Site Environmental Management Plan

Kosciuszko Flow Trail Realignment, Little Beauty Jumps Bypass and Wombat Walk Connector Mountain Bike Trails

Thredbo Alpine Resort
Kosciuszko National Park, NSW

January 2024

Document Control

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A	21.11.2023	Draft	C.Chalk	K.Delpit
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Kosciuszko Thredbo Pty Ltd
1 Friday Drive, Thredbo, New South Wales 2625
www.thredbo.com.au

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1 Introduction

This Site Environmental Management Plan (SEMP) has been prepared for implementation by Kosciuszko Thredbo Pty Ltd (KT) (and its contractors) for the Kosciuszko Flow trail realignment, Little Beauty Jumps Bypass and Wombat Walk Connector mountain bike trails (the Project).

The Project will comprise:

- Vegetation clearing;
- Construction of mountain bike trail, including earthworks and installation of platform; and
- Rehabilitation works.

This SEMP outlines how construction activities for the Project are to be managed in order to maintain and protect the environmental values of the Project site and surrounds. The objectives of this SEMP are to:

- Provide mitigation measures to minimise the potential for environmental harm and/or environmental nuisance.
- Provide guidance for the development of detailed construction environmental management plans.
- Ensure all Project Personnel understand individual roles and responsibilities.
- Provide corrective actions to be implemented in the event of environmental harm and/or environmental nuisance. and
- Ensure Project personnel understand incident and emergency response procedures.

2 Reference Documentation

2.1 Legislation & Approval Requirements

The Project will be carried out in accordance with the applicable legislative requirements outlined in the following Acts and subordinate legislation:

- *Environment Protection and Biodiversity Conservation Act 1999 (Cwlth)*;
- *Biodiversity Conservation Act 2016*;
- *Environmental Planning and Assessment Act 1979*;
    - Development Consent is required under the EP&A Act
- *Environmentally Hazardous Chemicals Act 1985*;
- *Heritage Act 1977*;
- *National Parks and Wildlife Act 1974*;
- *Protection of the Environment Operations Act 1997*;
- *Waste Avoidance and Resource Recovery Act 2001;*
- *Water Management Act 2000*
    - A Controlled Activity Approval is required under the WM Act.
- *Work Health and Safety Act 2011.*

2.2 Guidelines

- Guideline for the Preparation of Environmental Management Plans (DIPNR 2004)
- Managing Urban Stormwater: Soils and Construction, Volume 1, 4th Edition (Landcom 2004)

- Managing Urban Stormwater: Soils and Construction, Volume 2A, Installation of services (NSW DECC 2008)
- Interim Construction Noise Guidelines (DECC 2009)
- NSW EPA Waste Classification Guidelines (NSW EPA 2014)

2.3 Procedures & Policies

The following Kosciuszko Thredbo procedures and guidelines apply to the Project:

- Construction Site Incident and Emergency Procedures Thredbo Village, version 1.1 (KT045)
- Emergency Response Spill Procedure, version 1 (KT074)
- Standard Operating Procedure: Use and Maintenance of Wash Down Bay (KT055), 2019
- Bushfire Danger Period Policy (KT021), version 2

3 Project Description

3.1 Project Location

The Project site is located within Thredbo Alpine Resort (Thredbo), Kosciuszko National Park (KNP), approximately 35 kilometres (km) south-west of Jindabyne, New South Wales (NSW). The site is within the Thredbo Head Lease Area, on land formally described as Lot 876 DP1243112.

The Flow Trail Realignment commences at the top of the Little Beauty Jumps Park and traverses the native vegetation adjacent to the jumps park and Lower Supertrail ski run.

The Wombat Walk Connector starts on the Flow trail on the edge of the tree island (skiers right) of Milk Run ski run, follows the existing Wombat Walk access track onto the Village Loop and Home Run trails, then down to the base of Snowgums chairlift at Valley Terminal via the lower section of Lovers Leap and Sundance ski runs.

4 Construction Management Details

4.1 Construction Timing

Construction is planned for January/February 2024 during the resort “summer construction period” (generally after the October long weekend and end no later than 30 April the following year), with finishing of rehabilitation and stabilisation works up until 30 May, or as otherwise approved.

Works must not commence when snow is located in the project area corridor and machinery must not be used to remove snow from areas containing native vegetation.

4.2 Work Hours

Works will be carried out in accordance with the hours specified in the Development Consent.

4.3 Site Access

During construction, the Development site will be accessible via the summer mountain access road.

No temporary diversions or closures of existing trails will be required during construction of the Development.

4.4 Vehicles, Machinery and Equipment

Machinery, plant and equipment will likely include (but not limited to):

- mini excavator;
- motorised wheelbarrows;
- quad bikes;
- dump trucks (to and from stockpile sites);
- 4 WD vehicles;
- side-by-side vehicles; and
- handtools (i.e. chainsaws and brush-cutters).

The tread width of on-ground machinery used in trail construction must not exceed 1,500 millimetres (mm).

4.5 Flexible Construction Corridor

The construction corridor for the Project comprises 10 m either side of the ground-truthed alignment, except for the areas where a separation of 15 m is required from 'no-go' areas identified on the site plans in **Appendix A**.

4.6 Trail Corridor and Disturbance

The width of the MTB trail corridor must not exceed 3 m at any location, with an average disturbance width not exceeding 2.5 m.

The trail corridor disturbance for the Flow Trail Realignment is approximately 1,000 m^2 (400 m long x 2.5 wide). The trail corridor disturbance for the Wombat Walk Connector is approximately 1,732.5 m^2 (693 m long x 2.5 wide).

The combined trail corridor disturbance for the Project is 2,732.5 m^2 (0.27 ha). The approximate area of native vegetation disturbance is 1,300 m^2 (0.13 ha).

4.7 Construction Activities

Pre-construction activities will comprise:

- establishment of site boundary;
- marking significant vegetation to be retained and no-go zones;
- erection of site signage and traffic controls;
- flagging exact trail alignment using pin flags to mark the edges of the trail for construction; and
- mobilisation of machinery, equipment and construction materials to site.

Construction activities will comprise:

- vegetation clearing (50 m increments) within the trail corridor to expose bare earth
    - excess cut vegetation to be spread into the surrounding heath and used for rehabilitation of exposed soil on the trail edges
    - topsoil and vegetation sods are to be stockpiled close to the trail tread;
- cut into the slope using a mini excavator and excavate the soil to achieve the appropriate depth of bench;
- remove loose rocks, roots and compact the trail;

- back slope the batter, ensuring outslope and appropriate drainage;
- define the trail line using rocks, logs and other obstacles;
- installation of platforms where required; and
- re-instate the verge areas, topsoil and preserved vegetation sods.

Post-construction activities will comprise:

- rehabilitation in accordance with the *Detailed Rehabilitation and Monitoring Plan*;
- demobilisation of plant and machinery; and
- site clean-up.

4.8 Adverse Weather Contingencies

Adverse weather events (e.g. high winds, thunderstorms, heavy rain, hail, snow, bushfire and high temperatures) have the potential to negatively impact upon construction activities. To ensure appropriate consideration of such events, the Project and Construction Manager will monitor weather conditions throughout the construction period. The Bureau of Meteorology (BoM) Thredbo AWS station provides daily weather observation data for the resort. The NSW Rural Fire Service website 'Fires Near Me' includes information on current bush fires and other incidents, as well as warnings for fires which may affect your location.

If adverse weather events are anticipated and/or occur during construction, contingencies will be implemented and arrangements will be made to postpone construction activities.

The Construction Manager / Site Project Manager will be responsible for notifying construction staff of any impending adverse weather, and to implement appropriate controls onsite, such as:

- Erecting wind breaks or covering stockpiles to prevent materials being blown away.
- Evaluate temporary sediment and erosion controls to ensure they are adequately installed to withstand adverse weather events.
- Discontinue use of plant and machinery.
- Secure materials and equipment.
- Protect open excavations.

4.9 Stockpiles and Material Storage Areas

4.9.1 Construction Materials

Construction materials will likely include:

- trail signs e.g. decision point signs; and
- gravel / decomposed granite for the trail surface.

4.9.2 Site Compound

No site compound is required for the Project.

4.9.3 Stockpile Sites

Temporary stockpiles will be required within the construction corridor to effectively manage excavated materials, spoil, soil and vegetation during the works. Soil will be separated so that it can be used during rehabilitation works. The main stockpile sites are identified in **Appendix B**. Excess materials from construction will be located within the main stockpile area within the resort. Access to these locations will be restricted to KT staff and contractors.

All stockpiles will be managed in accordance with the environmental controls in **Section 0** and the Erosion and Sediment Control Plan (**Appendix C**).

4.9.4 Site Facilities and Temporary Structures

There will be no site facilities or temporary structures within the construction corridor.

4.9.5 Material Storage Areas

No material storage areas are required within the construction corridor.

4.9.6 Waste

Waste generation from the Development is expected to be minimal. Waste may include general solid waste (putrescible) e.g. waste from litter bins and general solid waste (non-putrescible) e.g. plastic, paper, cardboard, construction waste. Refer to **Section 6.8** for environmental controls regarding waste.

4.10 Imported materials and stabilising agents

- NPWS requests that its authorisation is sought where it is proposed to utilise either of the following in construction or maintenance of the trail:
    - Imported gravel or fill material; or
    - soil stabilising or adhesive agents.
- KT staff (and its contractors) may obtain imported gravel or fill material from sources already assessed by NPWS as appropriate for use in KNP, being gravel or fill material from:
    - the McMahons Earthmoving quarry, located on Alpine Way, Crackenback NSW; or
    - the Kraft Earthmoving / Snowy Mountains Sand and Gravel quarry located on Kosciuszko Road, Jindabyne NSW.

5 Environmental Management

5.1 Roles and Responsibilities

The Project team structure is provided in **Figure 1**.

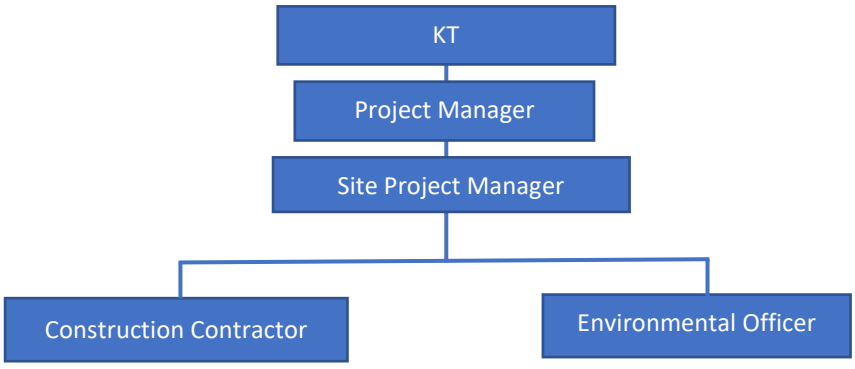


Figure 1: Project Team Structure

The roles and responsibilities are outlined in **Table 1**.

Table 1: Roles and Responsibilities

Role	Responsibilities
Project Manager	• Ensure the SEMP is made available, communicated, maintained and understood by all Project staff. • Responsible for the overall management of the construction and operation of the Project. • Ensure the SEMP is updated with applicable conditions of approval following the provision of Development Consent from Department of Planning and Environment (DPE). • Ensure that the requirements of the SEMP and sub-plans have been addressed in all contractor environmental management documentation. • Review of incidents, non-conformances and non-compliance. • Ensuring Project personnel and contractors are adequately trained and qualified to fulfil their roles.
Site Project Manager	• Implement and maintain the SEMP. • Ensure all Project personnel comply with the requirements of the SEMP. • Report any incidents, non-conformances to the Project Manager.
Environmental Officer	• Oversee all works which are part of the Project on behalf of KT. • Ensure compliance with all environmental protection measures detailed in the SEMP, supporting management plans and conditions of approval. • Ensure all environmental controls are in place and adequately functioning during construction. and • Conduct construction inspections and complete reporting requirements e.g. progress reports, environmental incidents, non-compliance, corrective action and auditing.
All Personnel	• Comply with requirements of this SEMP. • Report any actual or potential environmental incidents to the Construction Manager immediately. • Identify and report non-conforming or potentially hazardous work practices, equipment, machinery or products. • Only perform tasks for which they are trained and competent. • Assist with environmental incident investigations and applying corrective actions. • Ensure all machinery, plant and equipment are in good working order and condition prior to use.
Construction Contractor	• Comply with SEMP and legislative requirements. • Construction contractor to develop and implement management plans in accordance with this SEMP, conditions of approval and contractual obligations.

5.2 Communication and Consultation

5.2.1 Training and Awareness

All Project staff will be made aware of the site-specific environmental controls through a site induction, and pre-start meetings / toolbox talks prior to the commencement of construction.

The site induction will cover the following key aspects:

- Roles and responsibilities.
- Overview of environmental risks and specific locations of environmental and/or cultural heritage significance.

- The scope of legislative requirements and other licences and approvals.
- Communication and notification requirements e.g. procedures for notifying and reporting incidents and complaints.
- Environmental management and controls stipulated in this SEMP.
- Workplace health and safety issues.
- Emergency preparedness and response.
- Procedures for notifying and reporting incidents and complaints.

5.2.2 Key Contacts

Key contacts for the Project are provided in **Table 2**. Prior to commencement of works, contact details (name and contact number) will be provided for Project personnel.

Table 2: Key Project Personnel Contact Details

Company / Agency	Role / Reason	Contact
Department of Planning and Environment (DPE) (Alpine Resorts Team)	Development approval and compliance	(02) 6456 1733
National Parks and Wildlife Service (NPWS)	Flora, fauna, archaeology	(02) 6450 5600
Environment Protection Agency (EPA)	Water, noise, air pollution and regulation	131 555
NSW Soil Conservation Service	Soil erosion and sediment control	02 9842 8300
Thredbo Medical Centre	General medical attention	(02) 6457 6254
Fire and Rescue Thredbo, NSW	Incident / emergency	(02) 6457 6144
NSW Police	In case of fire, medical or police emergency	000
NSW Fire and Rescue		
NSW Ambulance		

5.2.3 Consultation

KT is committed to ensuring effective communication and consultation is undertaken to inform the development of this SEMP and ensure it is implemented on-site as per the Project roles and responsibilities in **Section 5.1.** Where required, communication with key external stakeholders such as DPE and NPWS will be undertaken. A summary of the key consultation activities is provided in **Table 3**.

Table 3: Summary of Consultation Activities

Consultation Activity	Communication Method	Frequency
Internal	Site inductions	Prior to commencement of works
	Pre-start meetings and toolbox talks	Daily
	Reports to Project Manager identifying project progress, any environmental incidents, and review of any complaints or enquiries	Weekly
External	Face-to-face meetings, phone and email correspondence with relevant Government Departments / Agencies	As required

	In-writing notifications to Government Departments / Agencies and relevant parties	As required

5.2.4 Notification Protocols

A summary of the key notification protocols is provided in **Table 4.** Notification requirements will be updated as required.

Table 4: Regulatory Agency Notification Protocols

Party to Notify	What to Notify	When to Notify	Responsibility to Notify Regulatory Agency
DPE	Commencement of construction	DPE will be notified in writing at least 48 hours prior to the commencement of construction.	Site Project Manager
NPWS	Details of any material suspected of being a European or Aboriginal culturally significant site, relic or artefact.	Immediately upon discovery of any archaeological/culturally significant site or relic that are encountered. NSW Police to also be notified immediately upon discovery of human remains.	Site Project Manager
NSW Environmental Protection Agency	Details of pollution incident – who, what, when, where, how, any other supporting information and evidence (e.g. photos)	Immediately upon identification of pollution incident causing or threatening material harm to the environment, in accordance with ***KT's Construction site Incident and Emergency Procedures Thredbo, version 1.1***.	KT Environmental Manager

5.2.5 Competence and Training

All Project staff will be made aware of the site-specific environmental controls through a site induction, and pre-start meetings / toolbox talks prior to the commencement of construction.

The site induction will cover the following key aspects:

- roles and responsibilities;
- overview of environmental risks and specific locations of environmental and/or cultural heritage significance;
- the scope of legislative requirements and other licences and approvals;
- communication and notification requirements e.g. procedures for notifying and reporting incidents and complaints;
- environmental management and controls stipulated in this SEMP;
- workplace health and safety issues;
- emergency preparedness and response; and
- procedures for notifying and reporting incidents and complaints.

5.3 Environmental Incident and Emergency Response

All Project personnel are required to follow KT's **Construction site Incident and Emergency Procedures Thredbo Village, version 1.1.** The procedure will be available on-site and all Project staff will be trained on their implementation through the site induction. The procedure classifies examples of emergencies and incidents and provides specific procedures for response to such events, such as:

- Serious injuries requirement urgent medical help.
- There are threats to property or life.
- Criminal activity e.g. you have witnessed a serious crime or accident.
- Sewer or water service breaks.
- Bushfire, building fire, spot fire on-site.
- Electricity service faults.
- Leaking gas.
- Fires and explosions.
- Release of pollution e.g. release of sediment into watercourse, chemical spill.

The procedure also outlines general site management principles, incident reporting and notification requirements and provides an emergency contacts list.

In the event of an environmental incident, emergency or near-miss, the following steps should be taken:

1) **STOP** works in the area and if safe to do so ensure the safety of personnel within the vicinity.
2) **NOTIFY** relevant persons e.g. emergency services or Construction Manager.
3) **ISOLATE** the risk or hazard e.g. turn off machinery/plant, implement immediate site controls, set up exclusion zone. and
4) **REPORT** and notify relevant persons (e.g. Project Manager, regulatory agencies).

Environmental incident and near-miss reporting requirements are detailed in **Section 7.3**. Contact details for key Project personnel and emergency services are provided in **Table 2**.

External contractors are required to prepare and implement an emergency and incident response procedure. The contractor will be responsible for responding to any environmental emergency caused by any action (or inaction) of the contractor's staff, including notification requirements to external parties such as EPA and Fire, Fire and Rescue NSW.

6 Environmental Controls

6.1 General

- Ensure works are conducted by suitably qualified and trained personnel.
- Ensure all site environmental management controls relevant to that stage of work are implemented in accordance with the approved plans and conditions of consent.
- Provide approved plans and relevant documentation in the site office or other suitable location so that they are easily accessible by all construction staff.
- Brief all works as to limit of disturbance footprint, "no-go" areas and other environmental safeguards prior to and during construction as required (ELA 2023).

6.1.1 Site Establishment

- Establishment of site boundary with temporary fencing, rope or flagging to clearly delineate the construction corridor and "no-go" areas.
- Erection of site signage and pedestrian/traffic controls.
- Installation of erosion and sediment controls.

6.1.2 Machinery and Storage

- All equipment, machinery and vehicles used during construction of the Project must be cleaned prior to entry into the Park and prior to site mobilisation to ensure they are free of mud and vegetative propagules.
- Equipment, machinery, and vehicles must be regularly maintained and manoeuvred to prevent the spread of exotic vegetation.
- Storage of equipment, machinery, vehicles and material is to be restricted to existing disturbed areas (i.e. at the stockpile, formed roads and within the construction corridors) and avoid undisturbed areas.
- All vehicles and machinery entering Thredbo must adhere to the **Standard Operating Procedure: Use and Maintenance of Wash Down Bay, March 2019 (KT055).**
- On-ground machinery used in vegetation removal and trail construction must adhere to the following:
    - the tread width of on-ground machinery used in trail construction must not exceed 1500 mm
    - disturbance/works must be entirely contained within the 3 m disturbance corridor.

6.2 Soil and Water Quality

Soil and Water Quality	
Objective	Minimise potential impacts to receiving water sources; and Reduce the potential for erosion and sediment moving offsite.
Mitigation Measures	**Timing**
Soil and stockpile management • All stockpiles will be constructed and managed in accordance with *Soil Stockpile Guidelines for the Resort Areas of Kosciuszko National Park* (OEH 2017). • Temporary stockpile sites within the construction corridor should adhere to the criteria outlined Appendix C. • Any excess excavated material will be removed from site and transported to the designated soil stockpiles sites in Appendix B.	Construction
• Vehicle and machinery movement should be limited to existing access tracks and the construction corridor as far as is possible.	Construction
• Implement Erosion and Sediment Control Plan. All erosion and sediment control devices will be inspected regularly (including immediately after rainfall) and will be maintained and repaired as necessary so that they remain effective for the works duration.	Construction
• Erosion and sediment controls to be inspected and maintained regularly, particularly immediately following rain events.	Construction
• Construction works should not be undertaken in periods of significant rainfall.	Construction
Performance Criteria	No significant sediment deposition observed leaving the site.

Corrective Actions	If sediment is observed leaving the site, identify the source and amend the ESCs on-site to ensure appropriate controls are in place. If required, additional ESCs to be installed.

6.3 Flora and Fauna

6.3.1 Vegetation and Habitat

Vegetation and Habitat Management	
Objective	To ensure compliance with legislative requirements and protect existing native vegetation. Minimise impacts to native vegetation.
Mitigation Measures	**Timing**
• All disturbance should be kept to the minimum required to achieve the proposal (ELA 2023).	Vegetation clearing and during construction
Marking out the trail alignment protocols • To the extent reasonably practicable, trail alignment must be adjusted to avoid the removal of mature trees, large boulders and rock outcrops. • Mature trees and rocks required to be removed must be clearly marked. • The proposed trail and associated works should be at least 15 m from the outer limit of the Subalpine Riparian Scrub (ELA 2023), refer site plans in **Appendix A**.	Marking trail alignment & construction corridor
Tree and rock removal • All clearing must occur solely within approved development corridors and to be clearly identified with flagging tape to mark no-go/no clearing zones prior to construction. • All vegetation must be checked for fauna habitats and fauna by the proponent's Environmental Officer immediately prior to felling/removal. Vegetation with active nests must not be removed until the young have left the nest. If fauna is present, then the proponent must contact NPWS to assist with mitigation actions. • To the extent reasonably practicable, trail alignment must be adjusted to avoid the removal of mature trees, large boulders and rock outcrops. Mature trees and rocks required to be removed must be clearly marked. • Any trees required to be removed must not be felled in a manner which damages surrounding vegetation. All vegetation (trees and understory) removed must either be cut into smaller pieces to be used for rehabilitation, discreetly dispersed amongst adjoining native vegetation without damaging existing native vegetation or removed from site completely if it contains any exotic vegetation species. • Removal of native vegetation by chainsaw, rather than heavy machinery, is preferable in situations where partial clearing is proposed. • All rocks removed during the works must be placed in the surrounding landscape without damaging existing native	Vegetation clearing

vegetation, used in the trail construction (e.g. rock armouring) or removed from site completely. • To the extent reasonably practicable, any live tree roots must be protected (and not removed) within the timbered areas of the trail corridor. This could occur through rock armouring, grade reversals or other construction methods.	
• All machinery to be used during the construction phase should be limited to the existing disturbed areas and access tracks as far as is possible.	Vegetation clearing and during construction
• Progressive rehabilitation is to be undertaken in accordance with the Rehabilitation and Monitoring Plan (**Appendix E**). All rehabilitation should be undertaken in accordance with the *Rehabilitation Guidelines for the Resort Areas of Kosciuszko National Park* (DECC 2007).	Construction & post-construction
Performance Criteria	No damage to site fencing. No damage to native vegetation (including vehicle tracks) associated with unauthorised access.
Corrective Actions	Fencing to be repaired / reinstated by appointed contractor. Entry points for unauthorised access to be identified and access restricted through fencing or other appropriate barriers.

6.3.2 Native Fauna

Native Fauna Management	
Objective	To minimise potential impacts to native fauna, their breeding places and habitat.
Mitigation Measures	**Timing**
• The trail should be aligned during construction as necessary to avoid any wombat burrows that are detected in close proximity to the trail. If any wombat burrows need to be impacted by the proposal a wombat management plan should be developed for the proposal in consultation with NPWS.	Prior to vegetation clearing works & prior to construction
• NPWS should be contacted if any animals are disturbed or injured during the proposed works (ELA 2023).	
• Maintain a clean and tidy work area to ensure animals are not attracted to the site, including provision of covered bins during proposed works.	Construction
Performance Criteria	No death or injury to fauna as a result of on-site activities. No disturbance outside the approval disturbance area.
Corrective Actions	Review and implement suitable strategies to dissuade fauna from coming to site. Contact NPWS / LAOKO if injured fauna is identified as a result of site activities.

6.3.3 Exotic Species

Exotic Species Management		
Objective	To reduce the risk of introducing invasive/pest species.	
Mitigation Measures		**Timing**
• All relevant weed species identified within the construction corridor are to be treated in accordance with best practice methods to ensure these weeks are not spread further within the site or throughout KNP. Relevant weed species include those listed in the *Regional Pest Management Strategy 2012-17, Southern Ranges Region: a new approach for reducing impacts on native species and park neighbours* (OEH 2012). ○ Any Blackberry or other problematic weeds detected within the study area should be controlled (ELA 2023).		Prior to construction
• If an area of vegetation proposed for removal includes any relevant weed species then the vegetation must be removed completely from site, not spread out within the existing vegetation or used in rehabilitation and stabilisation works.		Prior to vegetation clearing & prior to construction
• All machinery and equipment used during construction must be cleaned prior to entry into KNP and prior to site mobilisation to ensure the machinery is free of mud, vegetative propagules, and pathogens. This includes machinery that may have been working in an area of the resort that contains weeds and is preparing to be redeployed in the construction corridor and associated stockpile and staging areas (ELA 2023).		Construction
• All vehicles and machinery entering Thredbo must adhere to the Standard Operating Procedure: Use and Maintenance of Wash Down Bay, March 2019 (KT055). The wash down bay is located at the Thredbo Waste Transfer Station for use by KT staff and contractors.		Construction
• All machinery and equipment must be stored on existing disturbed areas (i.e. at the stockpile and staging areas proposed on the ski slopes) and should not be stored on native vegetation.		Construction
• All machinery to be regularly maintained and manoeuvred to prevent the spread of weeds and pathogens.		Construction
Performance Criteria	No introduction of invasive species as a result of construction activities.	
Corrective Actions	Review existing biosecurity procedures (e.g. clean down procedure) and implement additional controls if required.	

6.4 Air Quality

Air Quality Management		
Objective	To minimise potential impacts on sensitive receivers from dust and other air pollution from construction activities.	
Mitigation Measures		**Timing**
• Dust generation will be managed through typical dust suppression that will include covering stockpiled spoil, minimising the extent of ground disturbance at any given time and covering loads.		Vegetation clearing & construction
• Plant and equipment to be maintained and operated in an efficient manner to reduce air pollution.		Construction

• Vehicles are to adhere to speed limits to minimise dust general and potential spill of hauled materials.	Construction
• All vehicles carrying spoil or rubble to/from site should be covered to prevent the escape of dust or other material. Covers are to be adequately secured.	Construction
Performance Criteria	No complaints received in relation to air pollution.
Corrective Actions	If complaints are received, the following steps should be taken: • Investigate specific cause of complaint. • Review site activities/processes and identify the source of air emissions. • Implement immediate corrective actions on-site e.g. water site, replace equipment deemed to be poorly maintained. • If required, implement administrative controls e.g. additional staff training, alter construction methods or timing for undertaking dust generating activities.

6.5 Noise and Vibration

Noise and Vibration Management	
Objective	To ensure that noise and vibration from construction activities does not cause environmental nuisance in the locality.
Mitigation Measures	**Timing**
• Awareness training and information will be provided to project personnel in relation to minimising noise pollution as much as practicable when in close proximity of sensitive receivers.	Site induction
• Selection of the most appropriate plant and equipment to minimise noise generation.	Prior to construction
• Construction works will be undertaken during standard work hours.	Construction
• Appropriate noise management strategies will be implemented for construction works and operation of plant in accordance with the Australian Standard AS 2436-2010 *Guide to noise and vibration control on construction, demolition and maintenance sites.*	Construction
• Regular checks are to be undertaken to ensure all equipment and vehicles are in good working order and are operated correctly.	Construction
• All plant will be maintained in accordance with the manufacturer's requirements.	Construction
Performance Criteria	No construction related noise and vibration complaints received. No unreasonable noise or vibration.
Corrective Actions	If complaints are received, the following steps should be taken: • Investigate specific cause of complaint. • Review site activities/processes and identify the source of the noise emissions. • Implement immediate corrective actions e.g. swap out noisy equipment. • If required, implement administrative controls e.g. additional staff training or change work hours to minimise noise.

6.6 Fuels, Chemicals and Hazardous Substances

Fuels, Chemicals and Hazardous Substances		
Objective	Eliminate the potential for release of fuels, chemicals and hazardous substances to the environment.	
Mitigation Measures		**Timing**
• Spill kits will be available onsite and all site personnel will be made aware of their locations in the site induction.		Construction
• In the event on an on-site spill, construction staff will follow KT's Construction Site Incident and Emergency Procedures Thredbo Village, version 1.1.		Construction
• Hazardous substances, toxic materials or dangerous goods must not be stored or processed on-site at any time without prior approval from the DPE Secretary or nominee.		Construction
• Fuel and chemicals will be appropriately stored and handled in accordance with relevant Australian Standards and Codes of Practice.		Construction
• Appropriate controls will be implemented when refuelling Project vehicles and machinery.		Construction
Performance Criteria	No fuel, chemical or hazardous substance spills.	
Corrective Actions	Corrective actions will be taken in accordance with the **Construction Site Incident and Emergency Procedures Thredbo Village, version 1.1**, including: immediate spill response, implementation of any necessary control measures as directed by authorities. Where required, an investigation will be undertaken to determine the root cause.	

6.7 Traffic and Access

Traffic and Access Management		
Objective	Minimise potential impacts on existing road network	
Mitigation Measures		**Timing**
• Traffic and construction vehicle access will be managed as per regular daily operation in the resort.		Construction
• All Project vehicles and machinery to adhere to speed limits and signage and stay within construction corridor.		Construction
• Bikers within proximity of the site will be managed though the use of signage and fencing/flagging as required.		Construction
Performance Criteria	No significant impacts to existing road network or users. No complaints in relation to traffic or vehicle operators.	
Corrective Actions	If complaints are received, traffic management procedures will be reviewed and amended (if necessary).	

6.8 Waste Management

The following waste receptacles will be provided for the storage and disposal of waste associated with the construction of the Project:

- General litter bins for waste such as food waste and non-recyclable plastic.
- Recycling bins for waste such as carboard packaging, paper, recyclable plastic.

- KT's waste transfer facility (materials to be segregated for re-use, recycling etc.).

Excess spoil from excavations will be taken off-site and placed within the resort's existing stockpile area located at the carpark adjacent to the Thredbo Waste Transfer Station for re-use within the resort.

Waste Management		
Objective	Minimise construction waste as much as practicable. Reduce the impact of waste on-site and beyond the site boundary.	
Mitigation Measures		**Timing**
• All waste will be managed and disposed of in accordance with the KT's waste management procedures.		Construction
• Where possible, construction materials will be salvaged for reuse to divert waste from landfill.		Construction
• All waste will be separated into waste streams and contained within appropriate receptacles and/or disposed of in accordance with the EPA guidelines.		Construction
• All receptacles will be in good condition.		Construction
• All waste transportation vehicles will be covered appropriately to ensure waste cannot spill, leak or escape onto the road or wash into stormwater drains.		Construction
• Ensure that the waste is being transported to a place that may be lawfully used as a waste facility.		Construction
Performance Criteria	No litter or waste material to be released from site in an uncontrolled manner.	
Corrective Actions	• Investigate cause of inappropriate waste disposal/management. • Review on-site waste handling facilities and implement corrective actions e.g. change in receptacle size and/or waste management signage. • If required, implement administrative controls e.g. additional waste management training for staff.	

6.8.1 Licenced Waste Facilities

There are two licenced waste facilities within proximity to Thredbo, including:

- Jindabyne Landfill, 6013 Kosciuszko Road, Jindabyne NSW
- Cooma Landfill, 8448 Monaro Highway, Cooma NSW.

6.9 Aboriginal Cultural Heritage

The assessment concluded there are no heritage constraints on the Project, and Past Traces (2023) recommends the following for the Project:

- Recommendation 1: Works to proceed without further heritage assessment with caution.
    - The proposed works can proceed without further assessment as no Aboriginal or historical heritage sites (objects or places) have been identified within the project area. The potential for impacting on unrecorded heritage sites within the project area is assessed as extremely low, based on landform analysis and field survey.
- Recommendation 2: Discovery of Unidentified Aboriginal cultural material during works.
    - Under the NPW Act 1977 all Aboriginal places and objects are protected from harm, even if they have not been previously identified during the assessment process. If

Aboriginal material is discovered during works then the steps as outlined below should be followed:

- All work must cease in the vicinity of the find and project manager notified immediately.
- A buffer zone of 10m should be fenced in all direction of the find and construction personnel made aware of the 'no go' zone.
- NSW Heritage must be notified of the find and advice sought on the proper steps to be undertaken.
- After confirmation with NSW Heritage a heritage consultation should be engaged to undertake assessment of the find and provide appropriate management recommendations to the proponent.

- Recommendation 3: Alteration of impact footprint.
  - Further archaeological assessment would be required if the proposal activity extends beyond the area of the current investigation. Implementation of the above management recommendations will result in low potential for the project to impact on heritage values or result in damage to heritage sites.

6.10 Bushfire Protection

The construction contractor is responsible for determining relevant requirements for the site and ensuring staff are aware of bushfire avoidance, evacuation, and management measures.

The **Construction Site Incident and Emergency Procedure, version 1.1** outlines procedures for responding to fire and bushfire incidents or emergencies. This procedure is made available to all construction staff. In the event of a bushfire, Kosciuszko Thredbo (the head lessee) would implement the resort-wide Bushfire Evacuation Plan. The plan has been designed to assist management and emergency services to protect life and property in the event of a bush fire or other emergency.

7 Monitoring and Reporting

7.1 Environmental Monitoring

The Environmental Officer will conduct monitoring during all project phases (pre-construction, during construction and post-construction) to ensure compliance with this SEMP, associated management plans and conditions of approval.

The Environmental Officer will undertake weekly inspections utilising the **Site Environmental Management Measures Report**. The report includes a checklist on the following matters:

- Administration (weekly site inspections, sub-contractor environmental management, environmental monitoring, environment incidents, complaints handling, reporting and record keeping)
- Biosecurity management
- Chemical spills / emergency response
- Vegetation management and rehabilitation
- Waste management
- Native fauna management
- Material storage and sourcing
- Water quality
- Erosion and sediment controls

- Stockpile management
- Air quality and noise and vibration
- Cultural heritage
- Safety.

7.2 Weekly Environmental Reporting

The Environmental Officer will provide copies of the **Site Environmental Management Measures Report** to the Project Manager on a weekly basis. All records will be stored within KT's files and distributed to relevant persons / regulatory authorities as required.

7.3 Environmental Incident Reporting

All incidents and near misses will be managed in accordance with KT's **Construction site Incident and Emergency Procedures Thredbo Village, version 1.1**. The document provides procedures for responding to incidents and emergences, reporting and notification requirements and emergency contacts.

The following information should be recorded:

- Time and date of the incident / near miss
- A description of the incident / near miss
- A sequence of events that led to the incident / near miss occurring
- Person/s involved in the incident / near miss (including witnesses)
- Written statements from person/s involved (as applicable)
- Details of corrective actions.

The **Environmental Incident Report Form** should be completed for all environmental incidents. All parts of the form must be completed in accordance with KT's incident procedure and following the instructions within the form. The form must be signed by the person making the report and the Project Manager/person in charge of the site/activity.

7.4 Non-conformance

A non-conformance is the failure to comply with the requirements of this SEMP and supporting management plans. Non-conformances identified via site inspection or during day to day activities will be documented on the **Site Environmental Management Measures Report** (or similar contractor's form) and closed out in subsequent inspections. The Environmental Officer is responsible for investigation and managing corrective and preventative actions in the event of non-conformance or a situation likely to cause environmental harm.

7.5 Corrective Actions

Corrective actions should be prioritised on the following hierarchy of controls:

1. **Elimination** – can activities and processes be eliminated to reduce the risk of reoccurrence?
2. **Substitution** – can activities be substituted with another activity of lesser risk?
3. **Isolation** – can you isolate the hazard from any person exposed to it?
4. **Engineering controls** – can you reduce the risk of reoccurrence through engineering changes?
5. **Administrative controls** – can a change in work practices, additional training or additional checks reduce the risk?

6. **Personal Protective Equipment (PPE)** – can PPE be worn to protect personnel from harm?

The Construction Manager will be responsible for managing the implementation of corrective actions on-site.

7.6 Complaints Management

Should complaints be received from the public in relation to the Project they will be recorded using the **Complaints Form** (or similar contractor's form). The Project Manager will be responsible for investigating, recording and closing out any complaints received. All records will be stored within KT's files and distributed to relevant persons / regulatory authorities as required.

8 Record Keeping and Review

8.1 Document Control

All Project related documentation will be maintained within KT's Project file. Documents stored within the file include (but not limited to) the following:

- Copies of relevant planning approvals and documents, licences and permits.
- All completed induction forms and visitor sign-on register.
- Records of routine environmental inspections.
- Records of any environmental incidents, complaints, non-conformances and no-compliances.

8.2 SEMP Review

This SEMP is a live document and will undergo reviews and amendments as necessary. Reviews will generally be undertaken –

- If there is a change in the scope of the Project.
- Prior to commencement of construction to ensure any relevant conditions of consent and/or other approval, licence or permit requirements are incorporated.
- If there is a need to improve environmental controls to protect environmental values.
- If there is an increase or introduction of a new environmental risk or impacts.
- At the end of a Project to allow for improvements in subsequent Projects.

9 References

Department of Environment and Climate Change (DECC) 2007, Rehabilitation Guidelines for the Resort Areas of Kosciuszko National Park, NSW Government.

Department of Environment and Climate Change (DECC) 2009, Interim Construction Noise Guideline, July 2009, https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/noise/09265cng.pdf?la=en&hash=EF4576FD79DBB25D5AC22DFA1A883A2BADA1F77B

Department of Infrastructure, Planning and Natural Resources (DIPNR) 2004*, Guideline for the Preparation of Environmental Management Plans*, https://www.planning.nsw.gov.au/~/media/Files/DPE/Guidelines/guideline-for-the-preparation-of-environmental-management-plans-2004.ashx?la=en

Department of Planning & Environment (DPE) (2017) *What to include with your development application*, version January 2017, https://www.planning.nsw.gov.au/Policy-and-Legislation/~/media/65E2BA89886F426991525FF25707A9A9.ashx

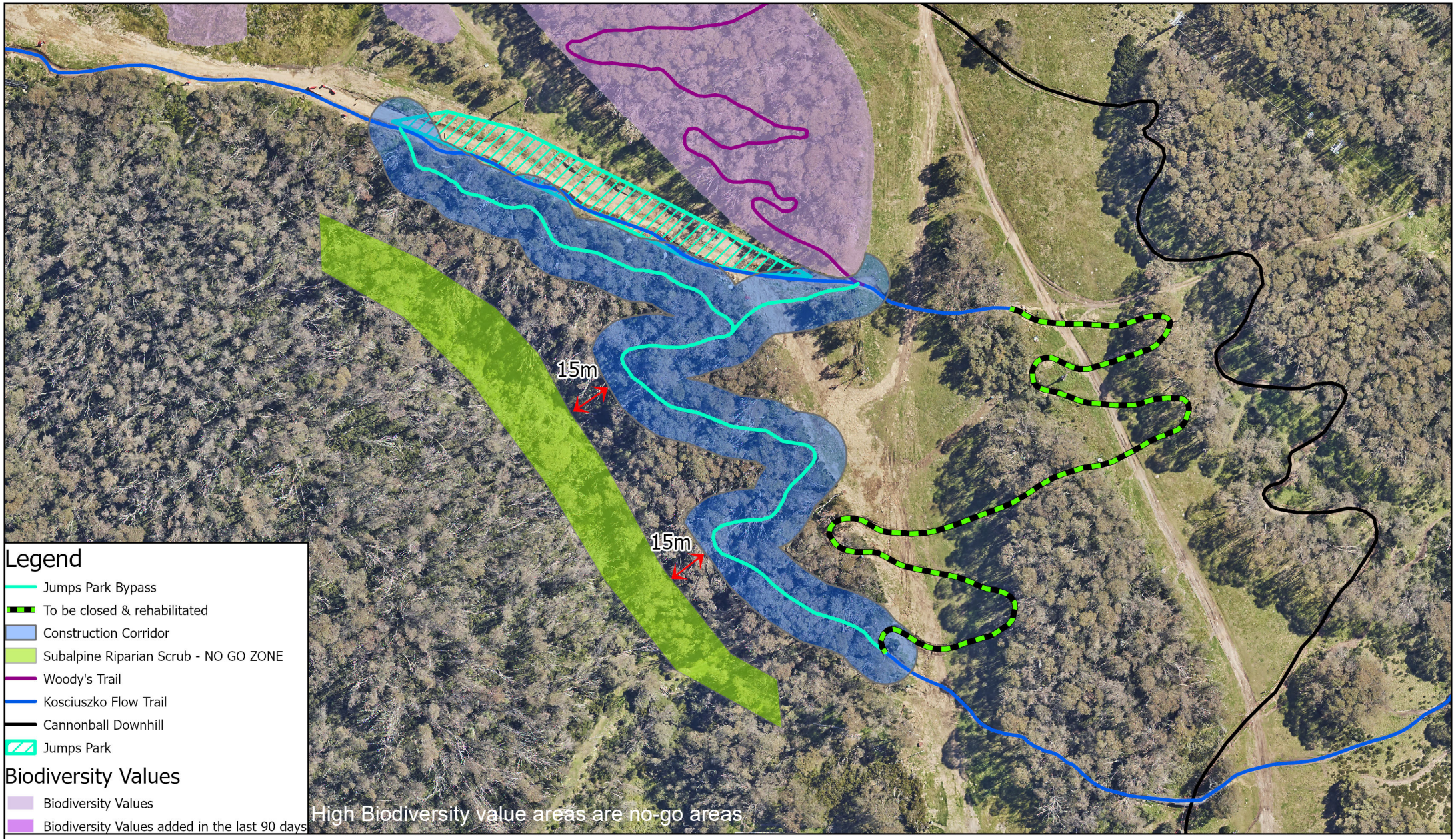
Eco Logical Australia Pty Ltd (ELA) 2023, Kosciuszko Flow Trail Realignment – Little Beauty Jumps Park Bypass and Wombat Walk Connection – Thredbo Alpine Resort – Flora and Fauna Assessment.

Office of Environment and Heritage (OEH) 2017, *Soil Stockpile Guidelines for the Resort Areas of Kosciuszko National Park, version 1.0, October 2017*, NSW National Parks and Wildlife Service.

Past Traces 2023, Aboriginal Cultural Heritage Due Diligence Assessment, Kosciuszko Flow Trail Realignment and Wombat Walk Connector.

10 Appendices

Appendix A Site Plans



Scale: 1:1,599

0 10 20 40 60 80

Meters

Map Projection: Universal Transverse Mercator
Horizontal Datum: GDA 2020
Grid: GDA 2020 MGA Zone 55

N

THREDBO

SITE PLAN

Project: Kosciuszko Flow Trail Realignment
Little Beauty Jumps Park Bypass

Revision: 5

Date: 23/11/2023

Produced By: BB

Scale: 1:2,082

0 12.5 25 50 75 100

Meters

Map Projection: Universal Transverse Mercator
Horizontal Datum: GDA 2020
Grid: GDA 2020 MGA Zone 55

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THREDBO

SITE PLAN

Project: Kosciuszko Flow Trail Realignment
Wombat Walk Connector

Revision: 4

Date: 23/11/2023

Produced By: BB

Appendix B Stockpile and Material Storage Areas

0 4.5 9 18 27 36 Meters

Map Projection: Universal Transverse Mercator
Horizontal Datum: GDA 2020
Grid: GDA 2020 MGA Zone 55

N

THREDBO

STOCKPILE AND MATERIAL STORAGE LOCATION WASTE TRASFER FACILITY

Revision: A

Date: 14/09/2023

Produced By: KOS

Appendix C Erosion and Sediment Control Plan

Erosion and Sediment Control Plan

Kosciuszko Flow Trail Realignment, Little Beauty Jumps Park Bypass and Wombat Walk Connector

PURPOSE

The purpose of this Erosion and Sediment Control Plan is to outline the intentions and fundamental principles that will be followed in the planning and implementation of erosion and sediment control (ESC) measures for the project during construction.

OBJECTIVES

To minimise potential impacts from construction works to receiving waters.

To reduce the potential for erosion and sediment moving offsite.

SCOPE OF THIS PLAN

This plan identifies appropriate controls specific to project activities to prevent sedimentation and pollution of receiving waters, and minimise potential impacts on vegetation communities with and adjacent to the site.

GUIDELINES

- Managing Urban Stormwater: Soils and Construction, Volume 1, 4th Edition (Landcom 2004)
- IECA Best Practice Erosion and Sediment Control
- Erosion and Sediment Control: A field Guide for Construction Site Managers (Catchments & Creeks Pty Ltd, 2012)

EROSION AND SEDIMENT CONTROLS

Implementation of appropriate controls and locations will be the responsibility of the construction contractor. Controls to be installed prior to any construction work (where required) and retain in place until exposed areas of soil or vegetation are stabilised/rehabilitated.

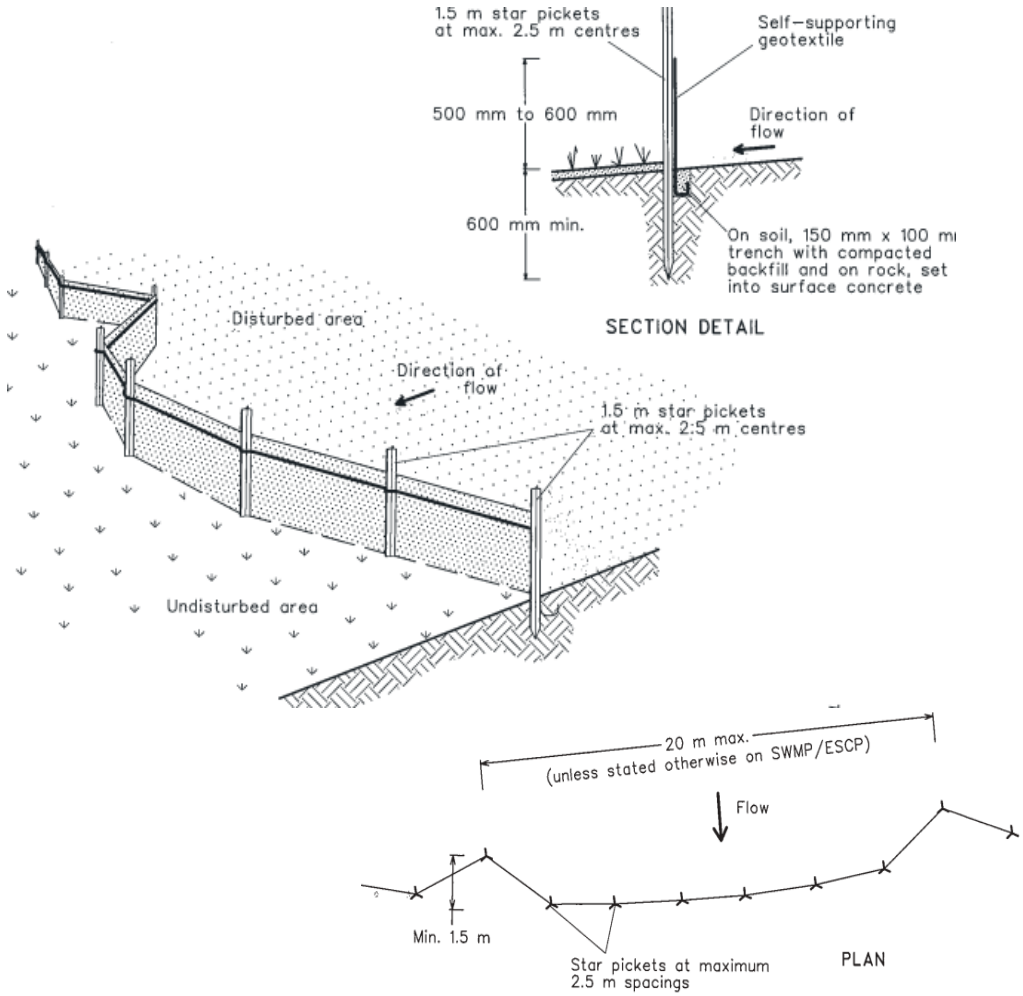
Sediment fencing and straw bale filter fencing is to be utilised during construction of the trail and stockpiling, as required. Controls are to be installed prior to works and retained in place until exposed areas of soil are stabilised.

Sediment Fence

The purpose of sediment fencing is to prevent sediment run-off and divert water around and away from disturbed areas. Sediment fencing should be used on the downslope side of works area, wetter areas and surrounding stockpiles.

Construction notes:

1) Construct sediment fences as close as possible to being parallel to the contours of the site, but with small returns to limit the catchment area of any one section. **The catchment area should be small enough to limit water flow if concentrated at one point to 50 L/s in the design storm event, usually the 10-year event.*
2) Dig a 150 mm deep trench along upslope line of fence for the bottom of the fabric to be entrenched.
3) Install 1.5 m long star pickets into ground at 2.5 m intervals (max) on the downslope edge of the trench. **Fit star pickets with safety caps.*
4) Fix geotextile to the upslope side of the posts ensuring it goes to the base of the trench.



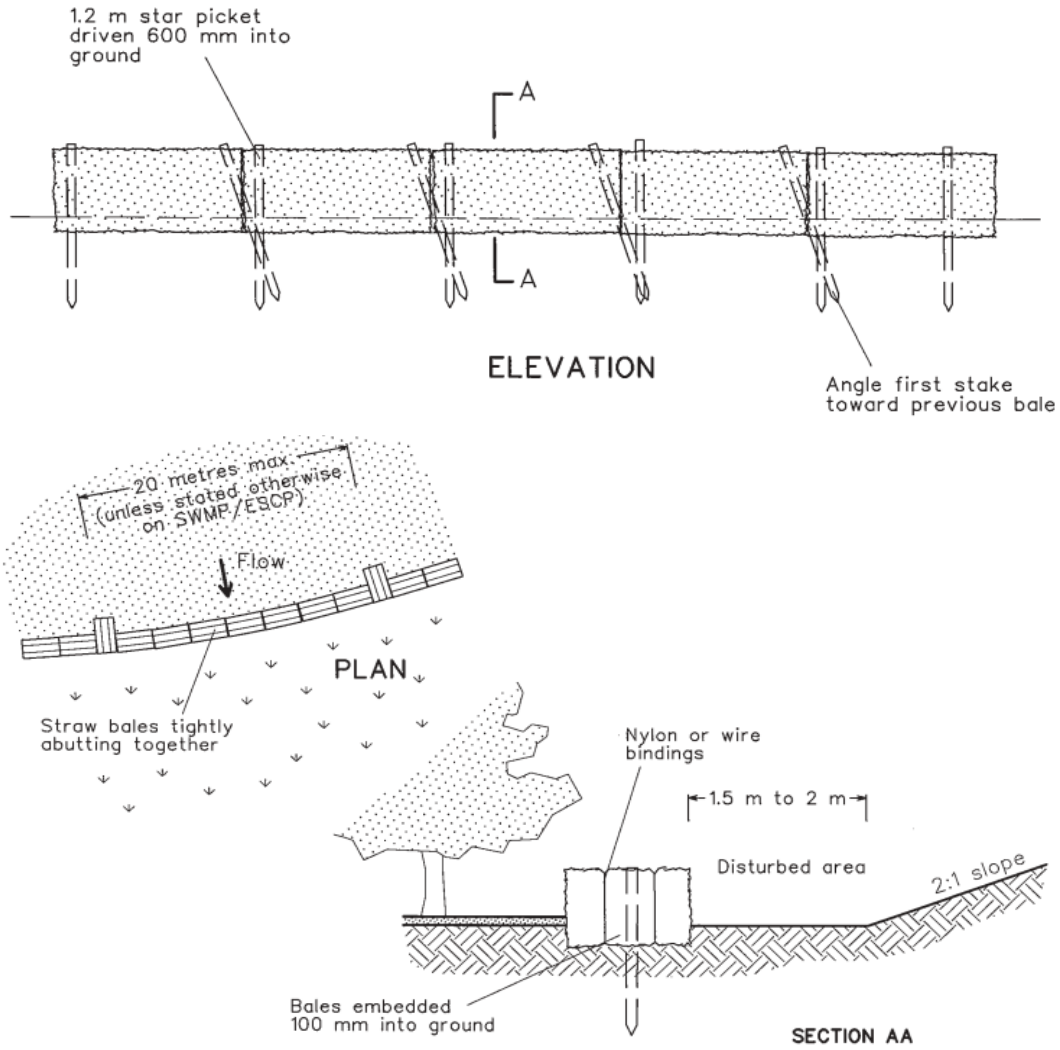
Standard Sediment Fence Installation (Source: Landcom 2004)

Straw Bale Filter Fence

Straw bales may be used to divert water around and away from disturbance areas during down-slope and cross-slope excavations. Straw bales are to be used on the uphill side of works area running cross-slope.

Construction notes:

1) Construct the straw bale filter as close as possible to being parallel to the contours of the site.
2) Place bales lengthwise in a row with ends tightly abutting (1 bale = max height of filter). Fill gaps between bales with straw and wrap with geofabric where necessary.
3) Embed each bale in the ground 75-100 mm and anchor with two 1.2 m stakes/star picket. Angle the first stake in each bale towards the previously laid bale. Stakes should be driven 600 mm into ground, sitting flush with top of bale (if possible). **If using star pickets which protrude above bales, fit with safety caps.*
4) Where a straw bale filter is constructed downslope from a disturbed batter, ensure the bales are placed 1-2 m downslope from the toe.



Standard Straw Bale Filter Installation (Source: Landcom 2004)

Cross Drainage and Sediment Barriers

The recommended spacing for cross drainage and sediment barriers is provided below.

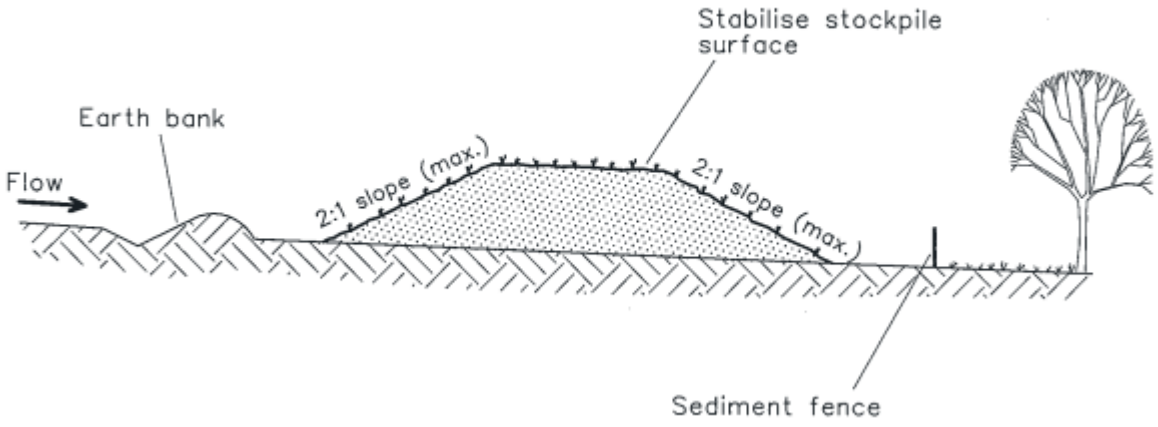
Slope Grade (%)	Cross Drain / Sediment Barrier (m)

5-10	15-20
10-15	10-15
15-25	8-10
>25	5-8

Source: NPWS 2007; Parr-Smith and Polley (1998)
Note: To calculate the grade of a slope: (rise/run) x 100 = slope grade

Soil and Stockpile Management

- All stockpiles will be constructed and managed in accordance with *Soil Stockpile Guidelines for the Resort Areas of Kosciuszko National Park* (OEH 2017).
- Temporary stockpile sites within the construction corridor should adhere to the following criteria (Landcom 2004; OEH 2007):
  - not exceed 2 m in height, have a slope <50% (26°)
  - be at least 2 m from vegetation, concentrated water flows, roads, publicly accessible areas or hazardous areas
  - avoid impacts to native vegetation and be located on disturbed areas
  - located directly adjacent to the works
  - located on relatively flat ground, where possible
  - in areas with sufficient room to accommodate the volume of material being stockpiled
  - be contained by appropriate erosion and sediment controls.
- Any excess excavated material will be removed from site and transported to the designated soil stockpiles sites.



Stockpile Management (Source: Landcom 2004)

Appendix D Environmental Schedules

THREDBO ENVIRONMENTAL SERVICES

Record of complaint

Sheet _____of_____

Project: _____ Date / Time: _____

Received by: _____ Reference Number: _____

Complainant details:	Witness details:

Nature of complaint:

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..... Complainant sign:

Action taken:

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Kosciuszko Thredbo Pty Ltd

Environmental Incident Reporting Form

Confidential document after first entry

The purpose of this form is to report any incident that may have resulted in Environmental harm on Kosciuszko Thredbo Pty Ltd premises. Remember to be succinct, stick to the facts and do not make assumptions. Only record information you know to be correct.

The only persons authorised to contact external agencies eg EPA in relation to environmental incidents are the Kosciuszko Thredbo General Manager and Environmental Services Manager or their approved delegates.

Return completed form to the Environmental Services Manager as soon as practicle, on completion of the Environmental incident.

Date of Incident:	**Time of incident:**
Reported by:	**Department:**

Location of Incident

EXACT location of the incident (include landmarks and features, nearest cross street etc to make it easier to identify later)		
Site:	Building:	Room:

Description of incident

Provide description and extent of incident: …… …… …… …… ……
Have relevant photos been taken and attached? Yes ☐ No ☐
If 'No', provide sketch and attach to the rear of this document.
What was the estimated duration of the incident?

Type of incident

☐ Spill (including fuel,oil,waste material or other polluting substance)	☐ Erosion and sedimentation incident	☐ Contaminated water discharge
☐ Noise emission/complaint	☐ Unauthorised/accidental damage to heritage item	☐ Unauthorised/accidental vegetation removal or harm
☐ Air Emission	☐ Wildlife habitat/nesting area disturbed	☐ Other (specify)

Environmental Incident Reporting Form

Level of incident

Level	Example
☐ Minor	eg. No material has escaped the site or caused material harm to the environment – it is easy to clean up without additional assistance.
☐ Major	eg. Material has escaped the site causing pollution downhill/downstream areas, which will require clean up involving other agencies and/or additional resources not available to local site management. Damage has occurred or is likely to occur to the environment.

Hazardous Material Spilt

☐ Petroleum based products/ Hydrocarbons	☐ Chemicals domestic or industrial grade
☐ Biological waste / Clinical and related waste	☐ PCB insulating liquids
☐ CFC containing equipment	☐ Paints or paint products
☐ Radioactive waste	☐ Other (specify)
Detail type/ingredient spilt: (UN, MSDS details)	
Detail concentration of material spilt:	
Detail quantity of material spilt:	

Type of Spill

☐ Spilt onto ground	☐ Spilt into stormwater drain
☐ Spilt into waterway	☐ Poured down sink
☐ Poured down sewer	☐ Released into atmosphere
☐ Caused odour	☐ Caused fire/explosion
☐ Caused infectious contamination	☐ Other (specify)

Immediate Actions

Was spill contained? Yes ☐ No ☐
Detail immediate actions/controls measures taken to rectify or contain the incident …… …… …… …… …… …… …… ……

Environmental Incident Reporting Form

Corrective Actions

Detail corrective clean up action taken

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Disposal

Detail disposal method/plans and location

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Recommended follow up and preventative actions

Detail recommendations

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……

……

Persons present at Incident

Were there any witnesses to the accident? Yes ☐ No ☐ If 'Yes', please provide names

……

……

Declaration

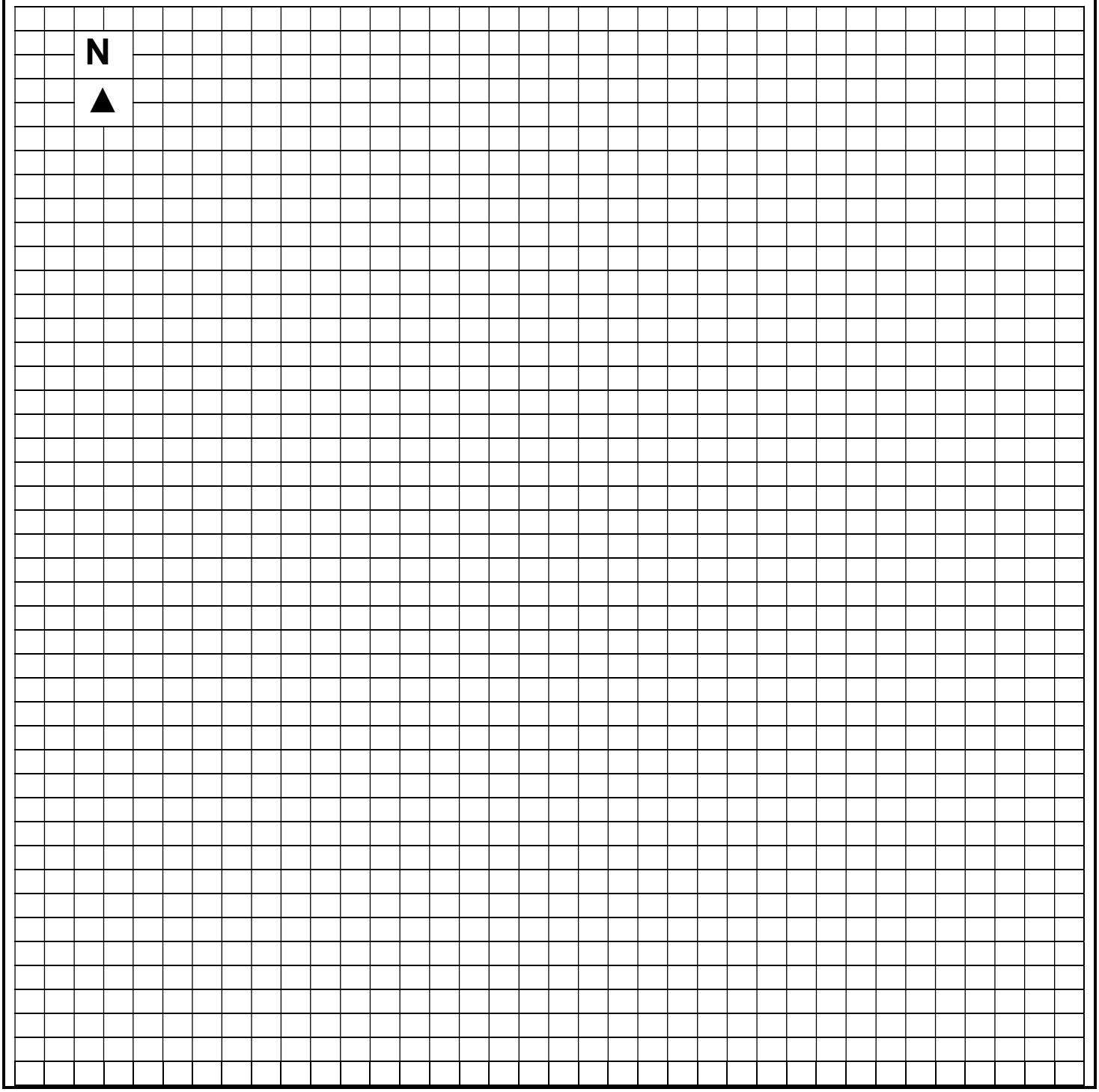
The information and answers given above are true in every detail and no information has been withheld.

Departmental Supervisors Name	
Departmental Supervisors signature	*Date*

Departmental Managers Name	
Departmental Managers signature	*Date*

Environmental Incident Reporting Form

Diagram: (do not scale)



Created By: Paul Corcoran
Created Date: 24 Mar 2009
Review Date: 24 Mar 2017
Reviewed Date: 7th January 2020, by E Diver

Appendix E Rehabilitation and Monitoring Plan

Construction of Mountain Bike Trails

Flow Trail Realignment
Little Beauty Jumps Park Bypass
& Wombat Walk Connector

Detailed Rehabilitation and Monitoring Plan

Table of Contents

1 Introduction

This rehabilitation and monitoring plan has been prepared to detail the rehabilitation required for all areas disturbed by the construction works associated with the development. The rehabilitation activities consist of trail verge stabilisation and revegetation works.

1.1 Aims and Objectives

The aim of this plan is to achieve successful rehabilitation of all areas disturbed by the works with full vegetation coverage to achieve an erosion resistant state. The objectives of this rehabilitation plan are:

- Detail the rehabilitation works required by the proposal for all disturbed areas;
- Set out the schedule for the rehabilitation activities;
- Provide information on plant species and planting ratios; and
- Dictate the maintenance and monitoring of the disturbed and rehabilitation areas.

2 Rehabilitation Program

2.1 Rehabilitation Areas

The areas to be rehabilitated consist of all areas disturbed as a component of the works. These areas include the verges of the completed trail, existing sections of trail on the Lower Supertrail and Milk Run that are to be closed and any disturbed areas adjacent to the works. The development areas are shown in Appendix 1.

2.2 Rehabilitation and Stabilisation

The rehabilitation and stabilisation works will be consistent with the Rehabilitation Guidelines for the Resort Areas of Kosciuszko National Park (NPWS). The works are to be carried out by Kosciuszko Thredbo Pty Ltd (KT) staff or suitable contractor on KT's behalf. Methods will consist of:

Timing	Procedure	Methods
Pre-construction	Establish construction corridor & trail alignment	• Flag trail alignment using pin flags and flagging tape • Mark out construction corridor to prevent damage to adjacent areas
	Treatment of weeds	• Treat weeds within disturbance area to ensure they are not spread further using methods relevant to the weed species being treated
	Identify trees to be removed	• Clearly identify any trees to be removed with flagging tape and inspect for nests / fauna • Alignment of trail is to avoid clearance of mature canopy vegetation
	Implement Site Environmental Management Measures	• Erosion & sediment controls to be put in place prior to construction where possible and during construction
	Cleaning of machinery	• Ensure all machinery to be used on construction site is cleaned at wash down bay to prevent spread of weed species in resort

	Identify "No Go" areas	• Identify & mark "No Go" areas to clearly delineate sensitive areas to be avoided
	Identify *Podocarpus lawrencei* (Mountain Plum Pine)	• Identify and mark out *Podocarpus lawrencei* • Alignment of trail is to avoid *Podocarpus lawrencei* • Ensure KT staff/contractors are able to accurately identify
	Identify *Ranunculus anemoneus* (Anemone Buttercup)	• Identify and mark out *Ranunculus anemoneus* in order to minimise and mitigate impacts during construction works • Alignment of trail is to avoid *Ranunculus anemoneus* • Ensure KT staff/contractors are able to accurately identify • Environmental Officer to GPS record location of *Ranunculus anemoneus* for on-going monitoring
	Identify set down and stockpile areas	• Identify and mark out appropriate plant & equipment set down areas for short term placement of machinery & materials avoiding areas of native vegetation • Set down areas are to be located within trail construction zone, identified stockpile site or site compound only and strictly adhered to
	Identify wombat burrows	• Identify and mark out wombat burrows within the construction corridor • Trail alignment is to avoid wombat burrows
During Construction	Minimise disturbance & stay within trail corridor	• Minimise disturbance to adjacent native vegetation • Limit movement of construction equipment to construction area and nominated set down areas
	Identify *Ranunculus anemoneus* (Anemone Buttercup)	• If *Ranunculus anemoneus* is discovered on the trail alignment during the course of construction that has not been previously identified, Environmental Officer is to be contacted immediately and works are to cease in that area • Environmental Officer and trails supervisor to determine if trail alignment can be moved within the flexible construction corridor of 20m (10m either side of the ground-truthed alignment) to avoid • If trail alignment is unable to be altered, KT is to consult NPWS regarding most appropriate action
	Regularly maintain site environmental management measures	• Conduct regular inspections and maintenance of sediment and erosion controls
	Sod cutting, collection & storage (as per Rehabilitation Guidelines for the Resort Areas of KNP)	• Native forbs and grasses are the most appropriate for sodding • Where sod collection is possible, cut sods to a depth of 10-20cm (leaving a layer of intact topsoil underneath) and to a size of 30cm^2 • Store sods collected on geofabric adjacent to the construction area

		• Sod storage time to be kept to a minimum and sods to be utilised as soon as possible after cutting and storage • Monitor sods and environmental conditions and water if necessary
	Soil removal	• Place topsoil & subsoil separately • Adhere to Soil Stockpile Guidelines for Resort Areas of KNP
	Soil replacement	• All excess soil gained from trail construction works is to be spread over the disturbed areas prior to rehabilitation • Ensure subsoil and topsoil are replaced in correct order
	Spread excess vegetation	• All excess native vegetation to be dispersed on exposed soil along the trail edge (50 cm max.), placed on batters & embankments for erosion control or carefully spread further into bushland to avoid smothering of understory vegetation communities • Any excess thatch unable to be used for the above is to be stockpiled off-site for use on other rehabilitation projects with the resort
	Management of ephemeral springs crossing marked trail alignment	• Manage water from ephemeral springs with the installation of rock armouring and/or construction of rock stormwater pits and piping of water underneath trail • Drainage pipe to discharge into rock dispersion pits to reduce water velocity and erosion
Post Construction	Direct seeding	• Areas of open ski slope adjacent to the trail tread, or trail to be closed, and dominated by EXOTIC grasses, seed using a 1:1 mix of Chewings fescue & *Poa fawcettiae* • Areas of open ski slope adjacent to the trail tread, or trail to be closed, and dominated by NATIVE species, use only 100% native *Poa* endemic to the area • Seeding rate: Slope grade <40% use 15-20g/m^2 Slope grade >40% use 20-30g/m^2 • Broadcast Dynamic Lifter @ 100g/m^2 • Weed free rice straw mulch and jute mesh to be applied over seed to protect soil and provide a favourable environment for establishment
	Sod replacement	• Utilise sod replacement in disturbed areas where possible particularly in areas of native vegetation in accordance with “Rehabilitation Guidelines for the Resort Areas of KNP” – Section C.1.4
	Stabilise disturbed areas (batters/embankments and trail to be closed)	• Spread weed free rice straw on slope grades <40% @ 1 bale per 25m^2 and weigh down using native thatch / litter gained from works. Jute mesh may be used if thatch amount insufficient • Install Jute mesh (or similar) over straw on batters & embankments >500mm height & with a slope >40% (Grade% = Rise/Run x 100)

		• Direct seed at rates listed above to stabilise disturbed areas including batters & embankments
	Planting native tube stock	• Plant tube stock on batters & embankments in areas of native vegetation • Plant shrubs at 3/m^2 • Plant grasses and forbs at 5/m^2 • Refer to Appendix 2 for suitable rehabilitation species • Water crystals & organic fertiliser may be used at label rates • *Water crystals:* 5gm pre-hydrated crystals, crystals must be hydrated for at least 2hrs prior to planting • *Fertiliser:* 1 x Typhoon Native fertiliser tablet per plant (*Poa* & shrubs) placed next to or below roots
	Watering	• If required, water rehabilitation areas to assist in seed germination, tubestock establishment and straw retention
	Weed control	• Monitor all areas disturbed by the works (including areas adjacent to the works) for signs of weed infestation • Treat weeds with methods appropriate to weed species being treated including low pressure spot spraying and hand removal techniques • Limit off-target damage by only spraying in the appropriate conditions • Weed monitoring & control is to be conducted on an on-going basis and included in annual resort weed control activities

2.3 Trail Hardening

Trail hardening during and post construction will assist in reducing surface loss from the trail tread which in turn will reduce issues such as breaking bumps, exposed roots and sub-surface rock, water channelling and undercutting and sedimentation of drains, sumps and vegetation.

Trail hardening methods will include:

- Trail grading and compaction using excavator, manual hand tools and vibrating plate;
- Watering of trail tread to aid in compaction;
- Use of rock armouring and aggregate where required;
- Trail not to be used by the general public for a minimum of 30 days following completion;
- Approved KT staff to "ride-in" trail in a steady and controlled manner to aid compaction in the preferred ride line (ride-in staff to be approved at the Mountain Managers discretion).

2.4 Rehabilitation of closed trail alignment

At the completion of the trail hardening period and once the new alignment is open, sections of trail to be closed are to be rehabilitated. Rehabilitation method is to consist of:

- "Scratch up" existing alignment with mini excavator to reduce compaction of trail tread, allow increased water infiltration and aid in plant and root establishment;
- Import topsoil from Thredbo stockpile site and place in areas of trail requiring topsoil;

- Lightly rake disturbed alignment cross-slope to form shallow furrows for seed. As fescue & *poa* seed is small, furrows should only be 1-2cm deep. Grass seed will not germinate if sown too deep;
- Apply dynamic lifter;
- Spread weed free rice straw on all exposed soil;
- Water in to prevent straw from blowing away and aid in seed germination;
- Seed, fertiliser and straw to be applied at rates listed in the Rehabilitation & Stabilisation table;
- Chewings fescue to only be used on areas of open ski slope dominated by exotic grasses;
- In areas of native vegetation, use only 100% native *Poa* endemic to the area and native shrubs as per Appendix 2 – Rehabilitation Species.

2.5 Monitoring

Weekly inspections of the construction area will be carried out by the Environmental Officer during the construction phase as per the Site Environmental Management Plan (SEMP). These inspections are to ensure that all site environmental management measures are in place and in good working order. On-going monitoring will occur as per the Rehabilitation & Monitoring schedule.

2.6 Schedule

The initial rehabilitation and stabilisation works are to be carried out as a component of the construction works during the trail finishing and closed trail rehabilitation phase. The maintenance works associated with the rehabilitation areas are to be undertaken on an on-going, as required basis throughout each summer season. The schedule for the rehabilitation works is provided in the table below. The appointed Environmental Officer for the project is responsible for ensuring that all preparation, works, monitoring and reporting are carried out to the required standard. The works will be carried out by KT staff or an appointed contractor.

Rehabilitation and monitoring schedule

AREA	PROCEDURE	TIMING
Trail verge Berms Batters Embankments Closed Trail sections	Site Preparation	During construction
	Seeding and planting tube stock	During construction and ongoing annually until adequate groundcover has been achieved
	Mulching	During construction and ongoing annually until adequate groundcover has been achieved
	Maintenance (incl. weed control & replacement planting)	Ongoing annually as required (between November and May)
	Monitoring	**Weekly** during construction as per SEMP **Monthly** post construction for the first 12 months to monitor for erosion, sediment control and plant establishment **Annually** once stabilisation has been achieved, between November & May each year up until the date 5 years after the issue of a final occupation certificate.

		At the completion of the 5 years general monitoring & maintenance will continue. **Monitoring** will be conducted by way of site inspection with triggers for action detailed in Section 2.7 - Maintenance & Mitigation

2.7 Maintenance & Mitigation

In the event that monitoring indicates initial rehabilitation efforts are not effective (minimal grass / shrub establishment, establishment of weed species or declining coverage), additional management actions may be required. Management actions will be determined following 3 consecutive months of poor establishment or declining survival rates of native species planted. If deemed necessary, this period will be brought forward to implement the additional actions required. The management actions are to consist of one or more of the following:

Area	Maintenance trigger	Action
All areas disturbed by construction works	Poor grass & shrub establishment <75% native species coverage	• Additional direct seeding in areas of open non-native vegetation • In-fill planting of native tube stock • Grazing control by use of tree guards where appropriate
	Presence of weeds	• Weeds to be controlled annually include, but not limited to, Milfoil, St John's Wort, thistle & Juncus • Spot spray using low pressure sprayer • Use of hand removal techniques where appropriate
	Identification of erosion & unstable areas	• Installation of Jute mesh, brush matting & mulching • Installation of hay bale and sediment fencing control measures • Maintenance of sediment retention pits, water bars and drains • Carry out additional planting & re-vegetation works as per Rehabilitation table
	Presence of sediment & debris	• Remove build-up of sediment from sediment retention pits and pipe inlets & outlets as required • Removal of any excess sediment from vegetation adjacent to the trail
Drains Water bars Sediment retention pits	Presence of sediment & debris Identification of damage	• Inspection of drains, water bars & sediment retention pits particularly after heavy rainfall • Removal of sediment and debris to prevent blockages / overflow and limit sedimentation of vegetation • Regular inspection to identify damage to system and maintenance

Additional planting & re-vegetation works are to be carried out as per the Rehabilitation table. If it is found that after 12 months of monitoring the rehabilitation efforts are not effective, KT will liaise with NPWS to determine the most appropriate action. The 12-month period will allow time for the rehabilitation area to establish prior to any further intervention.

3 Exotic Species

All areas disturbed by the works are to be monitored on an ongoing basis for the occurrence of any exotic flora and evidence of exotic fauna (scats and tracks). In the event of the detection of exotic species, appropriate control works are to be scheduled as required as set out below.

Exotic flora

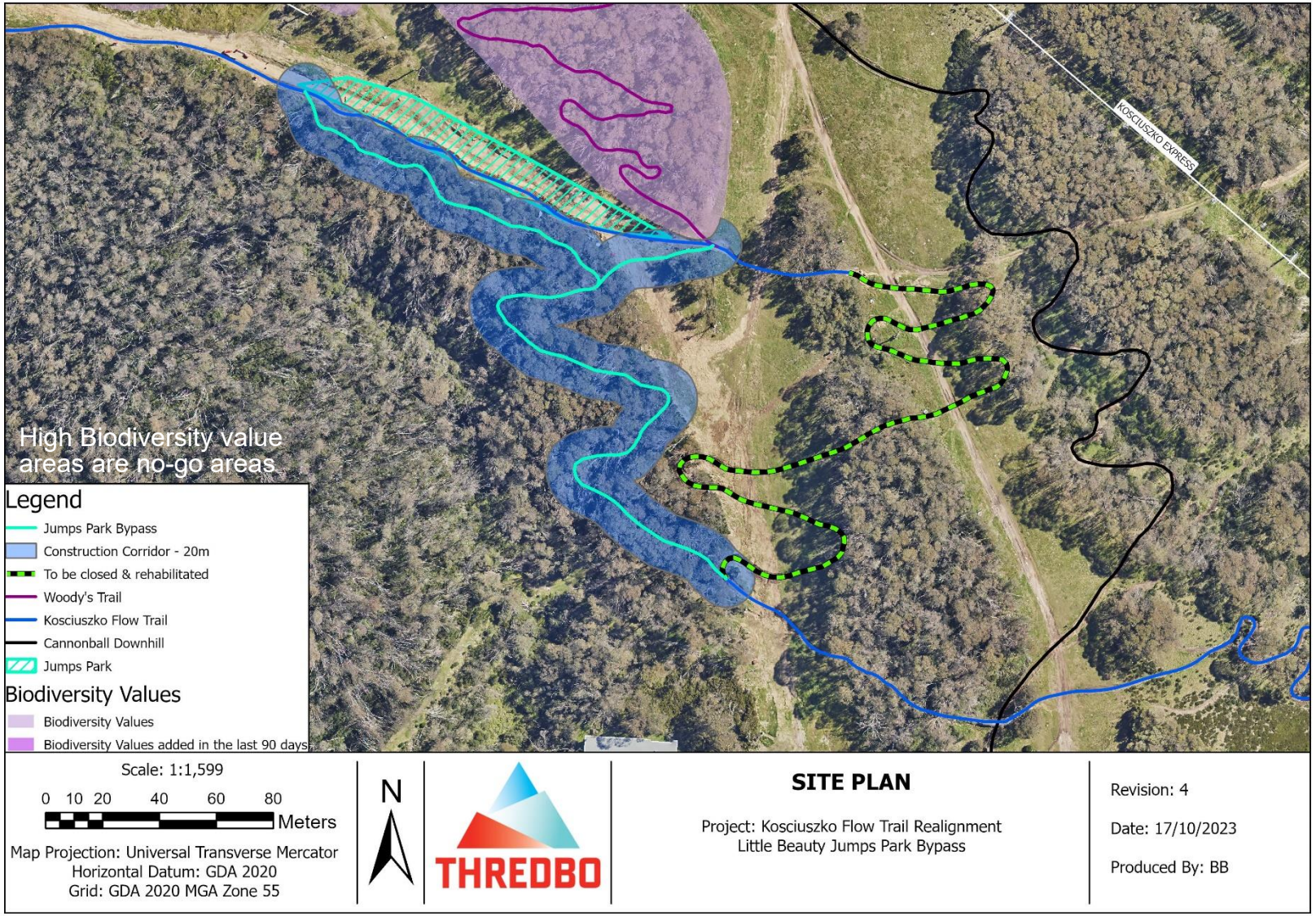
The control of exotic flora is to be undertaken using either spot spraying or hand removal techniques. The spraying activities are to be undertaken using appropriate herbicide for the species being treated and techniques for the conditions on the day. All control activities are to be undertaken prior to plant seed set.

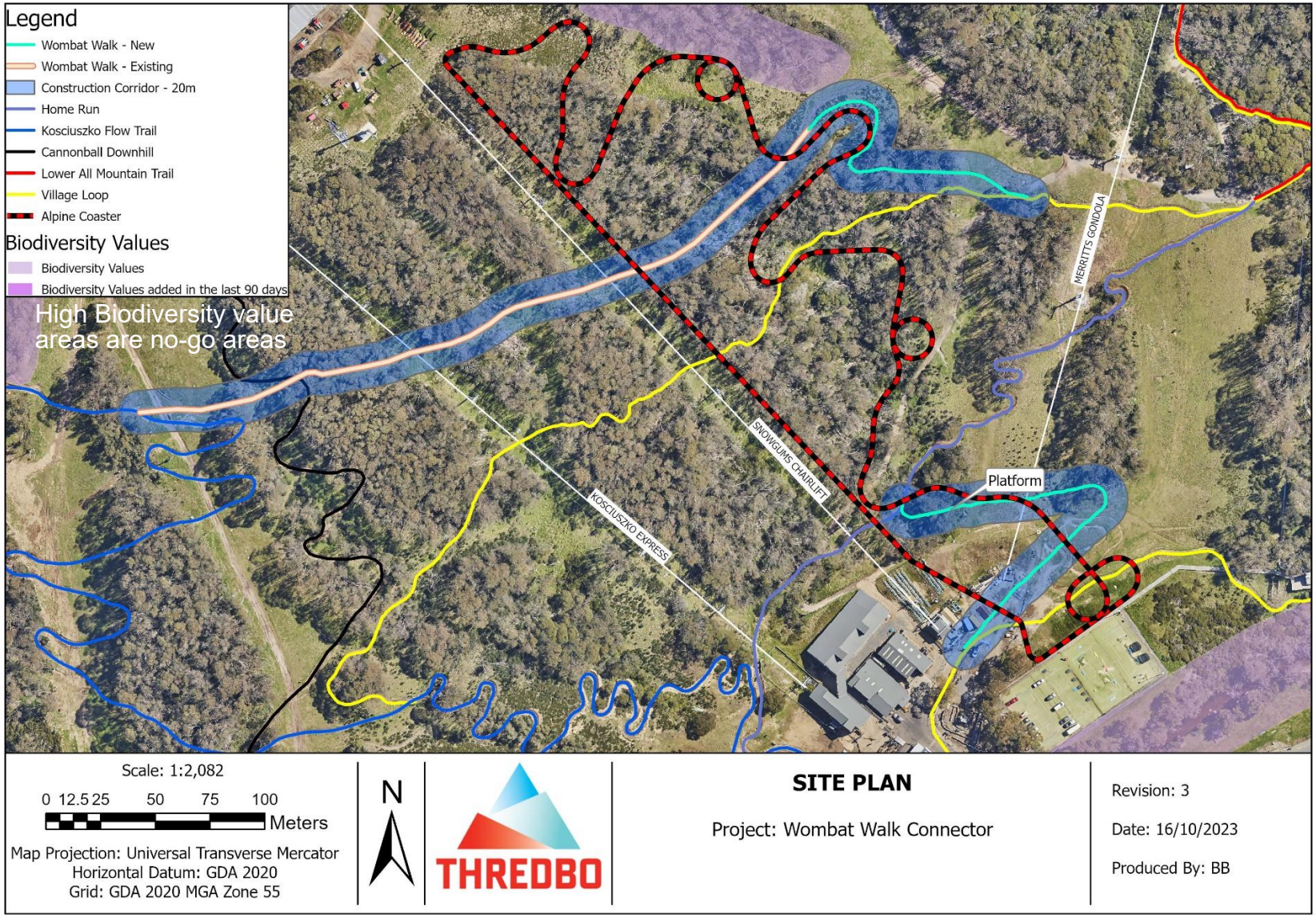
Exotic fauna

The control of exotic fauna is to be undertaken in cooperation with NPWS as a resort wide program targeting the control of cats, foxes and rabbits. The cat and fox trapping program is undertaken by KT during the winter months in the village and on the lower slopes of the resort. Rabbit control programs are conducted in autumn and spring by KT staff also targeting these areas. Feral deer, cat, fox and dog control is undertaken by NPWS outside of the KT lease area.

4 Appendices

4.1 Appendix 1 – Development Area Map




Legend
Wombat Walk - New
Wombat Walk - Existing
Construction Corridor - 20m
Home Run
Kosciuszko Flow Trail
Cannonball Downhill
Lower All Mountain Trail
Village Loop
Alpine Coaster
Biodiversity Values
Biodiversity Values
Biodiversity Values added in the last 90 days
High Biodiversity value areas are no-go areas
MERRITTS GONDOLA
SNOWGUMS CHAIRLIFT
KOSCIUSZKO EXPRESS
Platform
Scale: 1:2,082
0 12.5 25 50 75 100
Meters
Map Projection: Universal Transverse Mercator
Horizontal Datum: GDA 2020
Grid: GDA 2020 MGA Zone 55
N
THREDBO
SITE PLAN
Project: Wombat Walk Connector
Revision: 3
Date: 16/10/2023
Produced By: BB

4.2 Appendix 2 – Rehabilitation Species

The following is an extract from the publication; Rehabilitation Guidelines for the Resort Areas of Kosciuszko National Park (NPWS 2007). The table represents some of the recommended species for revegetation activities within Thredbo at the development site altitude.

Rehabilitation Species List: Thredbo & Bullocks Flat

This appendix provides a list of species known to be successful in rehabilitation, and which would be suited to the Kosciuszko resorts. It does not provide a definitive list of species found in each resort.

Form	Species	Common Name	Community	Propagation and Seed Collection Notes	Direct Seeding
Forbs					
	Craspedia jamesii	James's Billy-button	TAHa, STG	Seed or division	Y
	Craspedia lamicola	Shiny-leaf Billy-button	TAHa, STG	Seed or division	Y
	Craspedia leucantha	Pale Billy-button	SAH, TAHa	Seed or division	Y
	Craspedia maxgrayi	Woolly Billy-button	TAHa, STG	Seed or division	Y
	Helichrysum scorpioides	Button Everlasting	TAHa, W	Seed	Y
	Podolepis robusta	Alpine Podolepis	TAHa, STG	Seed	Y
	Senecio linearifolius	Fireweed Groundsel	SAH, W, SR	Seed	Y
	Stylidium graminifolium	AlpineTrigger-plant	TAHa, STG, H, B, W, SAH, SG	Seed	Y
Grasses, rushes					
	Carex hebes	Dryland Sedge	TAHa, STG	Seed or division	Y
	Poa costiniana	Prickly Snow-grass	STG, F, B, TAHa, H, SAH	Seed or division	Y
	Poa ensiformis	Sword Tussock-grass	W, SAH, SR	Seed or division	Y
	Poa fawcettiae	Smooth-blue Snow-grass	TAHa, STG	Seed or division	Y
	Poa hiemata	Soft Snow-grass	TAHa, SG	Seed or division	Y
Shrubs					
	Acacia obliquinervia	Mountain Hickory Wattle	SAH	Seed (collect in March)	Y
	Cassinia monticola	Cassinia	W, SG		
	Grevillea australis	Royal Grevillea	H, SAH	Tip cutting	
	Hakea microcarpa	Small-fruit Hakea	SAH, W		Y
	Ozothamnus ellipticum	Kerosene Bush	B, H	Soft cutting	
	Ozothamnus secundiflorus	Cascade Everlasting	H, SAH	Soft cutting	
	Podolobium alpestre	Alpine Shaggy-pea	H	Seed (collected in March)	
		Prostanthera cuneata	Alpine Mint-bush	H	Cuttings
Trees					
	Eucalyptus dalrympleana	Mountain Gum	W	Seed	Y
	Eucalyptus delegatensis	Alpine Ash	W	Seed	Y
	Eucalyptus pauciflora	Snow Gum	W	Seed (available all year). 3 weeks cold treatment at 4° recommended.	Y
	Eucalyptus stellulata	Black Sally	W	Seed (available all year). 3 weeks cold treatment at 4° recommended.	Y

Key to Communities:

TAHa	Tall Alpine Herbfield *Celmisia –Poa* alliance	H	Heath (alpine)
TAHb	Tall Alpine Herbfield *Brachyscome-Austrodanthonia* alliance	F	Fen
SAH	Short Alpine Herbfield	B	Bog
FMa	Feldmark *Epacris-Chionohebe* alliance	STG	Sod Tussock Grassland
FMb	Feldmark *Coprosma – Colobanthus* alliance	W	Woodland
		SAH	Sub-alpine heath
		SR	Subalpine Riparian and wet areas
		SG	Subalpine Grassland and dry, treeless areas