Site Environmental Management Plan (SEMP)

Alpine Coaster and Associated Works

Thredbo Alpine Resort
Kosciuszko National Park, NSW

Document Control

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A	19.05.2022	Draft	C.Chalk	P.Fleming
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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 Alpine Coaster and Associated Works (the Project).

KT requires a SEMP to support the Development Application (DA) for the Project, situated in Thredbo Alpine Resort (Thredbo), approximately 35 kilometres (km) south-west of Jindabyne, New South Wales.

1.1 Purpose

This SEMP has been developed to outline how construction processes for the Project are to be managed in order to maintain and protect the environmental values of the Project site and surrounds.

1.2 Objective

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.

1.3 Environmental and Social Sustainability Policy

All activities undertaken by KT will be in accordance with the Company's *Environmental and Social Sustainability Policy 2021* (KT083).

1.4 Applicable Legislation

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*;
- *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;* and
- *Work Health and Safety Act 2011.*

2 Project Description

The proposed Alpine Coaster is a gravity-based type of rail-guided toboggan run. The coaster provides a year-round all-weather toboggan style of ride. It comprises of a two-seat sled fixed to stainless steel tubes, which are self-supported mostly without foundations.

The proposed Alpine Coaster is over 1400 m in total in length with over a 380 m uphill track and just over 1000 m descending track with 130 m in elevation.

Site plans are provided in **Appendix B**.

2.1 Project Location

The Project is located between the Cat Shed and the Valley Terminal precinct at the base of the mountain, within the head lease allotment on land formally described as Lot 876/DP 1243112.

The Project site and activities are located largely within a pre-disturbed and highly modified environment.

2.2 Construction Detail and Activities

A summary of the construction program and activities is provided in **Table 1**.

Table 1: Construction Detail and Activities

Aspect	Details
Site Access	The site will be accessible via the existing access road off Friday Drive. The bottom of the site is accessible via the existing staff car park, and the area between the machinery workshop and Merritts Gondola base station. The top of the site (Cat Shed area) will be accessible via the Mountain summer access road via Friday Drive.
Pre-construction	Pre-construction activities involve site preparation works, which will include: • establishment of site boundary/fencing; • erection of site signage and pedestrian/traffic controls; • installation of erosion and sediment controls; and • vegetation clearing / trimming and surveying coaster track alignment.
Construction Program and Activities	Construction activities will include: *Relocation / Installation of Snowmaking Infrastructure* The construction activities will comprise: • removal of existing snowmaking infrastructure nearby Snowgums Chairlift bottom station and the base of Sundance ski run; and • installation of new snowmaking infrastructure nearby Snowgums Chairlift bottom station and the base of Sundance ski run. *Construction of top station* The construction activities will comprise earthworks and the construction of the top station building, erection of fencing and trenching for the electricity supply from the Cat shed. *Construction of track alignment and associated infrastructure* The construction activities will comprise earthworks, installation of the track, footings (trestles, mono supports and concrete footings) and associated infrastructure such as the walkways, safety nets and fencing. *Construction of bottom station* The construction activities will comprise earthworks and the construction of the bottom station building and associated works, including works on the existing carpark/hardstand, footpaths, trenching for electricity supply, relocation of existing light poles and power boxes, construction of ramps, gabion walls, construction of tunnel section, erection of signage and installation of stormwater drainage infrastructure. Refer to the site plans (**Appendix B**) for further detail.

	Post-construction activities will comprise: • rehabilitation and landscaping in accordance with the Rehabilitation Plan; • removal of erosion and sediment controls; • demobilisation of plant and machinery; and • site clean-up.
Machinery, Plant and Equipment	Construction vehicles and plant will include (but not limited to): • 4WD vehicles and utilities; • Excavator; • Front-end / skid-steer loader; • Telehandler; • Snow groomer with summer tracks; • Utility Terrain Vehicles (UTV); • Tipper trucks; • Delivery trucks; • ZAD Winch; • Tree chipper; and • Mobile Crane.
Stockpile Sites	Temporary stockpiles will be required within the construction corridor to effectively manage materials during the works. The proposed temporary stockpile locations are located north of the proposed top station and the eastern end of the disused tennis courts. Soil will be separated so that it can be used during rehabilitation works. The main stockpile locations will be located within Thredbo's Waste Transfer Station. Stockpile locations are identified in **Appendix C**. These sites are located on disturbed areas and devoid of native vegetation. Soil stockpiles will be managed in accordance with the *Soil Stockpile Guidelines for the Resort Areas of Kosciuszko National Park* (OEH 2017) (Soil Stockpile Guidelines) and **Appendix D**.
Site Facilities and Temporary Structures	The site compound will be located at Friday Flat bus carpark. Materials will be transferred from Friday Flat to the site prior to placement. The existing staff car park / disused tennis courts at Valley Terminal will be utilised for the site office, as well as storage of materials. Existing amenities (e.g. toilets) at Valley Terminal will be available for construction staff.
Project Timing	Pre-construction / construction activities are proposed to commence in summer 2022/23, with completion by the end of April 2024.
Working Hours	It is proposed construction hours of works will be undertaken during standard working hours. This includes 7:00am – 6:00pm Monday to Friday, 7:00am – 1:00pm Saturdays, and no work on Sundays or public holidays (unless approved otherwise by the Secretary). Construction hours of work will be stipulated in the conditions of consent. Out-of-hours works are not anticipated.

3 Environmental Management

3.1 Environmental Management Structure and Responsibility

3.1.1 Project Team Structure

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

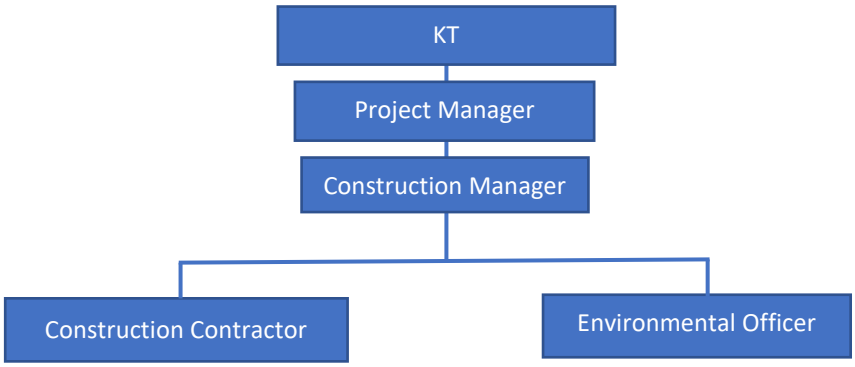


Figure 1: Project Team Structure

3.1.2 Roles and Responsibilities

The roles and responsibilities are outlined in **Table 2**.

Table 2: 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; and • Ensuring Project personnel and contractors are adequately trained and qualified to fulfil their roles.
Construction Manager	• Implement and maintain the SEMP; • Ensure all Project personnel comply with the requirements of the SEMP; and • 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; and • Ensure all machinery, plant and equipment are in good working order and condition prior to use.
Construction Contractor	• Comply with SEMP and legislative requirements; and • Construction contractor to develop and implement management plans in accordance with this SEMP, conditions of approval and contractual obligations.

3.2 Key Contacts

Key contacts for the Project are provided in **Table 3**. Prior to commencement of works, contact details (name and contact number) will be provided for Project personnel.

Table 3: Key Project Personnel Contact Details

Company / Agency	Role / Reason	Name	Contact
Key Project Personnel			
Spectrum	Project Manager	Rob Dickson	TBC
Wiegand	Construction Manager	TBC	TBC
KT	Environmental Officer	Brent Bourke	TBC
Government Agency Contacts			
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 Village Services			
Thredbo Medical Centre	General medical attention	-	(02) 6457 6254
Fire and Rescue Thredbo, NSW	Incident / emergency	-	(02) 6457 6144
Emergency Contacts			
NSW Police	In case of fire, medical or police emergency	-	000
NSW Fire and Rescue		-	
NSW Ambulance		-	

3.3 Communication

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 3.1.** 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 4**.

Table 4: 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

3.3.1 Notification Protocols

A summary of the key notification protocols is provided in **Table 5.** Notification requirements will be updated as required.

Table 5: 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.	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.	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 Village 2021/2022***.	KT Environmental Manager

3.4 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.

3.5 Environmental Incident and Emergency Response

All Project personnel are required to follow KT's ***Construction site Incident and Emergency Procedures Thredbo Village 2021/2022***. 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; and
- 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 7.1**. Contact details for key Project personnel and emergency services are provided in **Table 3**.

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.

4 Risk Assessment

To ensure that potential environmental risks are identified and managed, an environmental risk review has been included in **Table 6**. A risk matrix (**Appendix A**) was used to consider the likelihood and consequence of impacts identified in the SEE (KT 2022).

Table 6: Environmental Risk Assessment

Aspect	Activity / Project Phase	Potential Impact	Inherent Risk			Controls	Residual Risk		
			Likelihood	Consequence	Risk Rating		Likelihood	Consequence	Risk Rating
Injury/death to fauna as a result of earthworks	Vegetation clearing; earthworks; construction	Loss in population of fauna.	2	2	Low (4)	Flora and Fauna Management (**Section 5.3**)	2	1	Low (2)
Removal of native vegetation	Vegetation clearing	Loss of biodiversity; removal of approximately 0.29 ha of Subalpine Woodland (<0.1% of the extent of community within the resort). The impacts on vegetation communities are considered relatively minor and acceptable.	5	1	Mod (5)	Flora and Fauna Management (**Section 5.3**)	5	1	Mod (5)
Release of sediment and soils through disturbance of land or dewatering activities	Earthworks; trenching; construction of tunnel section	Loss of topsoil; reduction in water quality from the release of sediment laden water.	3	3	Mod (9)	Soil and Water Quality Management (**Section 5.2**) and **Appendix C**	2	3	Mod (6)
Generation of dust through movement of vehicles and plant	Removal of topsoil, excavating and backfilling.	Nuisance or health impacts from the release of dust. The potential impacts on air quality from the works are considered to be low.	2	2	Low (4)	Air Quality Management (**Section 5.7**)	2	1	Low (2)
Leak or spill of fuel or oil from fuel storage, plant and vehicles	Earthworks; Construction	Land and water contamination caused by the release of hydrocarbons.	2	3	Mod (6)	Fuels, Chemicals and Hazardous Substances Management (**Section 5.8**)	2	2	Low (4)
Release of noise and/or vibrations through use of heavy/loud plant or equipment	Earthworks; Construction	Noise and/or vibration nuisance caused through the use of heavy/loud plant or equipment considered low.	2	2	Low (4)	Noise and Vibration Management (**Section 5.6**)	2	1	Low (2)
Transport and loading/unloading of goods and materials and equipment and plant operation	All Project phases	Potential noise impacts on sensitive land uses considered low.	2	2	Low (4)	Noise and Vibration Management (**Section 5.6**)			Low (2)
Introduction and/or proliferation of weed/pest species in vehicles, plant, shoes and materials	All Project phases	Loss of biodiversity.	2	2	Low (4)	Biosecurity Management (**Section 5.4**)	2	1	Low (2)

Excavation works	Earthworks; trenching	Potential damage or destruction of unknown Aboriginal or European cultural heritage items or sites; loss of cultural heritage values. Considered unlikely due to works predominately within highly disturbed area.	2	2	Low (4)	Cultural Heritage Management (**Section 5.9**)	2	1	Low (2)
Storage and disposal of waste	All Project phases	Increase in pest numbers; impacts to road users and/or the environment from vehicles with unsecured loads.	3	2	Mod (6)	Waste Management (**Section 5.5**)	2	2	Low (4)
Construction vehicles and plants utilising existing road network	All Project phases	Inconvenience to existing transport networks/potential traffic impacts from the works are considered to be low.	2	1	Low (2)	Traffic and Transport Management (**Section 5.10**)	1	1	Very low (1)
Rehabilitation of disturbed areas	Post-construction	Failure of rehabilitation and stabilisation works resulting in increased erosion.	2	3	Mod (6)	Flora and Fauna Management (**Section 5.3**)	2	2	Low (4)

5 Mitigation and Management Measures

To mitigate and manage potential Project impacts identified in the risk review (**Table 6**), the following environmental management activities and controls will be implemented.

A SEMP checklist is provided in **Appendix E** which specifies the timing/frequency for implementation of controls, responsibilities and verification/sign-off. The checklist comprises general environmental management controls and will be updated following the provision of development consent and conditions of approval to ensure all site-specific requirements are met.

The checklist should be completed prior to, during and post construction. Following the provision of development consent, the checklist will be updated to include any site-specific requirements stipulated in the conditions of consent.

5.1 General

The following measures will be implemented:

- 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 (refer **Appendix E** for controls checklist);
- Provide approved plans and relevant documentation in the site office or other suitable location so that they are easily assessible by all construction staff; and
- Prior to commencement of works, the construction corridor will be temporarily fenced, roped or flagged to clearly delineate the construction area and no-go zones.

5.2 Soil and Water Quality

Soil and Water Quality Mitigation and Management Measures	
Objective	• Minimise potential impacts to receiving water sources; and • Reduce the potential for erosion and sediment moving offsite.
Mitigation Measures	*Drainage, erosion and sediment control principles* • Prepare and implement Stormwater Management Plan prior to commencement of construction works (refer **Appendix E** for the preliminary plan framework); • Appropriate sediment control measures should be implemented prior to any construction work for the proposal and retained in place until exposed areas of soil or vegetation are stabilised and/or revegetated (ELA 2022); • Drainage management and sediment control measures are to have particular regard to the prevention of any sedimentation of watercourses or vegetation communities adjoining the study area (ELA 2022); • Implement drainage, erosion and sediment controls in accordance with **Appendix D**; • Where required, drainage, erosion and sediment controls to be designed and installed in accordance with *Managing Urban Stormwater: Soils and Construction, Volume 1, 4th Edition* (Landcom 2004); • Site access points will be appropriately managed to minimise the risk of sediment being tracked onto sealed, public roadways; • All erosion and sediment control measures are to be checked regularly to ensure they remain in good working order at all times (e.g. prior to forecast rain, daily during extended periods of rainfall and after significant rainfall events); and • All exposed areas shall be progressively stabilised/rehabilitated; • Only weed-free or natural thatch/litter should be used in sediment control activities (ELA 2022); • All ESC measures will remain in place until all exposed areas of soil are stabilised and/or revegetated;

	Excavations • Ensure excavation depths and widths are the minimum necessary; • Leave excavations open for the minimum practical time; and • Divert surface water away from excavation openings. *Subgrade preparation* • Stockpile topsoil and organic matter for re-use as landscaping material, or remove from site, or spread nearby as per civil plans (AssetGeo 2022); and • AssetGeo (2022) recommends any waste soils being removed from the site must be classified in accordance with the current regulatory authority requirements to enable appropriate disposal to an appropriately licenced landfill facility. *Filling* • AssetGeo (2022) recommends any soils to be imported onto the site for backfilling and reinstatement of excavated areas should be free of contamination and deleterious material and should include appropriate validation documentation in accordance with current regulatory authority requirements which confirms its suitability for the proposed land use. *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); • Any excess excavated material will be removed from site and transported to the designated soil stockpiles sites; and • 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 ESCs.
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.

5.3 Flora and Fauna

Flora and Fauna Mitigation and Management Measures	
Objective	• Minimise potential impacts to native flora; • Minimise potential impacts to native fauna, their breeding places and habitat; • Minimise the introduction or proliferation of invasive species; and • Rehabilitate the site as soon as possible following completion of works to restore the habitat.
Mitigation Measures	*General* • The construction works will be confined to the approved construction corridor; • Reasonable and practicable native fauna management measures will be implemented during construction to avoid environmental harm and nuisance to native fauna, known habitats and breeding places; • Maintain a clean and tidy work area to ensure animals are not attracted to the site, including provision of covered bins during proposed works. *Vegetation and habitat management* • All disturbance should be kept to the minimum required to achieve the proposal (ELA 2022); • All machinery to be used during the construction phase should be limited to the existing disturbed areas and access tracks and the proposed coaster alignment as far as is possible (ELA 2022); and • 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 (ELA 2022).

	Rehabilitation • All exposed areas shall be progressively stabilised/rehabilitated; • Only weed-free or natural thatch/litter should be used in rehabilitation activities (ELA 2022); • All ESC measures will remain in place until all exposed areas of soil are stabilised and/or revegetated; and • All landscaping and rehabilitation should be undertaken in accordance with the *Rehabilitation Guidelines for the Resort Areas of Kosciuszko National Park* (DECC 2007) (ELA 2022), Rehabilitation Plan and approved Landscape Drawings.
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; and • Contact NPWS / LAOKO if injured fauna is identified as a result of site activities.

5.4 Biosecurity

Biosecurity Mitigation and Management Measures	
Objective	Reduce the risk of introducing invasive pest species
Mitigation Measures	• Appropriate safeguards should be in place during the proposed works to limit the potential for invasive plants or pathogens, chemicals or any other pollutants to enter the environment in association with the proposed development (ELA 2022); • Prior to the commencement of construction works, all weed species identified within the construction corridor will be treated in accordance with best practice methods to ensure these weeks are not spread further within the site or throughout KNP; • Project machinery and vehicles to arrive/depart from KNP and the Project site in a clean condition, free of mud and vegetative propagules and pathogens; • All vehicles and machinery entering Thredbo must adhere to the ***Standard Operating Procedure: Use and Maintenance of Wash Down Bay, March 2019 (KT055)*** which requires all vehicles and machinery to utilise the weed wash-down bay prior to entering site to ensure no new weed seeds are introduced to the site and KNP; • Machinery to be regularly maintained and manoeuvred to prevent the spread of weeds and pathogens; • Storage of plant and machinery is to be restricted to the designated disturbed areas within the construction corridor.
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.

5.5 Waste

The Project will generate the following waste streams:

- General solid waste (putrescible) – waste from litter bins, food waste; and
- General solid waste (non-putrescible) –plastic, paper, carboard, demolition and construction waste (e.g. concrete, excess steel).

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;
- Skip bins, including wash-out skip bin used for the management of excess concrete; and
- 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 Mitigation and Management Measures	
Objective	• Minimise construction waste as much as practicable; and • Reduce the impact of waste on-site and beyond the site boundary.
Mitigation Measures	• All waste will be managed and disposed of in accordance with the KT's waste management procedures; • Where possible, construction materials will be salvaged for reuse to divert waste from landfill; • All waste will be separated into waste streams and contained within appropriate receptacles and/or disposed of in accordance with the EPA guidelines; • All receptacles will be in good condition; • All waste transportation vehicles will be covered appropriately to ensure waste cannot spill, leak or escape onto the road or wash into stormwater drains.
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

5.6 Noise and Vibration

Noise and Vibration Mitigation and Management Measures	
Objective	Minimise potential noise and vibration nuisance in the surrounding environment.
Mitigation Measures	• Project staff will take reasonable and practicable management measures to avoid and mitigate environmental nuisance from noise associated with the works; • Works will be undertaken during standard work hours as stipulated in the conditions of approval; and • 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* and the *Interim Construction Noise Guideline* (DECC 2009) e.g. ensure plant is regularly maintained, and repair or replace equipment that becomes noisy, turn off plant that is not being used.
Performance Criteria	No construction related noise and vibration complaints received.
Corrective Actions	If complaints are received, the following steps will 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; and • If required, implement administrative controls e.g. additional staff training or change work hours to minimise noise.

5.7 Air Quality

Air Quality Mitigation and Management Measures	
Objective	Minimise potential impacts to the existing air quality in the surrounding environment.
Mitigation Measures	• Construction staff will take reasonable and practicable measure to prevent dirt and dust from affecting the amenity or the surrounding environment during construction e.g. minimise the area of soil disturbance; • Plant and equipment to be maintained and operated in an efficient manner to reduce air pollution;

	• All vehicles carrying spoil or rubble to/from site should be covered to prevent the escape of dust or other material; • When there is a risk of works creating dust nuisance, the Project site is to be watered.
Performance Criteria	No complaints received in relation to air pollution.
Corrective Actions	If complaints are received, the following steps will 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; and • If required, implement administrative controls e.g. additional staff training, alter construction methods or timing for undertaking dust generating activities.

5.8 Fuels, Chemicals and Hazardous Substances

Fuels, Chemicals and Hazardous Substances Mitigation and Management Measures	
Objective	Eliminate the potential for release of fuels, chemicals and hazardous substances to the environment
Mitigation Measures	• In the event on an on-site spill, construction staff will follow KT's ***Construction Site Incident and Emergency Procedures Thredbo Village, 2021/2022***; • A copy of KT's ***Thredbo Spill Kit Map (June 2019)*** will be available on-site and all Project staff will be made aware of their locations in the site induction; • 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; • Hazardous chemicals will be appropriately labelled in accordance with the *Code of Practice: Labelling of Workplace Hazardous Chemicals, August 2019* (NSW Government 2019); • Hazardous chemicals will be managed in accordance with the *Code of Practice: Managing risks of hazardous chemicals in the workplace, August 2019* (NSW Government 2019); and • Appropriate controls will be implemented when re-fuelling Project vehicles and machinery.
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, 2021/2022,*** 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.

5.9 Cultural Heritage

	Cultural Heritage (Indigenous and Non-indigenous) Mitigation and Management Measures
Objective	Minimise potential impacts on places and objects of cultural heritage significance
Mitigation Measures	• All Project personnel will be made aware of their obligations in relation to the management of cultural heritage via the site induction; • Project staff will take all reasonable and practicable measures to avoid harm to cultural heritage; • Where unexpected items of potential archaeological, built or Aboriginal cultural heritage significance are discovered, Project personnel will follow the below procedure: - **STOP:** Stop work and leave the site or item where it is. - **NOTIFY:** Notify the Project Manager and NPWS to arrange for representatives to inspect the site. If human remains are found, the NSW Police must also be notified. - **MANAGE:** Management may involve securing the find by erecting a no-go zone. - **REPORT:** The Project Manager will complete any reporting requirements, as directed by NPWS.

Performance Criteria	No loss of cultural heritage values.
Corrective Actions	If a suspected item/artefact of Aboriginal, built or archaeological cultural heritage significance is encountered, follow procedure above – Stop, notify, manage and report. All Project personnel to be made aware of any additional management requirements e.g. no-go zones.

5.10 Traffic and Transport

	Traffic and Transport Mitigation and Management Measures
Objective	Minimise potential impacts on existing road network
Mitigation Measures	• Traffic and construction vehicle access will be managed as per regular daily operation in the resort; • All Project vehicles and machinery to adhere to speed limits and signage and stay within construction corridor; and • All construction vehicles to enter/exit site via dedicated access. *Bike rider and pedestrian management* • Bike riders and pedestrian using trails within the construction corridor will be managed through the use of signage and temporary closures during the construction period.
Performance Criteria	• No significant impacts to existing road network or users; and • 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 Monitoring and Review

6.1 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 (refer **Appendix G** for SEMP checklist).

The Environmental Officer will also undertake weekly inspections utilising the **Weekly Inspection Report** (**Appendix H**).

6.2 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; and
- At the end of a Project to allow for improvements in subsequent Projects.

The Environmental Officer will be responsible for reviewing the SEMP and the Project Manager is responsible for approving these changes.

7 Reporting

7.1 Weekly Environmental Reporting

The Environmental Officer will provide copies of the **Weekly Inspection Report** (**Appendix H**) 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.

The Environmental Officer will report on the effectiveness of drainage, erosion and sediment controls using the **Erosion and Sediment Control Inspection Report** (**Appendix H**). The report forms part of the weekly environmental inspections and will be provided to the Project Manager with weekly internal reporting requirements.

7.2 Environmental Incident Reporting

All incidents and near misses will be managed in accordance with KT's ***Construction site Incident and Emergency Procedures Thredbo Village 2021/2022***. 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); and
- Details of corrective actions.

The **Environmental Incident Report Form** (**Appendix H**) 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.

7.3 Complaints Management

Should complaints be received from the public in relation to the Project they will be recorded using the **Complaints Form** (**Appendix F**) (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.

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 **Environmental Weekly Inspection Form** (**Appendix H**) (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 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; and
- Records of any environmental incidents, complaints, non-conformances and no-compliances.

8 References

Asset Geotechnical Engineering Pty Ltd (Asset) 2022, Proposed Alpine coaster Thredbo NSW Geotechnical Investigation.

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) 2022, Alpine coaster and Associated Works – Thredbo Alpine Resort – Flora and Fauna Assessment. Prepared for Kosciuszko Thredbo Pty Ltd.

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.

9 Appendices

Appendix A Risk Matrix

Likelihood and consequence is defined as follows:

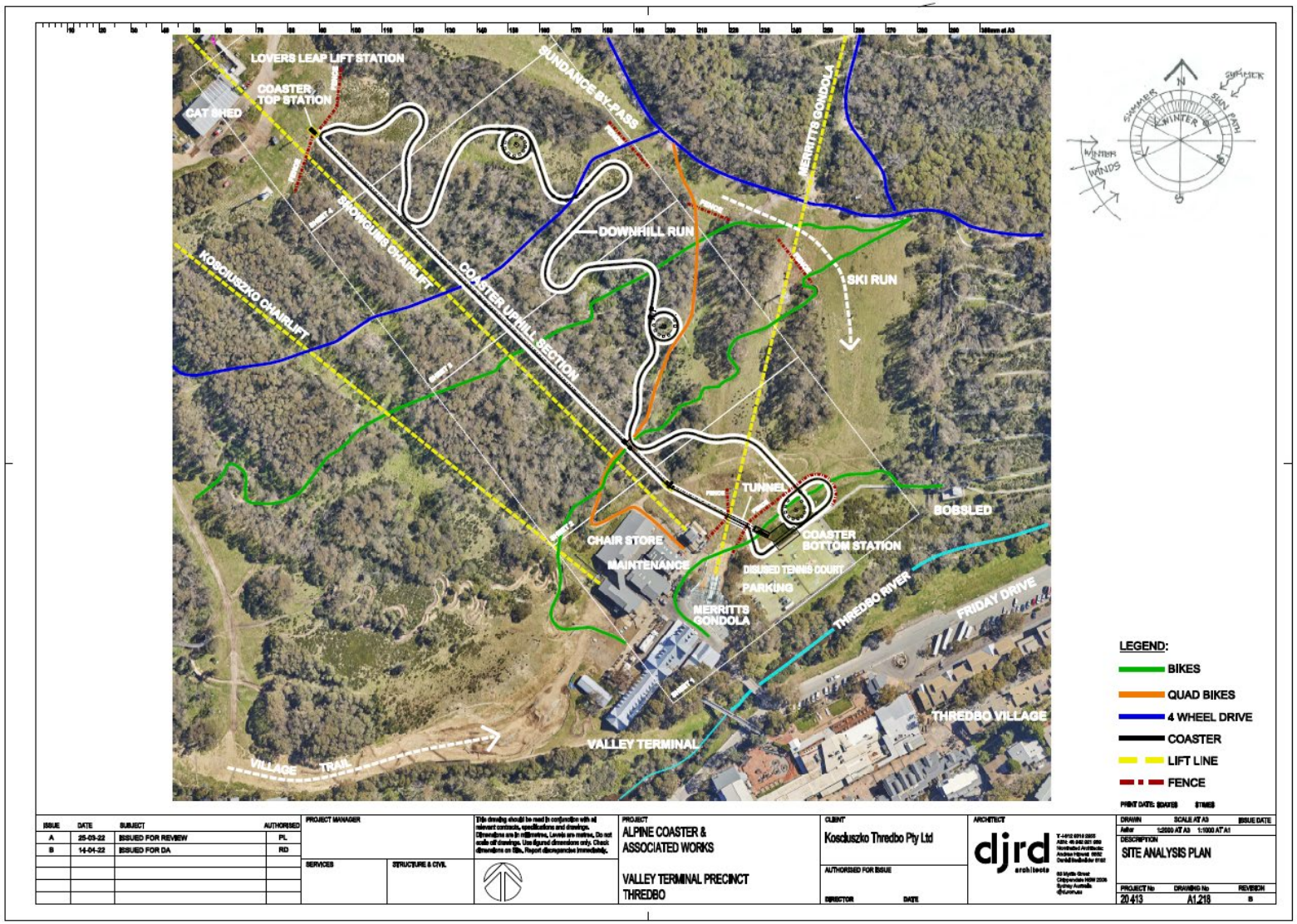
- **Likelihood**: the chance that something might happen; and
- **Consequence:** the outcome of an event which may have the potential to change the existing environmental values.

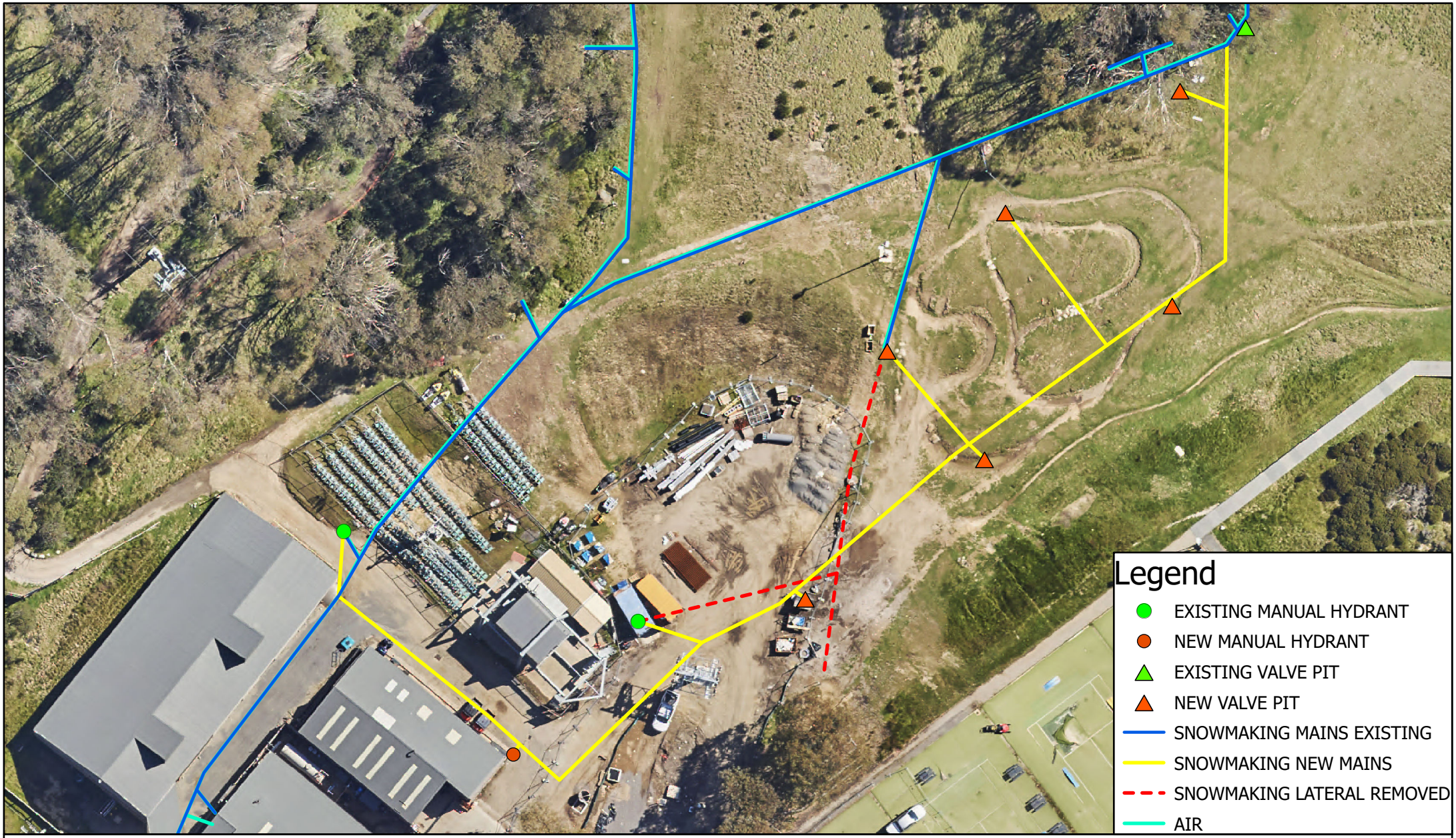
Likelihood	Consequence				
	Extreme (5)	Major (4)	Moderate (3)	Minor (2)	Insignificant (1)
Almost certain (5)	Extreme (25)	Extreme (20)	Extreme (15)	High (10)	Moderate (5)
Likely (4)	Extreme (20)	Extreme (16)	High (12)	Moderate (8)	Low (4)
Possible (3)	Extreme (15)	High (12)	Moderate (9)	Moderate (6)	Low (3)
Unlikely (2)	High (10)	Moderate (8)	Moderate (6)	Low (4)	Low (2)
Rare (1)	Moderate (5)	Low (4)	Low (3)	Low (2)	Very low (1)

Likelihood Rating		Definitions
Rare	1	Unlikely to occur during a lifetime or very unlikely to occur
Unlikely	2	Could occur but considered unlikely
Possible	3	Might occur at some time
Likely	4	Will probably occur
Almost certain	5	Is expected to occur in most circumstances

Consequence Rating		Definitions
Insignificant	1	Very low environmental impact, confined to a small area within the Project area. Prompt (typically within a shift) clean-up.
Minor	2	Low environmental impact, confined within the Project area. Short-term (typically within a week) clean-up.
Moderate	3	Reversible offsite environmental impact, requiring short-term clean-up (weeks). On-site medium term (weeks) clean-up.
Major	4	Major, offsite, environmental impact requiring medium-term clean-up (months). On-site impact requiring significant clean-up effort (months).
Extreme	5	Prolonged or severe, offsite or regional environmental impact requiring long-term clean-up (years) with irreversible residual damage. Extensive, Project area impact requiring long-term clean-up and recovery (years).

Appendix B Site Plans





Scale: 1:617

7 3.5 0 7 14 21 28

Meters

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

N

THREDBO

SNOWMAKING LAYOUT

Project: Snowmaking Services Proposal
Valley Terminal

Revision: G

Date: 26/07/2022

Produced By: KO

Appendix C Stockpile and Material Storage Locations

Site compound for storage of goods and materials within Friday Flat Coach Carpark

Temporary stockpile locations within the construction corridor

Main stockpile location within Thredbo's Waste Transfer Station

Appendix D Drainage, Erosion and Sediment Controls

Appropriate drainage, erosion and sediment controls will be required to manage soil and surface water during the construction of the development. A summary of proposed controls and associated requirements are outlined below.

Construction Activity	Control	Purpose	Timing	Location
Excavations; trenching; stockpiling	Sediment fence	To prevent sediment run-off	Where required, installed prior to commencement of activity and retained in place until exposed areas of soil are stabilised / rehabilitated	Downslope side of any excavations; wetter areas of trenches; surrounding soil stockpiles
	Straw bale filter fencing	To prevent sediment run-off	Where required, during excavation	Drier areas of excavation, across or at the toe of slope
Excavation / construction of tunnel section	Diversion trenching	To manage groundwater inflows at tunnel section	Where required, during excavation/trenching for tunnel section of the coaster route	To be determined onsite; tunnel section
Excavations; construction of tunnel section; trenching	Straw bales; sediment fence	Divert water around and away from open excavation works	Where required, installed once footings and service trenches are excavated and retained in place until excavations are stabilised/rehabilitated	Down-slope excavations – to be placed at each end of the open trenches
Excavations; trenching	Straw bales; Coir logs	Divert water around and away from excavation works	Installed once trenches have been excavated, where required	Cross-slope excavations – To be installed on the uphill side of excavations running cross-slope (where required)
Dewatering excavations – construction of tunnel section and trenching	Pumping; temporary filter dam	To capture sediment and pollutants and prevent them leaving the filter dam	In the event water enters an excavation and its required to be pumped out	Bank above old tennis courts, location to be determined during detailed design

Control Installation Notes

Sediment Fence

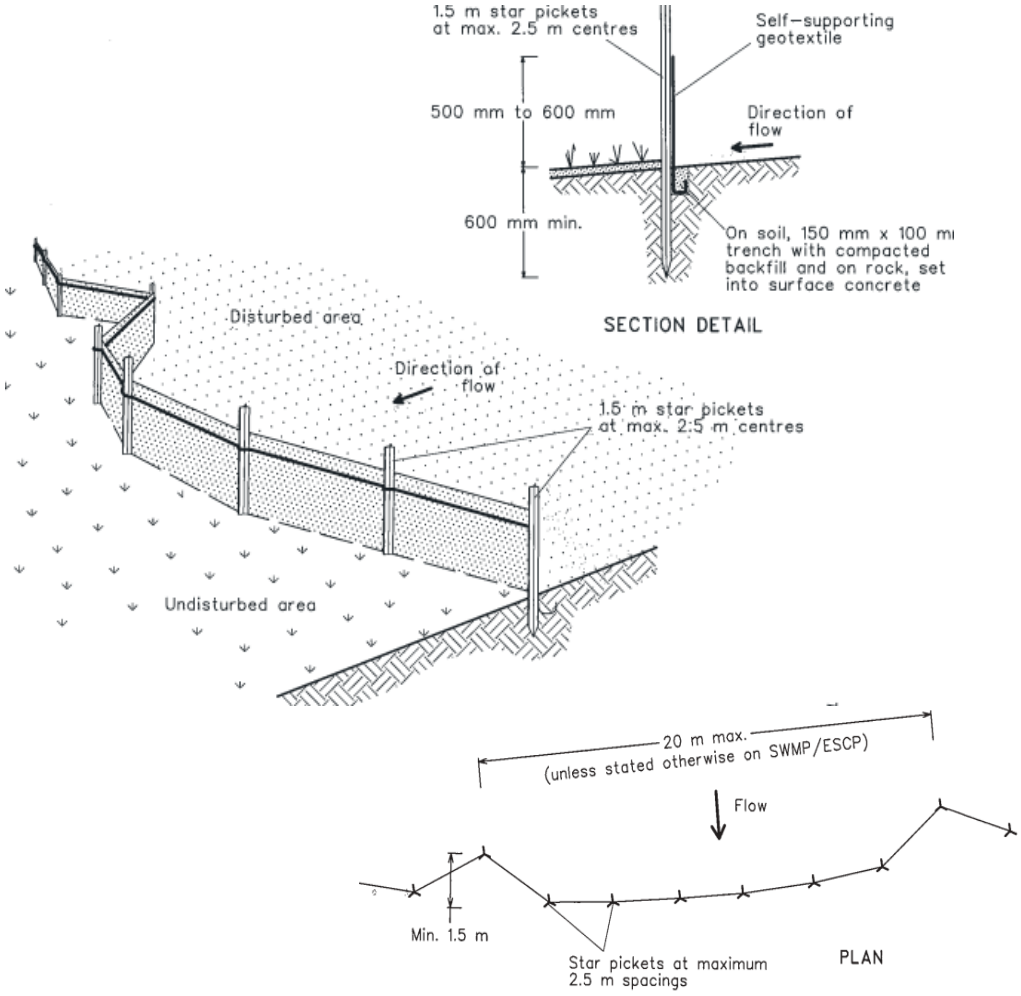
Construction notes:

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)

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

Coir Logs

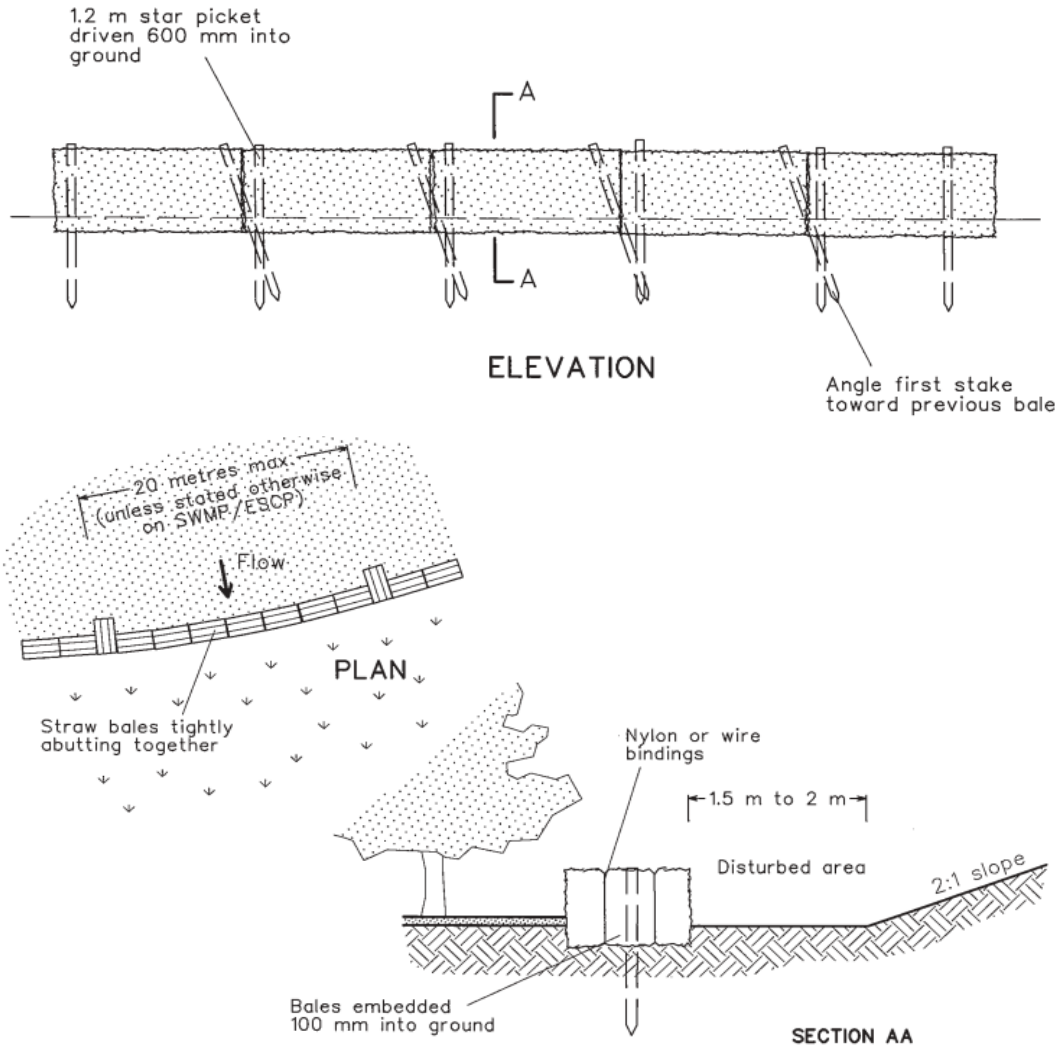
Construction notes:

1) Secure logs by driving the stakes between the outer netting and the core material each side of the logs and secured into the ground (not through centre of log).
2) Ensure spacing of stakes does not exceed an interval of 1 m.
3) Once driven into ground, the stakes should sit at least two-thirds below the ground and one-third above.

Straw Bale Filter

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)

Filter Dam Installation

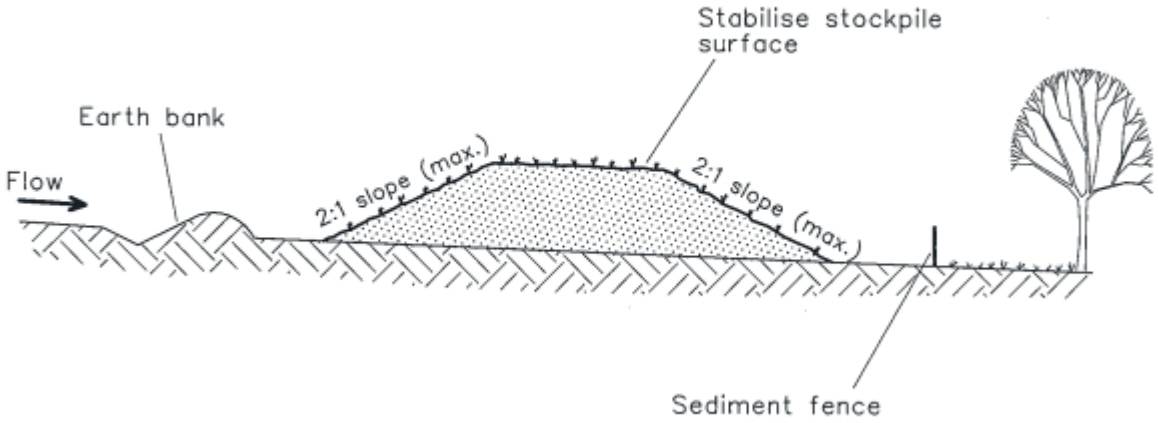
Construction notes:

1) Where practicable, locate the filter dam at least 50 m from the edge of a waterbody.
2) Suitably clear and prepare the surface where the filter dam will be installed.
3) The type, materials and size of filter dam to be in accordance with best practice guidelines e.g. Landcom (2004) and IECA Guidelines.

Soil Stockpile Management

Construction notes:

1) Stockpiles should be located at least 2 m (preferably 5 m) from existing vegetation and waterbodies, concentrated water flows, roads and hazard areas. Recommended location within weed free, disturbed area if possible.
2) Construct stockpiles as low, flat mounds (<2 m high) with a slope <50% (26˚).
3) Install appropriate sediment controls (e.g. sediment barriers 1-2 m downslope) around stockpiles.
    - It is recommended to cover stockpiles (e.g. with anchored geofabric) during strong wind or high rainfall events.
    - Straw bales used for sediment and erosion control must be certified weed free.



Stockpile Management (Source: Landcom 2004)

Appendix E Preliminary Stormwater Management Plan Framework

Preliminary Stormwater Management Plan Framework

Alpine Coaster

Thredbo Alpine Resort

Kosciuszko National Park, NSW

August 2022

Document Control

Revision	Date	Revision Type	Author	Approved by
A	06.07.2022	Draft	C.Chalk	A.Harrigan
0	11.08.2022	Final	C.Chalk	P.Fleming, A.Harrigan, E.Diver

Introduction

This preliminary Stormwater Management Plan (SMP) framework has been prepared for the Alpine Coaster Project. The proposed Alpine Coaster is a gravity-based type of rail-guided toboggan run.

The Project is located within Thredbo Alpine Resort, NSW between the Cat Shed and the Valley Terminal precinct at the base of the mountain. The Project site and activities are located largely within a pre-disturbed and highly modified environment.

The purpose of this document is to describe the existing stormwater network within and adjacent to the site, and demonstrate the Project has considered appropriate stormwater drainage and management measures during construction and ongoing operation of the Alpine Coaster. This document will inform the development of a more comprehensive plan as part of the detailed design for construction.

Summary of Existing Stormwater Infrastructure

A network of subsurface drainage and stormwater inlets/pits are located within the site and adjoining the works area (refer **Appendix A** and **B**). Generally, all stormwater within proximity of the works (nearby Gondola) flows into the gross pollutant trap and into outlet at Thredbo River (marked as existing rock headwall). Stormwater subsurface drainage east of tunnel works area flows into a wet area below raised footpath.

Construction – Stormwater Management Plan

The construction SMP will address the following:

- Necessary content outlined in Section 8 (Stormwater Management Plan) of the Department's *Guideline – What to include with your development application (DA)* (DoP 2017);
- Consideration of the construction and ongoing operation stages of the project, including any temporary measures such as the diversion trenches and pumping of groundwater during construction of the tunnel;
- Existing stormwater infrastructure within proximity of the works (refer **Appendix A** and **B**);
- The stormwater drainage and management measures are to demonstrate particular regard to the prevention of any sedimentation of watercourses or vegetation communities adjoining the work area;
- Recommendations outlined in the Proposed Alpine Coaster Thredbo NSW – Geotechnical Investigation prepared by Asset Geotechnical Engineering Pty Ltd, dated 11 August 2022; and
- Recommendations outlined in the Alpine coaster and Associated Works – Thredbo Alpine Resort – Flora and Fauna Assessment prepared by Eco Logical Australia, dated 2 August 2022.

Proposed controls will likely include (but not limited to) the following (refer **Appendix C**):

- Silt socks or similar for diverting water, protecting existing stormwater drains/inlets and aiding site runoff (where required).
- Diversion trenching for diverting groundwater away from works area during tunnel section, footing installations (where required).
- Dewatering excavations / filter dam – pumping of water at tunnel section, treatment prior to release offsite.

- Straw bales / sediment fencing for diverting water around and away from open excavations (where required).
- All controls will remain in place until all exposed areas of soil are stabilised and/ or revegetated.
- As highlighted in Section 7.5 of the Geotechnical Report (Asset 2022), if groundwater seepage is encountered during construction, subsoil drainage is recommended to be installed. If significant groundwater is encountered during construction that cannot be control using diversion drains, further geotechnical advice will be sought.

Operation – Stormwater Management Plan

The site plans (**Appendix C**) illustrate the installation of a stormwater network (e.g. pits and subsurface pipes around the bottom station and tunnel location). The site plans also demonstrate revegetation of the existing bank and landscape areas which forms part of the operational stormwater management.

The following controls will aid in the management of stormwater during operation:

- Stormwater pits will be installed to capture sediment runoff entering the stormwater system.
- Subsurface drainage will be installed to direct the flow of water to a suitable existing discharge point (below gondola/adjacent to tennis courts) rather than being allowed to infiltrate the ground.
- Landscaped areas and revegetation of the existing bank will form part of the ongoing stormwater management and filtration. Trees, and to a lesser extent smaller vegetation, take large quantities of water out of the ground every day. This lowers the ground water table, which in turn helps to maintain the stability of the slope (Australian Geomechanics 2007). All rehabilitation shall be undertaken in accordance with the *Rehabilitation Guidelines for the Resort Areas of Kosciuszko National Park* (DECC 2007).

References

Asset Geotechnical Engineering Pty Ltd (Asset) 2022, Proposed Alpine coaster Thredbo NSW Geotechnical Investigation.

Australian Geomechanics, AUSTRALIAN GEOGUIDE LR8 (CONSTRUCTION PRACTICE), Vol 42, No 1, p.174, March 2007.

Eco Logical Australia Pty Ltd (ELA) 2022, Alpine coaster and Associated Works – Thredbo Alpine Resort – Flora and Fauna Assessment. Prepared for Kosciuszko Thredbo Pty Ltd.

Appendix A – Existing Stormwater Infrastructure

Appendix B – Photos of Existing Stormwater Pits/Inlets

Photos 1-5 below are marked up on Site Works Sheet 2 of 2 (**Appendix C**) to provide context of the existing stormwater network within proximity of the works area. Photos 6-8 are marked up on CONSTRUCTION – PRELIMINARY STORMWATER MANAGEMENT PLAN (BOTTOM STATION AREA) (**Appendix C**).

Photo 1: gross pollutant trap – drains at tennis court and drains to the right of road/runoff nearby Gondola area all feed into GPT

Photo 2: Existing rock headwall, outlet to Thredbo River (GPT piped to outlet)

Photo 3: Outlet into thredbo River (existing rock headwall)

Photo 4: Drain – south western corner of tennis court (flows into GPT)

Photo 5: existing drains between Gondola and road - feed into GPT

Photo 6: Existing drain within proximity of tunnel works area

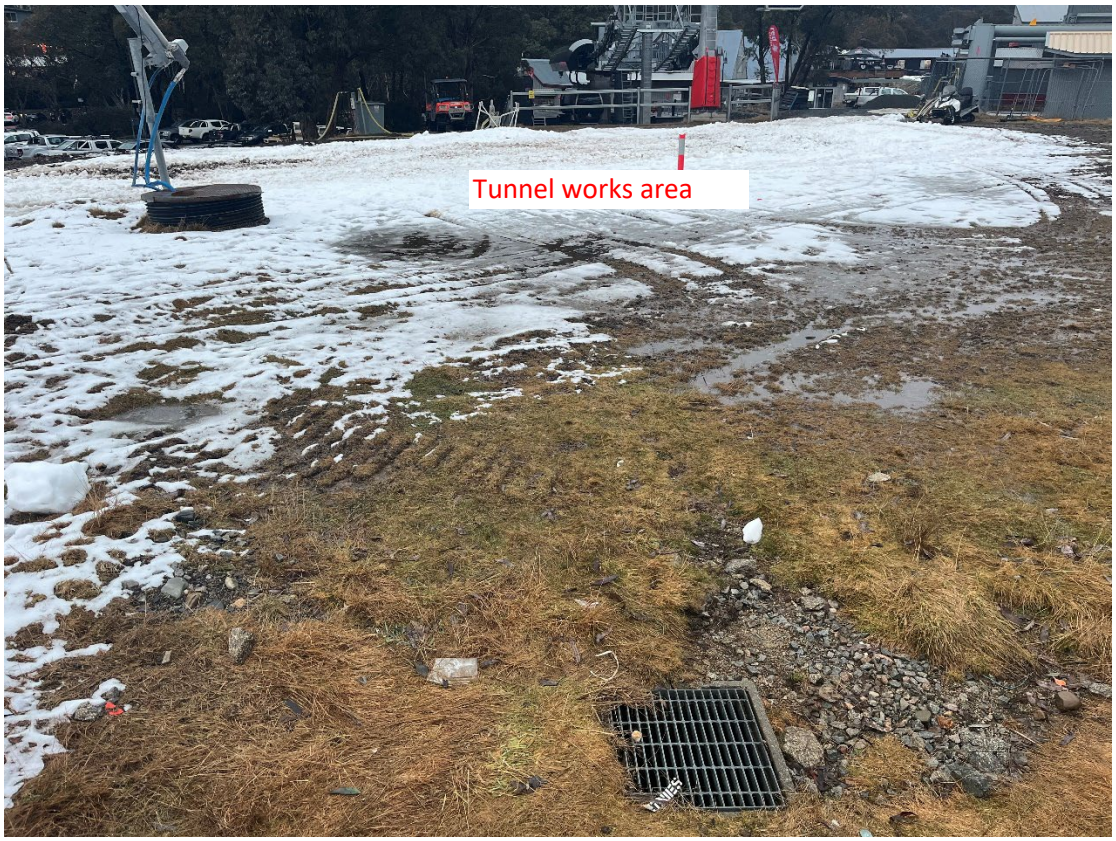
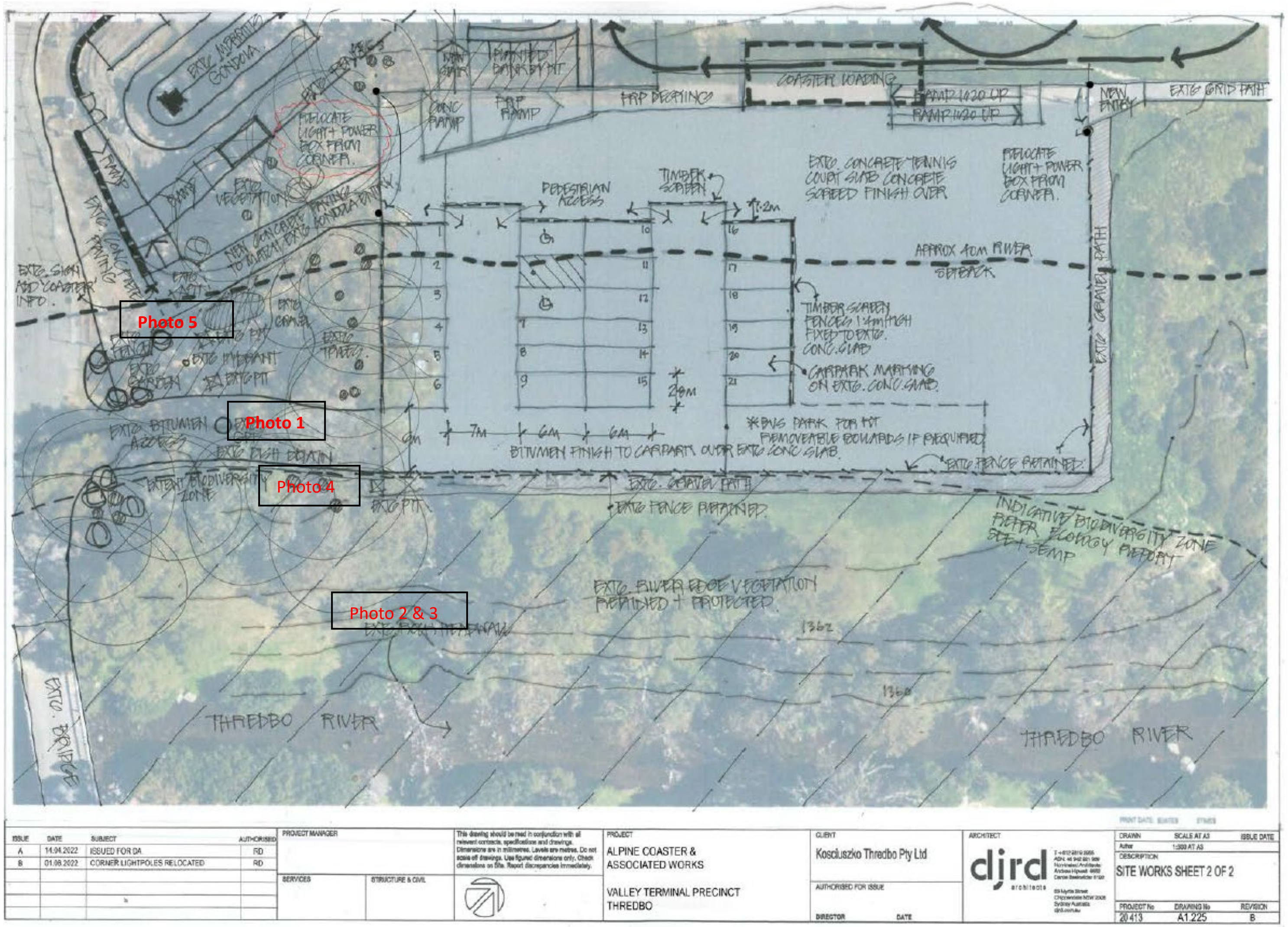


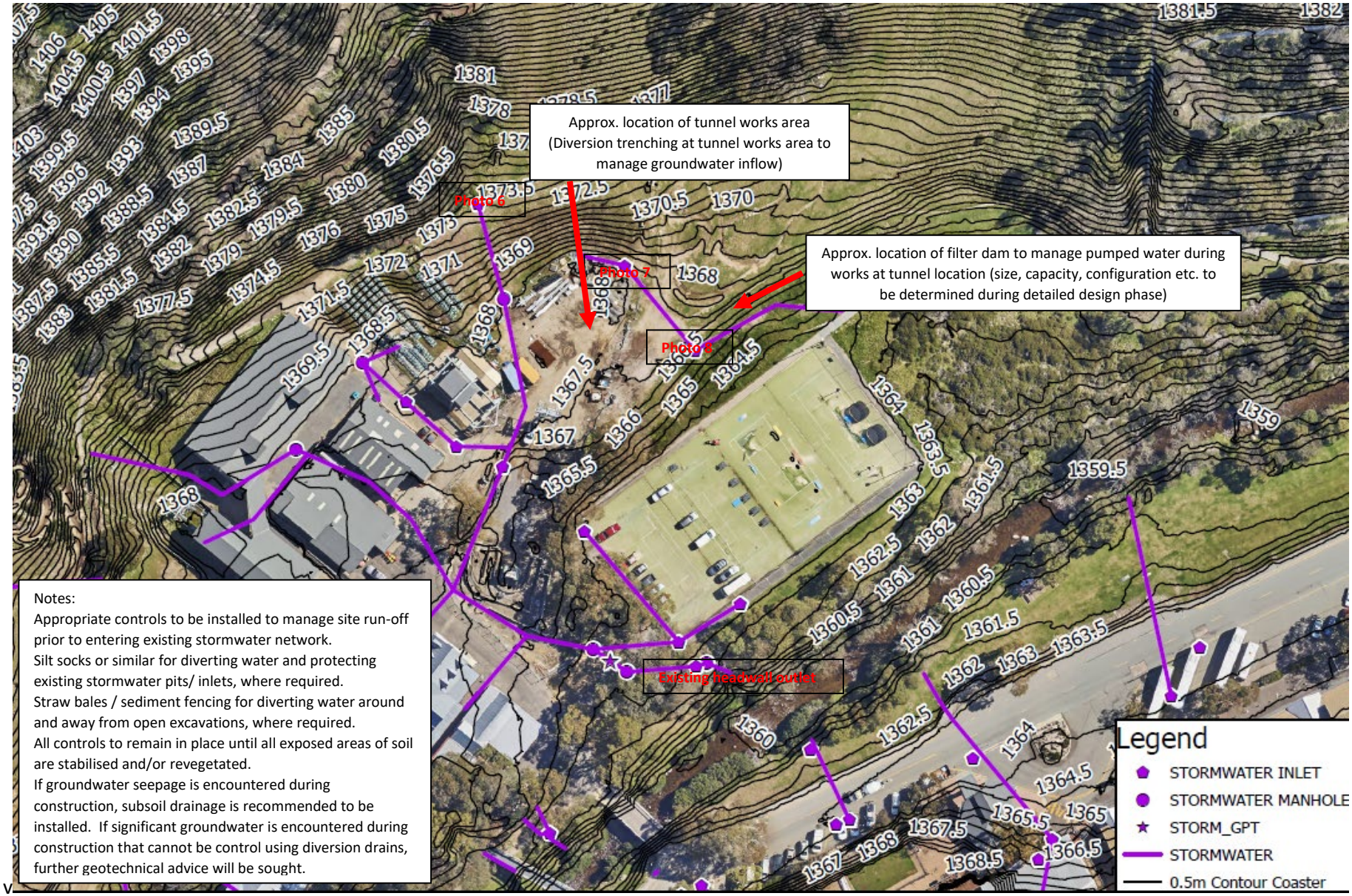
Photo 7: Drain nearby tunnel works area

Photo 8: Bank above tennis court – during Gondola works filter dam was located on flat section of bank and fed into this drain. Anticipated we will use same general location.

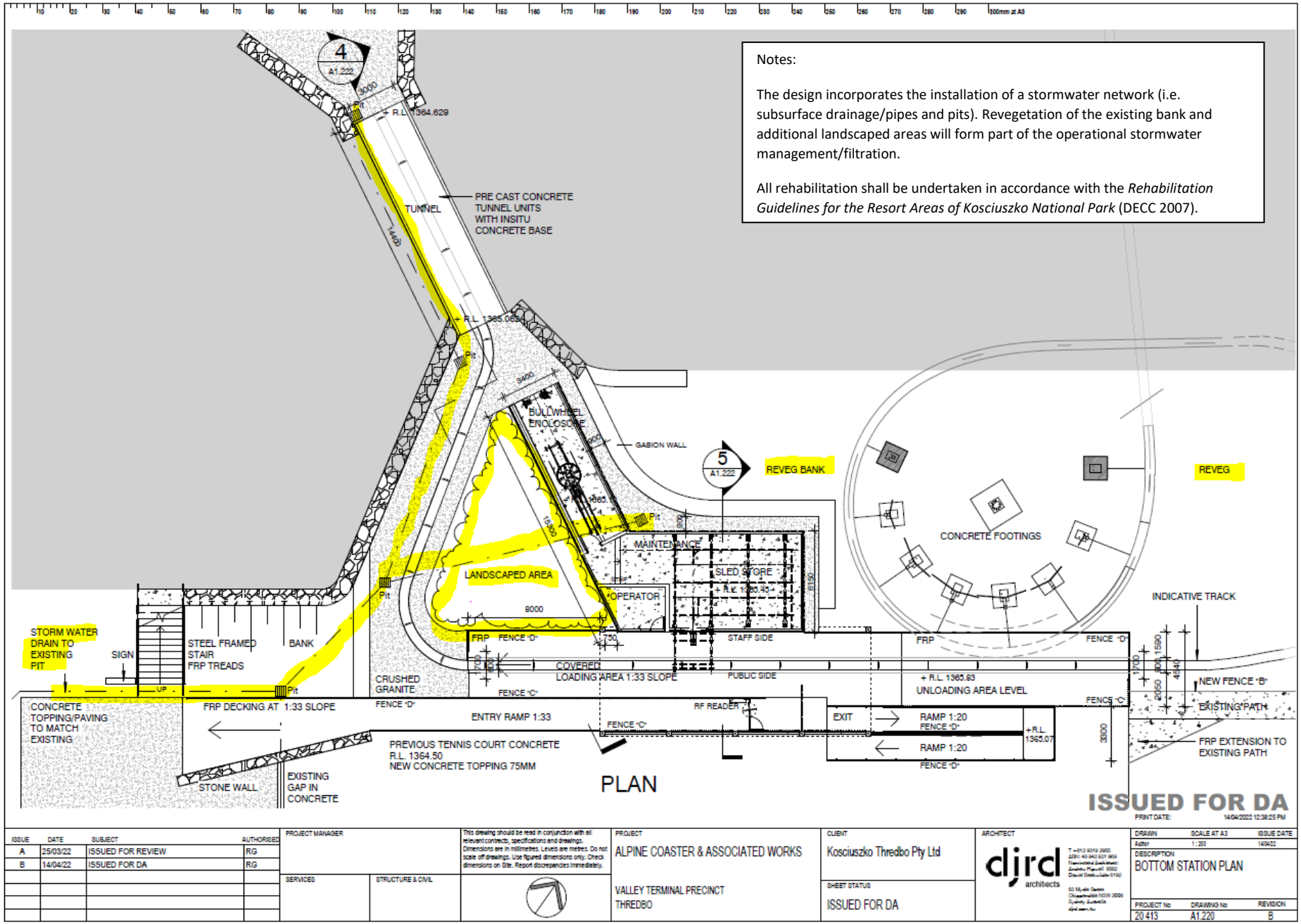
Appendix C – Preliminary Stormwater Management Plans



CONSTRUCTION – PRELIMINARY STORMWATER MANAGEMENT PLAN (BOTTOM STATION AREA)



OPERATION – PRELIMINARY STORMWATER MANAGEMENT PLAN (BOTTOM STATION AREA)



ISSUE	DATE	SUBJECT	AUTHORISED
A	25/03/22	ISSUED FOR REVIEW	RG
B	14/04/22	ISSUED FOR DA	RG

PROJECT MANAGER

SERVICES | STRUCTURE & CIVIL

This drawing should be read in conjunction with all relevant contracts, specifications and drawings. Dimensions are in millimetres. Levels are metres. Do not scale off drawings. Use figured dimensions only. Check dimensions on Site. Report discrepancies immediately.

PROJECT: ALPINE COASTER & ASSOCIATED WORKS

VALLEY TERMINAL PRECINCT
THREDBO

CLIENT: Kosciuszko Thredbo Pty Ltd

SHEET STATUS: ISSUED FOR DA

ARCHITECT: djrd architects

DRAWN	SCALE AT A3	ISSUE DATE
Author	1:200	14/04/22

DESCRIPTION: BOTTOM STATION PLAN

PROJECT No	DRAWING No	REVISION
20 413	A1.220	B

PRINT DATE: 14/04/2022 12:38:25 PM

Appendix F Environmental Management Activities and Controls Checklist

Environmental Management Activities and Controls Checklist						
Project Name:			**Location:**			
Environmental Management Control	**Responsibility**	**Timing / Frequency**	**Date of Completion**	**Sign Off**	**Reference**	**Comment /Observations**
General						
All approvals, licences and permits have been obtained for the Project and available on-site	Project Manager	Pre-construction				
Site inductions have been provided to all Project personnel on-site	Project Manager	Pre-construction				
All Project personnel have undergone relevant training / hold relevant permits and qualifications to perform their role	Project Manager	Pre-construction				
Construction site boundary and no-go zones have been clearly delineated	Construction Manager	Pre-construction				
Site access to be restricted to authorised personnel	Construction Manager	During construction				
All plant, materials and equipment to be located in existing disturbed corridors	Construction Manager	During construction				
Maintain incident and complaints register	Project Manager	During construction				
Maintain copies of inspection and monitoring reports	Environmental Officer	During construction				
Drainage, Erosion and Sediment Control						
Drainage, erosion and sediment controls designed and installed in accordance with this plan	Construction Manager	Pre- construction; during construction			**Section 5.2** and **Appendix D** of SEMP	
Drainage, erosion and sediment controls to be inspected each day and prior to, and immediately following a significant rainfall event to ensure controls are in good working condition.	Construction Manager	Prior to construction, during construction (daily / following significant rainfall event)			**Section 5.2** and **Appendix D** of SEMP	
Stormwater controls implemented in accordance with Stormwater Management Plan	Construction Manager				**Section 5.2** and **Appendix D** of SEMP	
Stockpiles						
Stockpiles are managed appropriately e.g. erosion and sediment controls installed around perimeter, stockpiles shall not encroach within the dripline of trees, stabilise stockpiles to prevent weed infestation	Construction Manager	During construction			**Section 5.2** and **Appendix D** of SEMP	

Flora and Fauna						
Ensure equipment and construction materials are stored on previously disturbed areas to avoid impacts to native vegetation.	Construction Manager	All Project phases			**Section 5.3** of SEMP	
Reasonable and practicable native fauna management measures have been undertaken to avoid environmental harm and nuisance to native fauna, known habitats and breeding places	Construction Manager / Environmental Officer	Pre-construction, during construction			**Section 5.3** of SEMP	
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 Manager	During construction			**Section 5.3** of SEMP	
Biosecurity						
All weed species that occur within the construction corridor and could spread through disturbance or seed dispersion are treated to ensure no further spread	Environmental Officer	Pre-construction, during construction			**Section 5.4** of SEMP	
Machinery and personnel to arrive at and depart from the site in a clean condition, free of mud and vegetative propagules	Construction Manager	Pre-construction, during construction			**Section 5.4** of SEMP	
Machinery to be regularly maintained and manoeuvred to prevent the spread of weeds and pathogens	Construction Manager	Pre-construction, during construction			**Section 5.4** of SEMP	
Rehabilitation						
All disturbed areas to be progressively stabilised and/or revegetated in accordance with the Rehabilitation Plan (and in consultation with the Environmental Officer) so that no areas remain exposed if works are completed in that area	Construction Manager	During construction, post-construction			**Section 5.3** of SEMP	
Disturbance areas are to be rehabilitated immediately following the completion of construction works	Construction Manager	Post-construction			**Section 5.3** of SEMP	
Waste						
Site is free from litter and waste is contained within dedicated areas / appropriate receptacles e.g. building waste shall be separated from litter bins	Construction Manager	During construction			**Section 5.5** of SEMP	
Where possible, waste avoidance and resource recovery strategies for construction waste have been implemented	Construction Manager	During construction			**Section 5.5** of SEMP	
All waste that cannot be recycled shall be disposed of appropriately at a licenced landfill site	Construction Manager	During construction, upon completion			**Section 5.5** of SEMP	
No burning or burying of waste on-site	Construction Manager	During construction			**Section 5.5** of SEMP	

The site shall be left in a tidy state with no evidence of waste left on-site	Construction Manager	Post-construction			**Section 5.5** of SEMP	
Noise and Vibration						
Works conducted during hours stipulated in conditions of consent	Construction Manager	During construction			**Section 5.6** of SEMP	
Machinery and equipment fitted with appropriate noise control devices	Construction Manager	During construction			**Section 5.6** of SEMP	
Machinery and equipment maintained and serviced in accordance with the manufacturer's specification	Construction Manager	During construction			**Section 5.6** of SEMP	
All justifiable noise complaints have been investigated, managed and reported	Environmental Officer	During construction			**Sections 5.6** and **7.3** SEMP	
Air Quality						
Areas of exposed soil restricted as much as practicable	Construction Manager	During construction			**Section 5.7** of SEMP	
No burning of materials on-site	Construction Manager	During construction			**Section 5.7** of SEMP	
Trucks carrying spoil/rubble/waste covered to reduce dust nuisance	Construction Manager	During construction			**Section 5.7** of SEMP	
All justifiable air quality-related complaints have been investigated, managed and reported	Environmental Officer	During construction			**Section 5.7** of SEMP	
Fuels, Chemicals and Hazardous Substances						
Emergency procedure developed and available on-site at all times	Project Manager	Pre-construction, during construction			**Section 5.8** of SEMP	
Spill response material is adequate for the type and quality of hazardous materials used / stored on-site	Construction Manager	Pre-construction, during construction			**Section 5.8** of SEMP	
Fuel and chemical storage in accordance with the relevant Australian Standards	Construction Manager	Pre-construction, during construction			**Section 5.8** of SEMP	
All construction plant and machinery shall be properly maintained and inspected to avoid spills / leaks	Construction Manager	Daily during construction			**Section 5.8** of SEMP	
Appropriate controls implemented when refuelling Project vehicles and machinery	Construction Manager	During construction			**Section 5.8** of SEMP	
Cultural Heritage						
All Project personnel and contractors shall be made aware of the requirement to notify and cease works if cultural heritage (Aboriginal or archaeological) items are discovered during ground disturbance.	Project Manager /Construction Manager	Site induction			**Section 5.9** of SEMP	
Traffic and Access						
All Project vehicles and machinery to adhere to speed limits and signage and stay within construction corridor	All personnel	All Project phases			**Section 5.10** of SEMP	
Appropriate signage installed to direct traffic/exclude public access from the construction corridor	All personnel	All Project phases			**Section 5.10** of SEMP	

Appendix G Environmental Schedules

This Appendix includes the following environmental schedules:

- Weekly Inspection Report;
- ESC Inspection Report;
- Complaints Form template;
- Environmental Incident Report Form.

THREDBO ENVIRONMENTAL SERVICES

SEMP WEEKLY INSPECTION REPORT

Sheet _____of_____

Project: _____ Inspection Date: _____

Inspected by: _____

Weather:	**Morning** Clear/Overcast/ Fine/Rain/Snow	**Afternoon** Clear/Overcast/Fine/Rain/Snow	
Operation	Condition	Plant/Labour	Comments

Verbal Discussion with Contractor:	Verbal discussion with others:
Materials Received / Required:	Site Instructions Issued:
Inspectors Report / Summary:	Action required:

Signature: _____ Date: _____

THREDBO ENVIRONMENTAL SERVICES

INSPECTION REPORT FOR TEMPORARY EROSION/SEDIMENTATION CONTROLS

Sheet _____of_____

Project: _____ Inspection Date: _____

Inspected by: _____ Inspect the site weekly or immediately after rain.

1. Are temporary drains effective in diverting all runoff from exposed areas to silt traps or other sediment structures before leaving site? If No, state location and action required:	Yes/No
2. Have new areas been disturbed which need temporary controls? If Yes, state where:	Yes/No
3. Are there any disturbed areas where work is sufficiently advanced for revegetation to be undertaken? If Yes, state where:	Yes/No
4. Is any dirty runoff water bypassing or overflowing existing silt traps/sediment control structures? Do existing traps need to be increased in capacity? Are any additional traps needed? If Yes, state location, action needed and priority:	Yes/No Yes/No Yes/No
5. Do any silt traps/sediment control structures need maintenance or repair to operate effectively? If Yes, state location, action needed and priority	Yes/No
6. Are any silt/sediment control structures more than 60% full or otherwise in need of cleaning out? If Yes, state location	Yes/No
7. Are actions taken after last inspection adequate and effective? If NO, list outstanding actions:	Yes/No
Signature:_____ _____Date:_____	

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. It is important to capture photos at the time of the incident as part of this investigation.

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

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Spill Kit stock used – for restock purposes

Name Spill Kit(s) used: e.g. *'Waste Transfer Station 80Litre Spill Kit'*

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Environmental Incident Reporting Form

Spill Kit Product	Quantity used
Enviropeat Oil Absorbent Material – 25L bag	
1.2m Absorbent sock	
3m Absorbent sock	
Absorbent pads	
Chemical resistant disposable gloves	
Disposable face masks	
Roll of plastic bin bags	
Cable ties	

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:*

Spill Kit Replenished

Staff Members Name and Role:	
Staff Members signature:	*Date:*

Created By: Paul Corcoran on 24 Mar 2009
Review Date: 16 Jan 2019

Appendix H Proposed Landscape and Rehabilitation Species

The landscaping and rehabilitation for the Development will utilise a selection of species listed in Appendix 10 (Rehabilitation Species List: Thredbo & Bullocks Flat) from the publication; Rehabilitation Guidelines for the Resort Areas of Kosciuszko National Park (NPWS 2007). A summary of the selected species and materials/equipment required are provided below. The proposed species are similar to those used for the Merritts Gondola Development within close proximity of the Development site.

Landscaping around the bottom station will be undertaken in the areas marked on the Bottom Station Plan, Drawing No. A1.220. Landscaping within this area will be consistent with surrounding landscaped areas in the Valley Terminal base station area. All disturbed land within the construction corridor (e.g. service trenches, access routes) will be rehabilitated in accordance with the Rehabilitation Guidelines. A detail Rehabilitation Plan will be prepared for the Development prior to construction.

The proposed materials and equipment required include (but are not limited to) the following:

- local topsoil sourced from Thredbo's stockpile;
- weed-free mulch and anchoring materials;
- seed and native plants;
- native plant fertiliser tablets, dynamic lifter and water crystals;
- plant protection materials;
- hand tools and planting equipment; and
- watering supplies.

Table AI: Proposed Plant Species

Scientific Name	Common Name
Poa fawcettiae	Blue snow-grass
Ozothamnus secundiflorus	Cascade everlasting
Ozothamnus hookeri	Kerosene bush
Cassina uncata	Sticky cassina
Grevilliae australis	Alpine Grevillea
Oleria phlogopappa	Dusty daisy bush
Oleria megalophylla	Large leaf daisy-bush
Prosanthera cuneata	Alpine mint-bush
Eucalyptus pauciflora	Snow gum
Eucalyptus Stellulata	Black Sallee
Festuca rubra	*Chewings fescue**

**Exotic grass species such as Chewings Fescue are not suitable for the rehabilitation of areas containing native species.*

Areas of open ski slope that have been disturbed by the works and are dominated by exotic species will be seeded using a 1:1 mix of Chewings fescue & *Poa fawcettiae.*

Exposed soil / bare earth will be mulched utilising weed-free rice straw or natural thatch/litter.

Appendix 10
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^{o} recommended.	Y
	Eucalyptus stellulata	Black Sally	W	Seed (available all year). 3 weeks cold treatment at 4^{o} 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