management requirements (if applicable), and localised management strategies.

Table 10: Weed Management Zone 2 Strategies

Weed Present	Notes	Statutory Requirements	Management Strategy	Priority
Declared Weeds				
Spanish Heath *(Eric lusitanica)*	Heavy infestation immediately east of the Bell Bay rail Line easement.	George Town Council is in Statutory Weed Management Zone B for Spanish Heath stipulating Containment.	Zone B municipalities - containment: Containment is the most appropriate management objective for Zone B municipalities which have problematic infestations but no plan and/or resources to undertake control actions at a level required for eradication. The management outcome for Zone B municipalities is ongoing prevention of the spread of Erica from existing infestations to areas free or in the process of becoming free of Erica.	High
Environmental Weeds				
N/A				
High-Alert Weeds				
All other declared weeds species	No occurrences within the project area, but some infestations occur in other parts of the municipality.	*Various*	Prevention should be a primary focus, achieved through continuous monitoring.	Low

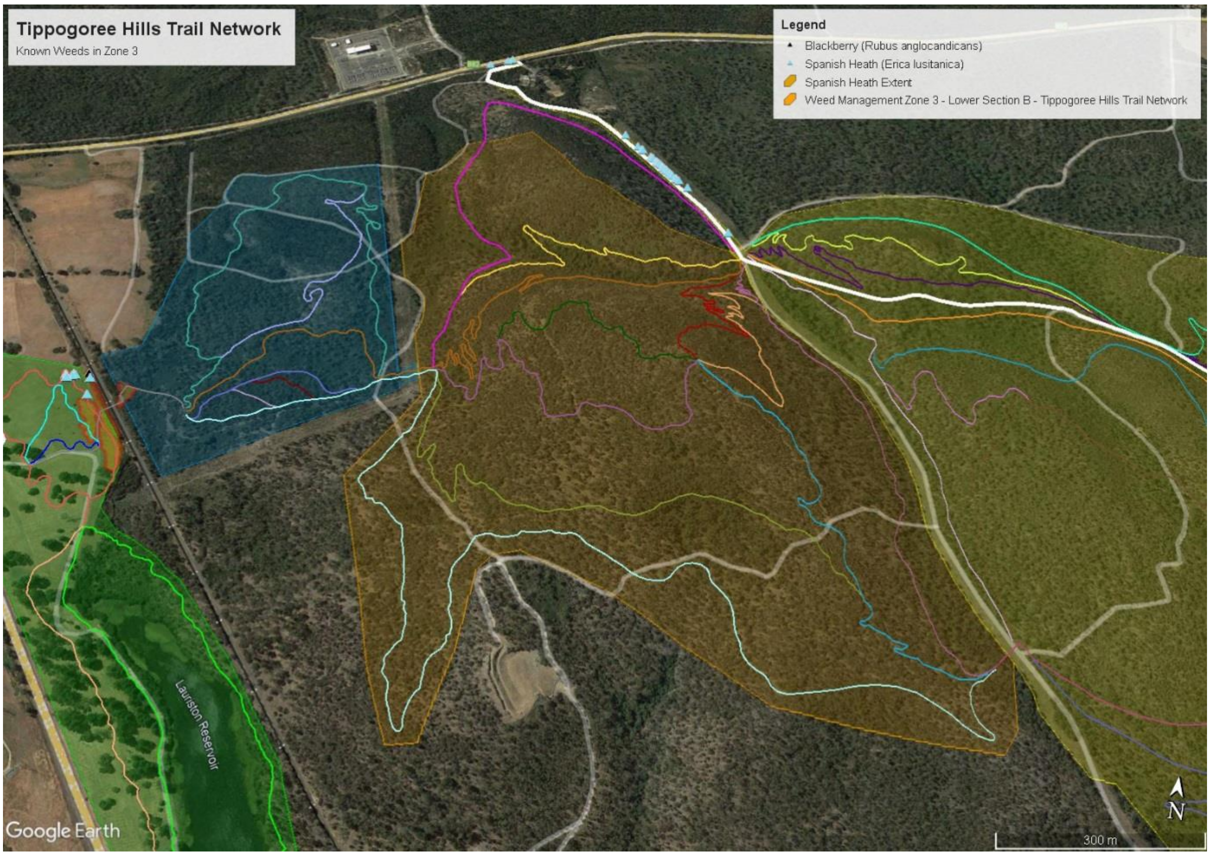
4.1.3 Management Zone 3 - Lower Section B - Tippogoree Hills Trail Network

Weed Management Zone 3 refers to the trails that occur within land owned by Rio Tinto Aluminium (Bell Bay) Limited. Active weed management only occurs within the 20m trail corridor (10m either side of the trail centreline).

Weed Management Zone 3 contains no known weed species, highlighting the importance of keeping the area free of weed occurences.

A map of Weed Management Zone 3 and the weeds contained within the zone boundaries can be seen in the image below.

Image 8: Management Zone 3 - Lower Section B - Tippogoree Hills Trail Network



A list of the weeds identified within the area are listed in the table below, along with statutory management requirements (if applicable), and localised management strategies.

Table 11: Weed Management Zone 3 Strategies

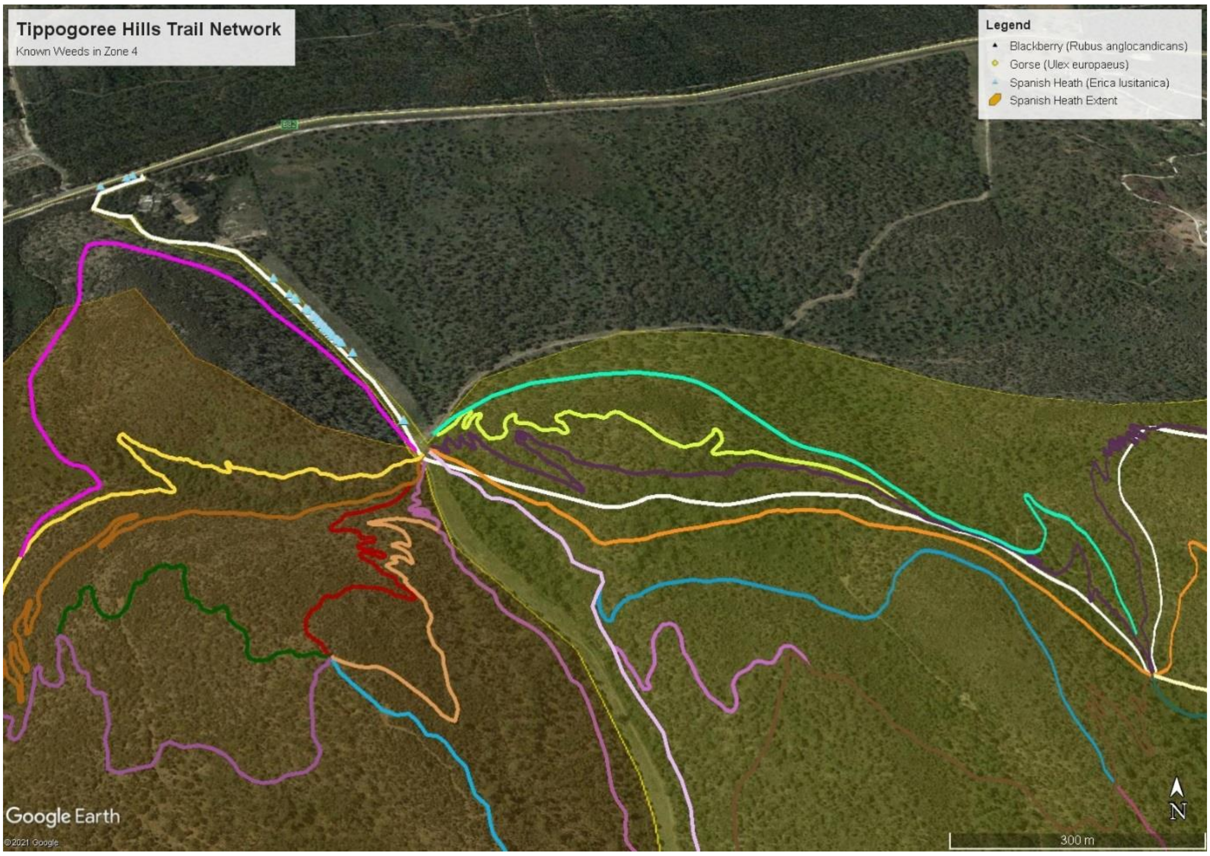
Weed Present	Notes	Statutory Requirements	Management Strategy	Priority
Declared Weeds				
N/A				
Environmental Weeds				
N/A				
High-Alert Weeds				
Spanish Heath *(Eric lusitanica)*	No occurrences within the project area, but significant infestations occur in other parts of the municipality and in neighbouring zones of the trail network.	George Town Council is in Statutory Weed Management Zone B for Spanish Heath stipulating Containment.	Prevention should be a primary focus, achieved through continuous monitoring.	High
All other declared weeds species	No occurrences within the project area, but some infestations occur in other parts of the municipality.	Various	Prevention should be a primary focus, achieved through continuous monitoring.	Low

4.1.4 Management Zone 4 - Upper Section - Tippogoree Hills Trail Network

Weed Management Zone 4 refers to the trails that occur within land owned by Rio Tinto Aluminium (Bell Bay) Limited and Parks and Wildlife Services. Zone 4 also includes the entirety of the service access road, including the existing firebreak that travels northwards towards Bridport Road. Active weed management only occurs within the 20m trail corridor (10m either side of the trail and roadway centreline).

A map of Weed Management Zone 4 and the weeds contained within the zone boundaries can be seen in the image below.

Image 9: Weed Management Zone 4 - Upper Section - Tippogoree Hills Trail Network



Weed Management Zone 4 contains infestations of spanish heath along the firebreak, particularly the lower sections nearer to Bridport Road. This presents as an ongoing risk for the spread of weeds into weed free areas.

A list of the weeds identified within the area are listed in the table on the next page, along with statutory management requirements (if applicable), and localised management strategies.

Table 12: Weed Management Zone 4 Strategies

Weed Present	**Notes**	**Statutory Requirements**	**Management Strategy**	**Priority**
Declared Weeds				
Spanish Heath *(Eric lusitanica)*	Occurrences along the lower parts of the existing fire break.	George Town Council is in Statutory Weed Management Zone B for Spanish Heath stipulating Containment.	Zone B municipalities - containment: Containment is the most appropriate management objective for Zone B municipalities which have problematic infestations but no plan and/or resources to undertake control actions at a level required for eradication. The management outcome for Zone B municipalities is ongoing prevention of the spread of Erica from existing infestations to areas free or in the process of becoming free of Erica.	High
Environmental Weeds				
N/A	N/A	N/A	N/A	N/A
High-Alert Weeds				
All other declared weeds species	No occurrences within the project area, but some infestations occur in other parts of the municipality.	*Various*	Prevention should be a primary focus, achieved through continuous monitoring.	Low

5.0 Management and Control of Weeds and Diseases

5.1 Construction Activities

5.1.1 Risk

Construction activities will involve removal of vegetation, excavation, drainage installation and placement of imported materials within the trail and road corridors. These activities bring more significant risks of introducing and spreading weeds and diseases.

5.1.2 Mitigation

Pre-Construction Weed Treatments

Before the construction phase commences, a pre-construction weed treatment program will be undertaken to treat as many weeds as possible from the heavily weed-infested areas within Weed Management Zone 1, Weed Management Zone 2, Weed Management Zone 4, and the neighbouring easements and areas where possible.

Pre-construction weed treatments for the identified weed site have ben detailed in the below.

Table 13: Pre-Construction Weed Treatments

Weed Management Zone (localised)	Weed Species	Treatment	Site-Specific Details
Zone 1	Spanish Heath (Erica lusitanica)	Selective spraying with follow up	Occurrences within the 20m construction corridor will be selectively sprayed by an approved herbicide. For larger infestations that extend greater than the 20m construction corridor will be selectively sprayed by an approved herbicide. Occurrences within neighbouring easements will be treated in accordance with the landowner / manager to ensure that the risk of spreading into the project area is appropriately mitigated.
Zone 1	Blackberry (Rubus anglocandicans)	Selective spraying with follow up	Occurrences within the 20m construction corridor will be selectively sprayed by an approved herbicide. For larger infestations that extend greater than the 20m construction corridor will be selectively sprayed by an approved herbicide.
Zone 1	Gorse (Ulex europaeus)	Selective spraying with follow up	Occurrences within the 20m construction corridor will be selectively sprayed by an approved herbicide. For larger infestations that extend greater than the 20m construction corridor will be selectively sprayed by an approved herbicide.
Zone 2	Spanish Heath (Erica lusitanica)	Selective spraying with follow up	Occurrences within the 20m construction corridor will be selectively sprayed by an approved herbicide. For larger infestations that extend greater than the 20m construction corridor will be selectively sprayed by an approved herbicide. Occurrences within neighbouring easements will be treated in accordance with the landowner / manager to ensure that the risk of spreading into the project area is appropriately mitigated.
Zone 4	Spanish Heath (Erica lusitanica)	Selective spraying with follow up	Occurrences within the 20m construction corridor will be selectively sprayed by an approved herbicide. For larger infestations that extend greater than the 20m construction corridor will be selectively sprayed by an approved herbicide. Occurrences within neighbouring easements will be treated in accordance with the landowner / manager to ensure that the risk of spreading into the project area is appropriately mitigated.

Construction and Environmental Management Plan (CEMP)

All contractors undertaking construction activities during construction will be required to produce a CEMP detailing weed and disease management controls, or adopt controls stipulated by Council. Further conditions may be stipulated by landowners.

World Trail, the contractors undertaking the trail construction, have developed a CEMP specific to construction of the Tippogoree Hills Trail Network which meets or exceeds provisions of this WDMP. World Trail's CEMP forms a key component of this plan.

All trail alignments and all known site-specific environmental matters discussed in the CEMP have been incorporated into the World Trail GIS platform, which all World Trail staff can access at all times on their phones. A unique reference ID number is allocated to each known site-specific environmental matter, which can be cross-referenced against the GIS platform.

World Trail's CEMP will apply for the duration of the construction phase, with monitoring of construction activities will be undertaken by council to ensure compliance.

Weed and Disease Washdown Protocols

Before the project commences, all vehicle and machinery require pre-construction washdown at a dedicated cleaning facility to the satisfaction of council. During the construction phase, washdown is required when vehicles and machinery are moving between Zones with known weeds and diseases present.

When conducting weed and disease hygiene washdown, the following planning manuals will be used to guide wash down procedures: -

- Allan, K. & Gartenstein, S. (2010). Keeping It Clean: A Tasmanian Field Hygiene Manual to Prevent the Spread of Freshwater Pests and Pathogens. NRM South, Hobart;
- Rudman, T., Tucker, D. & French, D. (2004). Washdown Procedures for Weed and Disease Control. Edition 1. Department of Primary Industries, Water & Environment, Hobart;
- DPIPWE (2015). Weed and Disease Planning and Hygiene Guidelines - Preventing the Spread of Weeds and Diseases in Tasmania. Department of Primary Industries, Parks, Water & Environment, Hobart; and
- Rudman T. (2005). Interim Phytophthora Cinnamomi Management Guidelines. Nature Conservation Report 05/7, Biodiversity Conservation Branch, Department of Primary Industries, Water & Environment, Hobart.

Links to access these documents electronically have been provided in Appendix A.

Vehicle, machinery and equipment washdown instructions and checklists have not been provided in the Appendix B and Appendix C.

Imported Surfacing Materials

Any imported surfacing material used will be sourced from a certified clean quarry to ensure there is no introduction of any weeds or pathogens.

Ecological Assessment Report Considerations

Consideration will be given of the order of construction of trail sections, and the direction in which construction occurs, ideally working towards and within the most heavily weed-infested area last. This provides the means for minimising the risk of introducing weeds to other parts of the project area network presenting as weed free.

5.2 Operational Maintenance

5.2.1 Risk

Trail maintenance will involve removal of vegetation, excavation, drainage installation and placement of imported materials within the trail corridors, albeit at a much lessor level than construction activities. However, these activities still constitute significant risk of introducing and spreading weeds and diseases.

5.2.2 Mitigation

Standard Maintenance Activities

Weed monitoring, identification and removal will be part of the standard operational maintenance activities. All maintenance personnel will be trained in: -

- Plant identification - particularly the identification of declared and environmental weeds;
- Safe handling and use equipment;
- Correct and appropriate use of personnel protection equipment;
- Vehicle and equipment washdown and hygiene protocols;
- Specific instruction on how to undertake allocated tasks; and
- Correct and appropriate handling and application of fuels, chemicals, and herbicides.

When a new weed is identified with the trial corridor, it will either be immediately mechanically removed, bagged and disposed of off site where possible, or be noted for treatment at a later date. Once the weed is removed, the site will be noted for ongoing monitoring for a period of six months to determine the site as being once again weed free.

Construction and Environmental Management Plan (CEMP)

All contractors undertaking construction activities during the operational phase will be required to produce a CEMP detailing weed and disease management controls, or adopt controls stipulated by Council. Further conditions may be stipulated by landowners.

Ongoing Monitoring

A crucial objective during operational maintenance will ongoing monitoring to identifying new weeds spreading into the trail network area. Weed and diseases symptom monitoring will be performed as part of the Trail Maintenance Plan, initially operating on monthly inspections, with treatments of weeds occurring as part of trail maintenance activities.

Weed and Disease Washdown Protocols

As with the construction phase, all vehicles and equipment used for trail maintenance require weed and disease washdown before entering the trail network area, and moving between sites with known weeds and diseases present.

The following planning manuals will be used to guide wash down procedures: -

- Allan, K. & Gartenstein, S. (2010). Keeping It Clean: A Tasmanian Field Hygiene Manual to Prevent the Spread of Freshwater Pests and Pathogens. NRM South, Hobart;
- Rudman, T., Tucker, D. & French, D. (2004). Washdown Procedures for Weed and Disease Control. Edition 1. Department of Primary Industries, Water & Environment, Hobart;
- DPIPWE (2015). Weed and Disease Planning and Hygiene Guidelines - Preventing the Spread of Weeds and Diseases in Tasmania. Department of Primary Industries, Parks, Water & Environment, Hobart; and
- Rudman T. (2005). Interim Phytophthora Cinnamomi Management Guidelines. Nature Conservation Report 05/7, Biodiversity Conservation Branch, Department of Primary Industries, Water & Environment, Hobart.

Links to access these documents electronically have been provided in Appendix A.

Vehicle, machinery and equipment washdown instructions and checklists have not been provided in the Appendix B and Appendix C.

Imported Surfacing Materials

Any imported surfacing material used will be sourced from a certified clean quarry to ensure there is no introduction of any weeds or pathogens.

5.3 Public Usage

5.3.1 Risk

Users of shared use trails, and in particular mountain bike riders, are unlikely to unintentionally leave the formal trail alignment. Nor do users directly interact with the adjacent vegetated areas of the trail corridors. Therefore, the risk of weeds or diseases spreading as a result of intended usage is considered rare and unlikely.

The greatest risk from users is triggered when obstacles or defects (such as muddy sections or fallen trees) are present, and users leave the trail alignment to circumnavigate the obstacle. Doing so impacts the surrounding vegetation, disturbs the ground, and provides opportunity for the spread of weeds and diseases.

Other trail users such as shuttle bus operators, tour service providers, private drop off vehicles, and event spectators may pose some risk once the trail network is operational.

Parts of the land in which the trails are being constructed has been and may continue to be accessed by unintended users for the (often illegal) purpose of rubbish dumping, wood collecting, four-wheel driving, and motorbike riding. This use of the land can negatively impact on the environmental values through vegetation damage, soil erosion, and contribute to the spread of weeds and diseases.

5.3.2 Mitigation

Trail Network Users

Given the minimal occurrences of weed infestations throughout the trail network area, the controllability of access points, and the minimal risk that mountain bikers pose to the spread of weeds, the primary mitigation tool will be user education.

User education on weed hygiene and bike cleanliness will be via three channels: -

- Trail head and access point signage;
- Brochures and handouts available at information centres and events; and
- Information pages on the trail network website.

Collateral focusing on mountain biking specific weed and disease hygiene already exists and is available from NRM South. Examples of these can be found in Appendix D.

Routine trail inspections will occur under the Trail Maintenance Plan to rectify any obstacles or defects present on trails that may cause users to stray from the trail alignment. Whilst the intent is to identify and rectify any defects before the user, in some instances the user may encounter a defect before a routine inspection does. Instructions and details for users to report a defect will be displayed on the trail head information board for users to report a trail defect. When a defect is reported, council will record the details electronic and forward to the maintenance personnel to be incorporated into the routine inspection and maintenance schedule.

Commercial Operators

Commercial operators that operate a service within the trail network will need to adhere to weed and disease hygiene protocols, with specifics negotiated on a case by case basis dependant on the level of interaction and risk of contributing to the spread of weeds and diseases.

Illegal Activities

Efforts will be undertaken to manage impacts caused by illegal use of trails by motorised vehicles (motorbikes, or 4WD vehicles). As part of the Trail Maintenance Plan, defects caused by illegal activity will be reported to the landowner, and rectified as soon as possible. If possible, the entry point should be identified and blocked.

Council cannot be held solely responsible for the potential weed and disease risks associated with these external and illegal uses. However, promoting the intended activities can act as a deterrent to illegal activities.

5.4 Weed Control Techniques

A full list of weed control techniques can be found in Appendix E.

Care should be taken to use the right technique for the right weed at the right time.

Before undertaking any control techniques, the relevant weed guidelines should be thoroughly consulted to ensure the control is effective.

5.5 Specific Management of Spanish Heath (Erica Lusitanica)

Specific consideration has been given to initial and ongoing management for the heavy infestations of Spanish Heath (Erica lusitanica) along the proposed service access road alignment, and the rail line corridor adjoining Lauriston Park.

The George Town municipality is located within Statutory Weed Management Zone B for Spanish Heath which stipulates Containment as the required level of management. However, the heavy infestations of Spanish Heath (Erica lusitanica) will be managed as if located within Statutory Weed Management Zone A, which stipulates Eradication.

In practice, the management strategy will be executed in three stages, with eradication being the primary objective, and targeting the infestations located within the 20m trail and road construction corridors. Where the infestations continue into the adjoining land not within the 20m trail and road construction corridors, the infestations will be managed to the greatest extent as practicably possible to protect and prevent re-infestation to inside the construction corridors.

The three stages of the management strategy are: -

- Pre-construction - initial treatment with an approved herbicide to serve as reduction in active growth, with follow up treatment of an approved herbicide within six months or after spring growth has occurred;
- Monitoring every three months during the construction phase, with follow up treatment of an approved herbicide as necessary; and
- Ongoing monitoring throughout the operational phase as trail maintenance inspections, with follow up treatment of an approved herbicide applied as necessary.

It is thought that ongoing monitoring with treatment as needed will be the most effective means of keeping the heavy infestations of Spanish Heath (Erica lusitanica) from spreading into the weed-free areas of the proposed trail network.

6.0 Communication and Reporting

6.1 Construction Activities

During construction, reporting and communication systems have been factored as part of World Trail's CEMP. Information will include reporting on the status of weeds and diseases discovered within the trail corridors, and near the access points, and hygiene practises undertaken.

Instructions and checklists for machinery, vehicle and equipment wash downs have been provided in Appendix B and Appendix C. The checklists will be kept on file so they can be referred to in the future.

6.2 Operational Maintenance

Weed inspection as part of maintenance activities are to be recorded as they are undertaken, to assist the trail maintenance team and landowners to develop a long-term record of new weed and disease occurrences.

Instructions and checklists for machinery, vehicle and equipment wash downs have been provided in Appendix B and Appendix C. The checklists will be kept on file so they can be referred to in the future.

A Weed Inspection Record Sheet can be found in Appendix F, and is also located in the Trail Maintenance Plan.

Once complete, the record sheets should be filed logically, so they can be accessed and referred to at future dates. Filing of record sheets should correspond with electronic record keeping in an Excel sheet of inspections, weed control treatments, and washdown activities undertaken. This data will assist in developing long-term monitoring of new weed and disease occurrences.

6.3 Public Usage

Signage will be the primary communication tool, aiming to educate users on weed hygiene and bike cleanliness.

This will be achieved utilising three communication channels: -

- Trail head and access point signage;
- Brochures and handouts available at information centres and events; and
- Information pages on the trail network website.

Collateral focusing on mountain biking specific weed and disease hygiene already exists and is available from NRM South. Examples of these can be found in Appendix D.

Instructions and details for users to report a defect will be displayed on the trail head information board for users to report a trail defect. When a defect is reported, council will record the details electronically and forward to the maintenance personnel to be incorporated into the routine inspection and maintenance schedule.

7.0 Monitoring

An important part of weed management is monitoring of the trail network to identify new weed sites, monitor already identified weed sites, and review effectiveness of weed management controls. Monthly trail inspections are typical for trail networks, however, during construction inspections may occur more frequently, especially in areas of heavy infestations.

7.1 Weed Inspections

Post-construction monitoring is essential where there has been soil disturbance, importation of materials (water, soil, gravel, sand, etc.), changes to drainage patterns, or removal of vegetation. Any of these actions can lead to the germination of dormant seed, or to the establishment of wind-blown weeds/seeds on recently exposed soil. Importation of materials can also result in the establishment of pathogens.

The timeframe for monitoring will vary depending on factors such as the presence of soil seed banks, the possibility for complete eradication of infestations and the likelihood of re-infestation from adjoining areas. The key point is that the responsibility to control weeds (and in particular declared weeds) does not finish when the construction phase has been completed.

Regular weed inspections will form a critical component of the routine trail inspection program as part of the Trail Maintenance Pan, with inspections initially occurring on a monthly basis. When inspections area conducted, the presence of a weed species should be assessed based on the likelihood of that weed spreading from use by the intended user. The risk rating guide in the table below provides the risk profile and the associated timeframes for rectification works to occur.

Table 14: Weed Inspection Risk Ratings

Risk Ratings	
Low	Weed located outside the 20m trail corridor or 15m perimeter of the trail head areas. Treatment required within 4 weeks (20 working days).
Medium	Weed located within the 20m trail corridor or 15m perimeter of the trail head areas. Treatment required within 2 weeks (10 Working days).
High	Weed located within 1.5m of the trail tread or high-trafficked area (bike, pedestrian or vehicle). Treatment required within 1 week (5 Working days).
Extreme	Weed located within the immediate trail tread or high-trafficked area (bike, pedestrian or vehicle). Treatment required immediately.

In some cases, the stated timeframe for treatment may not be possible due to the recommend treatment for that particular weed species (e.g. don't treat during flowering), however, scheduling in treatment to occur at a later date can be considered as being effectively treated.

Treatment can sometimes be appropriately undertaken at the time of inspection, by chipping, grubbing or spraying weeds on the trail edges or surface. If removal is done by mechanical chipping (e.g. rake-hoe) care should be taken not to damage the trail surface. The actual ride lines will typically be kept clear by the mechanical shearing action of riding over any germinating weeds.

Where spraying is used to treat weeds, care should be taken to: -

- Use herbicides registered for use near waterways (where relevant);
- To avoid spraying in windy conditions; and
- Avoid collateral damage to surrounding vegetation.

Names and details of herbicides used for weed control can be found in Appendix H.

7.2 Maintenance Personnel

When carrying out any weed treatment works or inspections, all necessary safety precautions should be taken. Appropriate Personal Protective Equipment (PPE) is to be used for all tasks, and any tasks requiring machinery operation (excavator, brushcutter, chainsaw etc) must only be undertaken by suitably qualified and licenced individuals. All works should be undertaken to a thorough, professional, industry level standard.

All personnel undertaking weed treatment tasks, whether they are council employees, subcontractors or volunteers will be fully trained in skills pertaining to: -

- Plant identification - particularly the identification of declared and environmental weeds;
- Safe handling and use equipment;
- Correct and appropriate use of personnel protection equipment;
- Vehicle and equipment washdown and hygiene protocols;
- Specific instruction on how to undertake allocated tasks; and
- Correct and appropriate handling and application of fuels, chemicals, and herbicides.

All weed treatment activities will be conducted in team of two, with one team member acting in a supervisory capacity to ensure compliance with workplace health and safety.

Safe Operating Procedures (SOP) will be developed for specific tasks to be undertaken to outline safe work practices for maintenance work on the trail network.

Material Safety Data Sheets (MSDS) will be available on site whenever chemicals are to be used with all appropriate handing and application risks identified in the particular Safe Working Method Statement.

Reference councils **Safe Operating Procedure Register** for specific documents prior to undertaking allocated tasks.

8.0 Conclusion

Importantly, whilst this document details the processes and protocols for weed and disease management, the process is dynamic and will need to be flexible in approach and methods. This document should be continually reviewed and updated to ensure the most appropriate protocols are in place.

Appendices

Appendix A: Weed and Disease Hygiene Washdown Planning Manuals Links

Title: -

Keeping It Clean: A Tasmanian Field Hygiene Manual to Prevent the Spread of Freshwater Pests and Pathogens. Allan, K. & Gartenstein, S. (2010). NRM South, Hobart.

Link: -

https://dpipwe.tas.gov.au/Documents/15130802_52keepingitcleanspreadswe.pdf

Title: -

Washdown Procedures for Weed and Disease Control. Edition 1. Rudman, T., Tucker, D. & French, D. (2004). Department of Primary Industries, Water & Environment, Hobart.

Link: -

https://dpipwe.tas.gov.au/Documents/Washdown-Guidelines-Edition-1.pdf

Title: -

Weed and Disease Planning and Hygiene Guidelines - Preventing the Spread of Weeds and Diseases in Tasmania. DPIPWE (2015). Department of Primary Industries, Parks, Water & Environment, Hobart.

Link: -
https://dpipwe.tas.gov.au/Documents/Weed%20%20Management%20and%20Hygiene%20Guidelines.pdf

Title: -

Interim Phytophthora Cinnamomi Management Guidelines. Rudman T. (2005). Nature Conservation Report 05/7, Biodiversity Conservation Branch, Department of Primary Industries, Water & Environment, Hobart.

Link: -

https://dpipwe.tas.gov.au/Documents/Interim-Phytophthora-Management-Guidelines.pdf

Appendix B: Hygiene Protocols for Vehicles and Heavy Machinery
Extract from: - Keeping It Clean: A Tasmanian Field Hygiene Manual to Prevent the Spread of Freshwater Pests and Pathogens. Allan, K. & Gartenstein, S. (2010). NRM South, Hobart.

Link: - https://dpipwe.tas.gov.au/Documents/15130802_52keepingitcleanspreadswe.pdf

Background
Passenger vehicles and heavy machinery (including trucks, tractors, mowers, slashers, trailers, backhoes, graders, dozers, excavators, skidders and loaders) are major vectors for the spread of soil borne fungal diseases such as Phytophthora cinnamomi (root rot) and terrestrial weeds.

As a minimum, apply the standard Check Clean Dry protocols to all your clothing, footwear, equipment, vehicles and heavy machinery before going into the field. Vehicles and heavy machinery that stay on formed and sealed roads have a low risk of spreading disease and weeds and on-site cleaning is not essential. However on-site vehicle washdown is particularly important when using vehicles and machinery off (sealed) roads.

Apply rigorous planning and hygiene protocols that include Disinfection when working in Phytophthora Management Areas, areas with endemic or threatened frog species or remote areas and where it is not possible to thoroughly dry vehicles, heavy machinery and equipment between sites. Ensure you Check, Clean, and Disinfect before you arrive and between sites.

Before going into the Field
- Consult with the relevant land manager to identify any specific hygiene protocols that apply to vehicles and machinery.
- Inspect vehicles and heavy machinery for mud, soil, plant material and debris and ensure they are clean and dry. Pay particular attention to the underside, tracks, rollers, tyres, wheel arches, guards, blades, bucket, other attachments, spare tyres, chassis, engine bay, radiator and grill, tray, cabin, foot wells, pedals, mats and seats.

Selecting a Field Washdown Site for Vehicles and Machinery
Vehicle/heavy machinery washdown is most effective where access can be controlled and entry points, roads or tracks are not open to general use. When selecting a washdown site, consider the following: -

- Washdown should be done at the point of departure from a previous operation, preferably at a designated washdown facility with a well-drained hard surface.
- Where there are large quantities of effluent or there is a risk of extensive run-off (e.g. during road construction), the washdown area should be bunded i.e. an impervious spill area constructed.
- Washdown at the edge of (or near) any areas where pests, weeds or pathogens need to be contained. Ideally choose a site where the land slopes gently away from the washdown area and back into the potentially infected area, or into an adjacent area not susceptible to the problem (e.g. a paddock).
- Select a site where the run-off will not enter a watercourse, waterbody or roadside drain: A buffer of at least 30m is required.

- Select a mud-free site (e.g. well grassed, rocky, gravel, bark or timber corded).
- Avoid sensitive vegetation or wildlife habitat e.g. remnant native vegetation and areas with threatened species.
- Mark or record washdown sites for the land manager to enable subsequent monitoring and weed control.

General Hygiene Procedures
For general vehicle/machinery cleaning, the following standards apply.

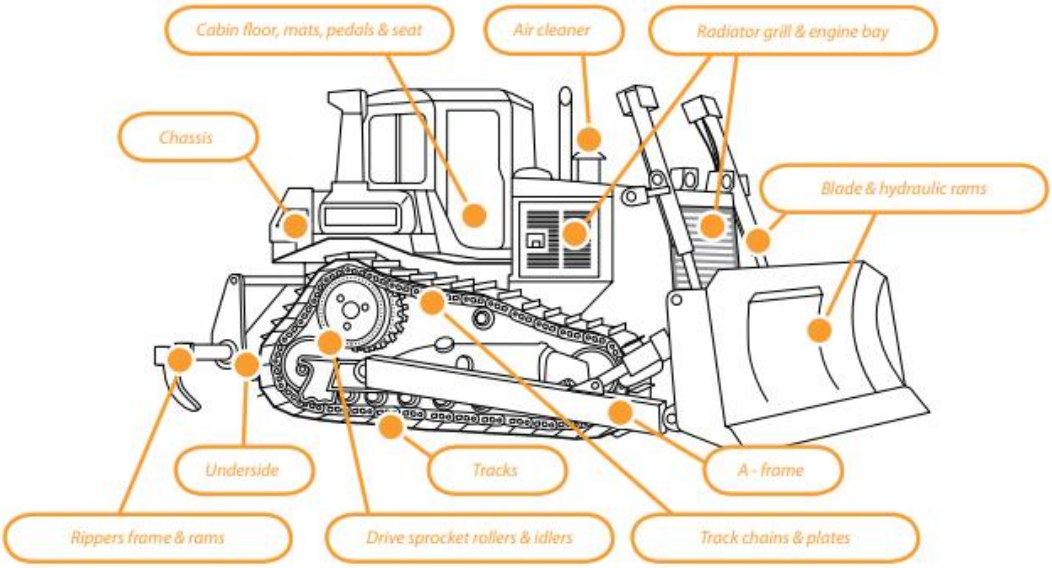
- Elevate heavy machinery with boom arm to enable underside to be accessed. Tyres can be placed under equipment to allow underside to dry.
- Remove any guards, covers or plates that can quickly and easily be removed and replaced.
- Check the vehicle inside and out for any lodged mud, soil, seeds, algae, plant and other debris or substrate material.
- Knock off large clods of dirt with a crowbar or stiff brush.
- Clean with a high-pressure hose and stiff brush or crowbar to further remove clods, starting from the top of the vehicle and working down to the bottom. Remember to clean undersides, tracks, rollers, tyres, wheel arches, guards, blades and buckets, chassis, engine bays, radiator and grill, tray, spare tyres and other attachments.
- When spraying with disinfectant solution be sure to only use the minimum amount of water needed to adequately disinfect all equipment and only add the amount of disinfectant required. Before adding disinfectant to tank release any surplus water (present in tank).
- Allow the disinfectant solution to remain in contact with surfaces for at least 1 minute and wherever possible allow vehicles and equipment to drip dry.
- Avoid driving through any cleaning water/waste,
- Clean the interior (including floor, foot wells, mats, pedals, seats, under seats), air cleaners, radiator grills and engine bays with vacuum, compressed air device or brush off.

No clods of dirt or debris should be present after washdown. If smeared soil stains or soil lodged in difficult-to-access areas remain then ensure these areas have been thoroughly treated with disinfectant solution and allowed to drip dry.

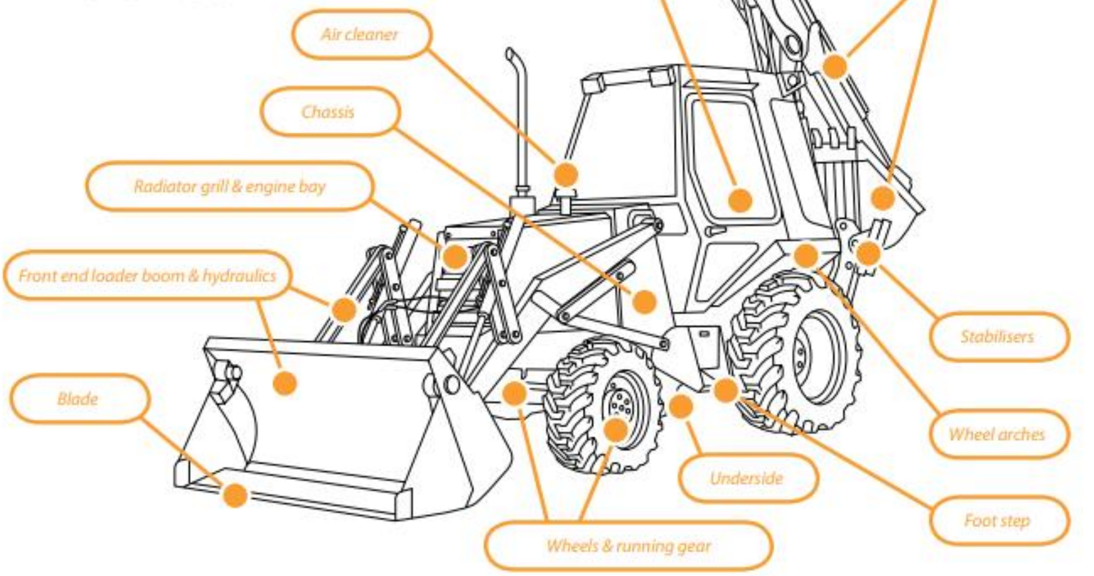
Portable Vehicle/Machinery Washdown Units
Mobile washdown units and/or small self-assembled systems are one option. A pump and high-pressure hose is the best means to remove all dirt and debris, particularly from places that are difficult to access. A shovel, crowbar and stiff brush are also needed to remove stubborn dirt. A blowdown device, compressor or portable blower can also be used along with a small brush to remove dry dirt (e.g. from air cleaner and radiators).

Designated Washdown Facility
Purpose built wash bays are the best option for cleaning large vehicles or machinery. These washdown facilities should have a well-drained hard surface and include effective effluent management systems to protect the environment. Commercial washdown facilities are available for vehicles and small trucks at most large towns. However onsite checking and cleaning of vehicles should be undertaken first, especially after working in contaminated.

BULLDOZER WITH KEY SPOTS TO CHECK AND CLEAN



BACKHOE WITH KEY SPOTS TO CHECK AND CLEAN



Appendix C: Inspection and Washdown Checklists

Vehicle Inspection and Washdown Checklist				
Date:		**Site:**		
Vehicle:		**Rego / Vehicle ID**		
Area	**Contamination Point**	**Inspected**	**Cleaned**	**Method**
Engine Bay	Front grill			
	Radiator and other cooling cores or fins			
	Grill or recess under wipers			
	Engine mounts			
	Top of gearbox			
	Battery recess/tray			
	Any recesses on engine or manifold			
	Air cleaner (including element)			
Cabin	Footwells			
	Carpets and mats			
	Seats and seat covers			
	Tool boxes			
	Air Vents			
Wheels and Arches	Tyre treads			
	Rims and wheel caps			
	Wheel arches			
	Mud flaps and brackets			
	Brakes			
Tray	Body of tray (especially recesses)			
	Framework (especially hollow tubing)			
	Around fuel caps			
	Tailgate cover			
Undercarriage	Chassis rails			
	Struts and stabilisers			
	Steering components			
	Axels and differentials			
	Spare tyre and mounts			
	Guards			
	Fuel tanks(s)			
Attachments	Bull bar			
	Winch			
Cleaning methods:	Mechanical (M) High Pressure Water (HPW)	Compressed Air (CA) Low Pressure Water (LPW)	Vacuum (V)	
Inspected By:		**Signed:**		
Cleaned By:		**Signed:**		

Excavator Inspection and Washdown Checklist				
Date:		**Site:**		
Vehicle:		**Rego / Vehicle ID**		
Area	**Contamination Point**	**Inspected**	**Cleaned**	**Method**
Engine Bay	Engine bay floor			
	Fan shroud and radiator core			
	Air filters (shake or tap filters to determine if clean)			
	Glacier plate			
Cabin	Footwells			
	Carpets and mats			
	Seats and seat covers			
	Tool boxes			
	Air vents			
Excavator Body	Hollow sectioned chassis channels			
	Hose channels			
	Counterweight void spaces			
	Removable track adjuster guards and lubrication points			
	Turret pivot area			
	Arms/boom pivot points			
	Tracks			
Bucket/blade	Between teeth of adapters			
	Wear plates			
Rear blade (stabiliser)	Wear plates			
	Hollow sectioned arms			
	Hollow sectioned blade			
Cleaning methods:	Mechanical (M) High Pressure Water (HPW)	Compressed Air (CA) Low Pressure Water (LPW)	Vacuum (V)	
Inspected By:		**Signed:**		
Cleaned By:		**Signed:**		

Wheeled Loaders and Compactors Inspection and Washdown Checklist			
Date:		**Site:**	

Vehicle:		**Rego / Vehicle ID**		
Area	**Contamination Point**	**Inspected**	**Cleaned**	**Method**
Engine Bay and Running Gear	Air cleaner and air filters			
	Air conditioner unit			
	Under and around removable fuel cells			
	Brake assemblies			
Cabin	Hollow channels			
	Void space between cab and body			
	Footwells			
	Carpets and mats			
	Seats and seat covers			
Body	Feet of adaptors on compactors			
	Hydraulic points			
	Articulation points of hydraulics			
	Counterweight void spaces			
	Between duel wheels			
Bucket/blades	Between teeth of adapters			
	Wear plates			
Cleaning methods:	Mechanical (M) High Pressure Water (HPW)	Compressed Air (CA) Low Pressure Water (LPW)	Vacuum (V)	
Inspected By:		**Signed:**		
Cleaned By:		**Signed:**		

Dump / Tipper Truck Inspection and Washdown Checklist			
Date:		**Site:**	
Vehicle:		**Rego / Vehicle ID**	

Area	Contamination Point	Inspected	Cleaned	Method
Engine Bay and Running Gear	Air cleaner			
	Air conditioner unit			
Cabin	Footwells			
	Carpets and mats			
	Seats and seat covers			
	Behind and under seats			
	Tool boxes			
	Air vents			
Body	Hollow channels in tray frame			
	Between dual wheels (if applicable)			
Cleaning methods:	Mechanical (M) High Pressure Water (HPW)	Compressed Air (CA) Low Pressure Water (LPW)	Vacuum (V)	

Inspected By:		**Signed:**	
Cleaned By:		**Signed:**	

Excavator Inspection and Washdown Checklist			
Date:		**Site:**	
Vehicle:		**Rego / Vehicle ID**	

Area	Contamination Point	Inspected	Cleaned	Method
Engine Bay	Check radiator core and engine area for			

	residues.			
	Remove and check the air filter/cleaner (these often require destruction where they are clogged with QRM).			
	Check carefully the void space between the oil and radiator cores.			
	Battery Box - Lift/remove the battery to check for contamination (battery box may be at side/rear or under seat).			
Cabin	Check externally under and around driver’s cab.			
	Check under mats in cab.			
	Remove/lift seat; remove/lift floor pans to allow checking to top of transmission.			
	Check air conditioner filter (if fitted) – shake/tap filter to check if clean.			
	Check externally under and around driver’s cab.			
	Check under mats in cab.			
Body	Belly plates should be removed to allow inspection and cleaning.			
	Rear plates at back of dozer should be removed to allow inspection and cleaning.			
	Hydraulic cover plates should be removed to allow inspection and cleaning.			
Tracks / Track Frame	Examine tracks carefully.			
	Ensure inspection/cover plates are removed to allow inside track area.			
	Check idler wheels (these support the tracks).			
Fuel Cells	Are removable therefore dirt etc can pack between the tank and the frame.			
Blade	Ensure that edge of blade top/bottom is not split – this allows soil to be packed very tightly in the hollow.			
	Check cutter points/wear blades			
	Check carefully the pivot points and adaptors at the rear of the front blade – these allow the blade to change height and angle. Sometimes soil has compacted and is difficult to dislodge.			
	Check trunction arms			
	Check all hollow sections			
Ripper Support	Frame is usually hollow. Check carefully if any contaminants have entered this section. The tynes may need to be removed.			

Tynes	Tynes need careful inspection. Contamination may often be removed by water blasting, but tynes may need to be removed in some cases.			
Ripper Points	A pin holds on the ripper points. Dirt can compact under the ripper points.			
All Areas	Check if any sections or channels are hollow and determine if there is a possible entry point for contamination. Check if plates are covering a compartment or space that may have collected dirt/trash.			
Cleaning methods:	Mechanical (M) High Pressure Water (HPW)	Compressed Air (CA) Low Pressure Water (LPW)	Vacuum (V)	
Inspected By:		**Signed:**		
Cleaned By:		**Signed:**		

Small Engine Tools, Hand Tools, and Clothing Inspection and Washdown Checklist				
Date:		**Site:**		
Area	**Contamination Point**	**Inspected**	**Cleaned**	**Method**
Motorised Wheelbarrows	Inside the tub foil soil residues			
	Around tyres and wheels or tracks			
	Underneath tub			
	Axles and running gear			
	Air filter / intake			
	Handles			

Chainsaws	Bar and chain			
	Bumper spikes			
	Side casing			
	Front and rear handles, and chain brake			
	Base plate			
Brushcutters	Cutting blade / head			
	Underneath guard			
	Air filter / intake			
	Handles			
	Underneath engine housing			
Rake Hoes and Shovels	Check blades / head			
	Connection of handles with head (small cavities can fil with soil)			
	Handles			
Hand Saws, Secateurs, Loppers	Handles			
	Blades and hinges			
Clothing	Boots			
	Gaiters			
	Socks			
	Pants / Trousers			
	Shirts and jackets			
	Gloves			
	Hat			

Cleaning methods:	Mechanical (M) High Pressure Water (HPW)	Compressed Air (CA) Low Pressure Water (LPW)	Vacuum (V)

Inspected By:		**Signed:**	
Cleaned By:		**Signed:**	

Appendix D: Ride Clean Collateral (NRM South)

WHEN YOUR BIKE IS COVERED IN MUD IT'S A NO-BRAINER THAT WASHING IT WILL MAKE IT RUN BETTER AND LAST LONGER.

But there's a bigger picture to consider. Mud can carry a whole bunch of microscopic nasties - pests, pathogens and weeds seeds that have the potential to devastate the bushland areas we love to ride in.

In fact, one drop of contaminated moisture from your bike is enough to put a pristine area at risk. There's a fungus called Chytrid that kills entire frog populations.
An introduced algae called Rock Snot has already destroyed waterways in New Zealand.
And a water mould called Phytophthora kills the roots of plants.

If you stick to the one area all the time then there's little risk of spreading unwanted organisms elsewhere. But if you're into long rides, or dragging your bike to different trails by car, then it's crucial that you don't unwittingly carry an unwanted hitchhiker between rides. Make sure your bike and gear are spotless each time you ride in a new place.

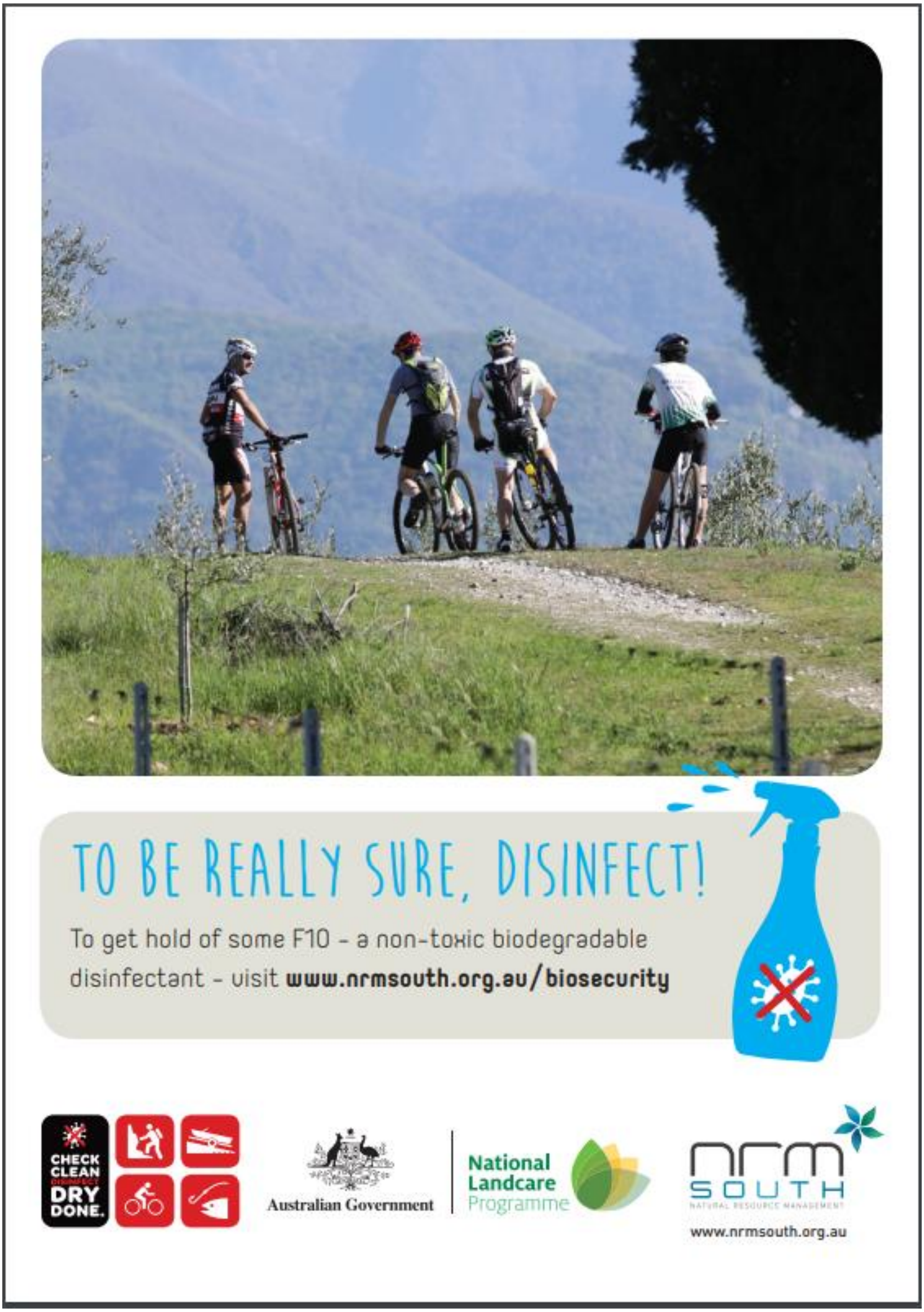
I'M NOT A MONSTER – HOW DO I DO MY BIT?

1. **Wash your bike using a gentle water spray and a biodegradable detergent.** (Don't use high-pressure spray – it can ruin your delicate seals). Pay attention to all the nooks and crannies, including under the saddle, cable guides, wheel hubs, suspension mounts, pedal clips, brake and gear levers, water-bottle holder ... Use a chain-cleaning brush to get into the spaces between the chain rings, and make sure the chain itself is clean. Don't forget your shoes, gloves, backpack, and anything else that can collect mud.

2. **Ask yourself whether the bike is likely to dry out completely before your next ride.** Most of the organisms we're worried about can't live without water, so the longer you give your bike to dry out the better. If you're likely to ride again before your bike can dry, spray the bike with F10, a non-toxic biodegradable veterinary disinfectant. Tackle all the little hidey-holes where water is likely to get stuck.

3. **Re-lube your chain and cassette.** A clean drive train repels mud and is easier to clean after a ride. Make sure your pedal threads and saddle post have a smidge of grease too.

KEY SPOTS TO CHECK & CLEAN


TO BE REALLY SURE, DISINFECT!
To get hold of some F10 - a non-toxic biodegradable disinfectant - visit www.nrmsouth.org.au/biosecurity
CHECK CLEAN DRY DONE.
Australian Government
National Landcare Programme
nrm SOUTH
www.nrmsouth.org.au

Appendix E: Weed Control Techniques

The most cost effective and successful weed control is achieved through an integrated weed control program, using a number of complementary methods together to achieve sustainable, long-term weed control.

Chipping

Chipping with a mattock or similar tool to manually chip out weeds is very effective for smaller weed infestations. When chipping, it is important to minimise soil disturbance to avoid stimulating the weed seed bank. Ideally, chipping should be undertaken when weeds are not in seed to minimise accidental spread. Chipped weeds are normally left to rot in the paddock.

Hand Pulling

Hand pulling weeds can be done at any time of the year, however, it is easiest when the soil is soft just after rain. Care needs to be taken to extract the whole plant and root system because many plants can regenerate from root fragments left in or on the ground. Hand-pulled weeds can be disposed of in the same way as chipped weeds.

Cultivation and Ploughing

Cultivation and ploughing are effective means of weed control and are usually used as a preparation for sowing or planting pastures and crops.

Grooming

Grooming is carried out by a specialised machine or an attachment on an excavator. Groomers are commonly used to mulch large woody weed infestation, such as gorse and hawthorn, minimising soil disturbance and the use of chemicals. This technique is usually followed up with spot-spraying of any regrowth. Ideally, this technique should be undertaken in stages and the weed infestation substituted with native vegetation in order to replace lost habitat for native animals.

Brush-cutting / Slashing

Brush-cutting or slashing is used primarily to reduce overall weed cover or as a short-term measure to stop seed-set on a particular weed. Any resulting re-growth will need to be followed up with weed control, e.g spraying, grazing.

Chemical Treatment

Used correctly, herbicides can be a very effective tool to control weed infestations. It is important to select the most appropriate chemical for your circumstances. Selective herbicides only target weeds with a certain characteristic, e.g. broad leaves, leaving grasses unaffected. This is very useful when dealing with broadleaved weeds in pasture or areas of native grass. Non-selective herbicides will control a wide variety of weeds.

There are a variety of chemical application techniques used for weed control. It is important to consider the target weed and desired outcome before selecting your technique. Be aware that the risk of weeds developing herbicide resistance is increased if the same chemical is used repeatedly on the same weed in the same location. It is advisable not only to vary the herbicide used but also the control method as part of an integrated control program. Spot spraying can be undertaken using a hand-held spray unit, backpack, or large or small tanks fitted to a quad-bike, ute or trailer. An applicator such as a gun or a wand is used to direct the spray onto the target plant.

Spot Spraying: Spot spraying is suitable for small outbreaks of weeds or when applying herbicide amongst desirable plants such as improved pasture or native vegetation. Foliar spraying is a form of spot spraying typically used on larger woody weeds such as gorse, blackberry and hawthorn (this weed is mainly cut & paint, or drill/fill) Perhaps use Broom species or Spanish Heath.

Boom Spraying: Boom spraying requires specialised equipment fitted to a quad-bike or tractor, and is used for the application of herbicide on dense infestations of weeds or on large areas of weed infestation. Boom spraying is often undertaken prior to pasture renovation or cropping.

Cutting and Painting: Cutting and painting is generally performed on trees and shrubs with smaller trunks and stems using secateurs, loppers, handsaw or chainsaw. The main stem of the plant must be cut as close as possible to ground level to prevent potential suckering. To ensure the plant takes up the herbicide, paint the stump with undiluted herbicide within 15 seconds of the initial cut. If this procedure takes longer or the surface becomes contaminated with dirt, it may be necessary to re-cut or scrape the cut surface before applying the herbicide. A paint brush, atomiser or sponge can be used to apply the herbicide.

Drilling, Frilling and Filling: Drilling, frilling and filling is generally performed on trees and shrubs with thick trunks or where habitat for fauna needs to be maintained. Using a cordless, electric drill or hand drill, holes are made into the trunk on an angle 2-3cm deep and 5-10cm apart around the circumference. Alternatively, a hammer and chisel, an axe or tomahawk can be used to create wounds around the trunk. This technique is called ‘frilling and filling’.

Within 15 seconds of the holes being drilled, or the frills being made, undiluted herbicide is injected/poured into each hole. To avoid suckering, the holes must be as close to the base of the plant as possible. It is important to treat every stem/trunk originating from the ground to prevent re-growth. Large multi-stemmed trees may also require the main branches to be drilled/frilled and filled. Deciduous trees should only be treated when they are actively growing, i.e. during spring and summer to ensure the plant takes up the herbicide.

Stem Scraping: Stem scraping is a technique that is often used on vines or when trees are growing horizontal to the ground, preventing drilling or frilling around the entire truck. Simply scrape back the bark using a chainsaw or hand-tools, then apply herbicide as described for ‘cutting and painting’. There are a variety of non-chemical and nonmechanical weed control methods which can be used as part of a sustainable, integrated weed control program.

Solarisation
Solarisation involves laying sheets of black plastic over weed infestations and letting the sun effectively ‘cook’ the plants. Best results are achieved on weeds growing in full sun; however, the sheet of plastic will need to remain securely in place for some time.

Mulching

Mulching with a 10 cm layer of mulch will help reduce the chance of weed seeds germinating. Securely placed old carpet or underlay, or a thick layer of newspaper, pre-soaked in water, can also be an effective way to smother weeds.

Biological Weed Control

Biological weed control using a biological control agent is an effective way to reduce the size and density of large weed infestations. Biological control should be viewed as a long-term weed control method that must be used in conjunction with other control techniques for an effective outcome. Results can sometimes take long periods of time before they become obvious.

Biological control has the benefit of reducing the amount of chemicals required, minimising environmental impacts and reducing costs. All biological control agents must undergo stringent testing to ensure there are no detrimental impacts on agriculture or the environment.

Fire

Fire can be used to control and suppress weeds, however, should only be used as a last resort because of the inherent risk of using fire. It generally does not kill the targeted weed, but is primarily used to reduce the overall cover of weeds and the need for large amounts of chemical.

Fire can also be used to deliberately stimulate germination of weed seeds in the soil. The resulting new weed growth must then be controlled with follow-up weed control. It is important to note that using fire as a weed control technique may risk damaging or destroying all vegetation, including desirable plants, and can result in re-invasion of weeds.

Competition or Replacement

One of the most effective weed control techniques is to prevent or minimise weed invasion by providing competition with desirable plants, e.g. pasture or native vegetation. Implementing replacement and management techniques is a long-term, cost effective and sustainable approach to weed management, and can enhance and protect natural resources. Providing competition will also ensure valuable resources such as water and nutrients are unavailable to weeds.

Revegetation

When controlling large infestations of weeds, particularly woody weeds such as gorse and blackberry, it is important to undertake it in stages. This allows the woody weeds to be substituted with native vegetation, replacing valuable habitat for native animals. Replacing woody weeds also provides valuable competition against re-invasion of weeds.

Follow-up

To achieve successful weed control, regular monitoring of treated areas must be undertaken for any re-growth or new germinations of weeds. New outbreaks of weeds must be controlled before they have a chance to reproduce and re-infest the site. Monitoring and follow-up weed control may need to occur for many years in order to eliminate an infestation completely.

Appendix F: Weed Inspection Record Sheet (Draft) (also in the Trail Maintenance Plan)

Weed Inspection Record Sheet					
Date		**Inspected By**		**Landowner**	
				GTC	BBA
				PWS	Crown
Trail Name	**Weed Identified (or suspected)**		**Repair / Solution / Required Tools**		
Location on Trail					
	Risk Rating	Low	Medium	High	Extreme
Date		**Inspected By**		**Landowner**	
				GTC	BBA
				PWS	Crown
Trail Name	**Weed Identified (or suspected)**		**Repair / Solution / Required Tools**		
Location on Trail					
	Risk Rating	Low	Medium	High	Extreme
Date		**Inspected By**		**Landowner**	
				GTC	BBA
				PWS	Crown
Trail Name	**Weed Identified (or suspected)**		**Repair / Solution / Required Tools**		
Location on Trail					
	Risk Rating	Low	Medium	High	Extreme
Date		**Inspected By**		**Landowner**	
				GTC	BBA
				PWS	Crown
Trail Name	**Weed Identified (or suspected)**		**Repair / Solution / Required Tools**		
Location on Trail					
	Risk Rating	Low	Medium	High	Extreme

Risk Ratings	
Low	Weed located outside the 20m trail corridor or 15m perimeter of the trail head areas Rectification required within 4 weeks (20 working days).
Medium	Weed located within the 20m trail corridor or 15m perimeter of the trail head areas. Rectification required within 2 weeks (10 Working days).
High	Weed located within 1.5m of the trail tread or high-trafficked area (bike, pedestrian or vehicle). Rectification required within 1 week (5 Working days).
Extreme	Weed located within the immediate trail tread or high-trafficked area (bike, pedestrian or vehicle). Rectification required immediately.

Appendix G: Generic CEMP (Construction and Environmental Management Plan)

(Not yet developed)

Appendix H: Herbicides for Weed Control

Source of Information

All information listed in Appendix D was collected from ***https://dpipwe.tas.gov.au/invasive-species/weeds/weeds-index***

Disclaimer

These herbicide recommendations are made subject to the product being registered for that purpose under relevant legislation. It is the user's responsibility to check that registration or an off-label permit covers the proposed use. Always read the herbicide label.

If in doubt, check with the Registrar of Chemical Products - 1300 368 550 (local call cost in Tasmania).

Wetting agents

Most herbicides require a wetting agent for best results. Carefully consult the product label for specific directions regarding any adjuvants.

Waterways and wetlands

Be careful! Many herbicides can cause damage to waterways and wetlands. Check the herbicide label directions carefully before use near waterways and wetlands. For more information see Guidelines for Safe and Effective Herbicide Use Near Waterways.

Herbicide brands

Herbicides are referred to by the active chemical ingredient in the following tables. Information on available brands containing the herbicide you require should be obtained from a reputable herbicide supplier.

Herbicides for Weed Control - Gorse				
Herbicide (active ingredient)	**Commercial products (concentration of active ingredient)**	**Rate of commercial product per litre of water**	**Withholding period**	**Comments**
Foliar (leaf) application				
Triclopyr+ **Picloram + Aminopyralid	Grazon Extra (300 g/L + 100 g/L + 8g/L)	2.5 ml (bushes 1-1.5 m tall) 3.5 ml (bushes > 1.5 m tall) 5 ml	nil	Use in spring to early summer treatments only: add a 100% concentrate non-ionic surfactant at 1ml per litre of water for best results. Autumn Treatment: add a 100% concentrate non-ionic surfactant at 1ml per litre of water for best results. Winter treatment only: Brownout may not be complete until summer. Add a 100% concentrate non-ionic surfactant at 1ml per litre of water for best results. **Picloram is soil-residual, hindering the re-establishment of clovers and other broadleaved plants for up to twelve months. In dense stands, access paths should be cleared to allow complete coverage. Regrowth needs to be around 50 - 100 cm high before follow-up treatment. Does not affect grasses, will damage clovers and other broadleaved plants including surrounding trees.
Triclopyr + **Picloram	Grass-up™ (300g/L + 100g/L)	2.5 ml (bushes 1-1.5 m tall) 3.5 ml (bushes > 1.5 m tall)	nil	Use in spring to early summer treatments only: add a 100% concentrate non-ionic surfactant at 1ml per litre of water for best results. Autumn Treatment: add a 100% concentrate non-ionic surfactant at 1ml per litre of water for best results. Winter treatment only: Brownout may not be complete until summer. Add a 100% concentrate non-ionic surfactant at 1ml per litre of water for best results. **Picloram is soil-residual, hindering the re-establishment of clovers and other broadleaved plants for up to twelve months.

		5 ml		In dense stands, access paths should be cleared to allow complete coverage. Regrowth needs to be around 50 - 100 cm high before follow-up treatment. Does not affect grasses, will damage clovers and other broadleaved plants including surrounding trees.
Triclopyr	Garlon 600 (600 g/L)	1.7 ml - 3.4 ml	nil	Apply from spring to mid-summer. Does not affect grasses, will damage clovers and other broadleaved plants including surrounding trees. Use the higher rate on older plants. Preferred to triclopyr + **picloram mixture in urban or horticultural areas, and near waterways/wetlands.
*Metsulfuron-methyl	Brush-Off (600 g/Kg)	0.1 - 0.15 g	nil	APVMA Off-Label permit - PER84775. Suitable for bushes up to 2 m tall. Does not affect grasses, will damage clovers and other broadleaved plants including surrounding trees. Metsulfuron-methyl is soil-residual, hindering the re-establishment of clovers and other broadleaved plants for up to twelve months.
Glyphosate	Roundup Biactive (360 g/L) Glyphosate 360 (360 g/L)	10 - 15 ml	1 day	Apply all year round but only if actively growing. Non-selective and will affect grasses, clovers and most broadleaf plants.
Ammonium thiocyanate	Amitrole T® (220 g/L)	20 ml	Orchards and vines - 56 days Other areas - nil	Apply during summer or before full flowering. Non-selective and will affect grasses, clovers and most broadleaf plants. Use in restricted spraying areas. Apply to bushes up to 2 m tall. Respraying will be necessary.
Glyphosate+Metsulfuron-methyl	Trounce® (835 g/L + 10 g/L)	1.7 g	nil	Actively growing (except spring). Use in restricted spraying areas. Use surfactant as directed by label.
**Note: picloram remains active in soil for extended periods and may leach into groundwater Source: - https://dpipwe.tas.gov.au/invasive-species/weeds/weeds-index/declared-weeds-index/gorse/gorse-herbicides-for-control				
Cut-stump application				
Herbicide (active ingredient)	**Commercial products (concentration of active ingredient)**	**Rate of commercial product per litre of**	**Withholding period for use**	**Comments**

		water	in pasture	
Glyphosate	Roundup Biactive (360 g/L) Glyphosate 360 (360 g/L)	1 litre	nil	Use when plants are actively growing. Apply immediately (within 15 seconds) after top growth removal.
*Triclopyr	Garlon 600 (600 g/L)	1:60 in diesel	nil	For cut-stump treatment. Apply immediately (within 15 seconds) after top growth removal; (APVMA Off-Label permit - PER84775).
**Picloram	Vigilant® Herbicide Gel 43 g/kg	3 - 5 mm thick layer 5 mm	nil	Stems up 20 mm diameter. Stems greater than 20 mm diameter. In the case of multi-stem plants treat at least 80% of stems including main stems.

**Note: picloram remains active in soil for extended periods and may leach into groundwater.

*These products are not registered for this application method in Tasmania and will not be mentioned on product labels, however Permit Number – PER84775 issued by the Australian Pesticides & Veterinary Medicines Authority has been issued for this specific use. If using this method and herbicide you will require a copy of this off-label permit.

Source: - https://dpipwe.tas.gov.au/invasive-species/weeds/weeds-index/declared-weeds-index/gorse/gorse-herbicides-for-control

Herbicides for Weed Control - Boneseed

Foliar spray application

Stage of Growth	Herbicide (active ingredient)	Example of commercial product (concentration of	Application rate of commercial product	Withholding period	Comments

		active ingredient)			
Seedlings	Bromoxynil		160 mL per 100 L water Plus adjuvants in accordance with label as required	14 days	**Pastures, Roadsides and Right-of-Ways** Seedlings only. Apply when actively growing. Ensure an overall spray coverage.
Actively growing to mature	Glyphosate 360 g/L	Roundup® 360 g/L	Knapsack 75 mL or 150 mL in 15 L or **high volume** 500 mL or 1000 mL / 100 L of water		**Non-agricultural areas** (refer label). Spray to wet all foliage. Use higher rate on bushes over 1.5m tall. Do not spray during periods of drought. Best treated at peak flowering during winter.
	Glyphosate ***** 360 g/L (where product has an aquatic registration)	Weedmaster Duo ® 360 g/L Roundup Biactive® 360 g/L	10-13 ml/L Plus adjuvants in accordance with label as required		**Non-cropping and bushland** In accordance with APVMA Permit PER84775 Spot spraying Use lower rate on young bushes. Spray to wet all foliage. Do not spray during hot, dry conditions.
	Glyphosate	Roundup Power Max® 540 g/L	330 - 660m L/L of Water		**Non-agricultural areas** (around buildings, commercial and industrial areas, domestic and public service areas, right-of-ways). Higher rate to bushes over 1.5 m. Apply as a thorough foliage spray when bushes are in full leaf and actively growing
	Metsulfuron-methyl,	Associate®, Brush-off® 600 g/Kg	10 g in 100 L water		**Native pastures, rights of way, commercial and industrial areas** Legumes in the pasture will be damaged Add surfactant/ wetting agent in accordance with product label. Apply to point of run-off. Minimise contact with desirable plants.
	Metsulfuron-methyl, *	Associate®, Brush-off® 600 g/Kg	10 g in 100 L water		**Non cropping and bushland** In accordance with APVMA Permit PER84775 Spot spraying / knapsack Add surfactant/ wetting agent in accordance with product label.
	Metsulfuron- methyl + glyphosate*	various concentrations	10g Metsulfuron-methyl & 200mL Glyphosate 360 per 100 L		**Non cropping and bushland** In accordance with APVMA Permit **PER84775** Spot spraying / knapsack Add surfactant/ wetting agent in accordance with product label.

	Triclopyr, * Picloram **	Conqueror® (300 g/L, 100 g/L)	Foliar spray 350 - 500 mL/ 100 L of water		**Non cropping and bushland** Spot spray / knapsack application In accordance with APVMA Permit PER84775
	Triclopyr*	Garlon 600 (600 g/L)	170 mL/ in 100 L of water		**Non cropping and bushland** Spot spray / knapsack application In accordance with APVMA Permit PER84775
**Note: Picloram remains active in the soil for extended periods and may leach into groundwater. https://dpipwe.tas.gov.au/invasive-species/weeds/weeds-index/declared-weeds-index/boneseed/boneseed-herbicides-for-control					
Drill axe, cut stump and basal bark application					
Stage of Growth	**Herbicide (active ingredient)**	**Example of commercial product (concentration of active ingredient)**	**Application rate of commercial product**	**Withholding period**	**Comments**
Actively growing to mature	Glyphosate* 360 g/L (where product has an aquatic registration)	Weedmaster® Duo 360 g/L Roundup Biactive® 360 g/L	drill axe 2 ml undiluted per hole/cut		**Non cropping and bushland** **In accordance with APVMA Permit PER84775**

	Glyphosate* 360 g/L (where product has an aquatic registration)	Weedmaster® Duo 360 g/L Roundup Biactive® 360 g/L	cut stump 1:5 - undiluted.		**Non cropping and bushland** **In accordance with APVMA Permit PER84775** **Trees and shrubs generally. Undiluted for blackberry, bulbs and hard to kill weeds.**
	Picloram ** 43g/kg.	Vigilant® Herbicide gel	cut stump Direct application of gel as per label		**Home use: native vegetation, conservation areas, gullies, reserves and parks** **Do not use if rain likely to fall within 12 hours of application.** **Avoid use over or near desirable plants, or in areas where their roots may extend or where the chemical may be washed or moved to their roots.**
	Triclopyr*	Garlon 600® (600 g/L)	cut stump 1:60 with diesel distillate		**Non cropping and bushland** **In accordance with APVMA Permit PER84775** **Cut stump method:** **Apply immediately after cut is made.**
	Triclopyr * 240 g/L, Picloram ** 120 g/L.	Access	cut stump 1 litre per 60 litres diesel distillate		**Non cropping and bushland** **In accordance with APVMA Permit PER84775** **Cut stump method:** **Apply immediately after cut is made.**

**Note: Picloram remains active in the soil for extended periods and may leach into groundwater.

* These products are not registered for this application method in Tasmania and will not be mentioned on product labels, however Permit Number - PER84775 issued by the Australian Pesticides & Veterinary Medicines Authority has been issued for this specific use. If using this method and herbicide you will require a copy of this off-label permit.

https://dpipwe.tas.gov.au/invasive-species/weeds/weeds-index/declared-weeds-index/boneseed/boneseed-herbicides-for-control