



Statement of Environmental Effects

Friday Flat and Middle Slopes Fan Gun Project

**Thredbo Alpine Resort,
Kosciuszko National Park, NSW**

March 2022



Department of Planning
and Environment

Issued under the Environmental Planning and Assessment Act 1979

Approved Application No DA 22/458

Granted on the 31 March 2022

Signed S Butler

Sheet No 2 of 10



Site Environmental Management Plan (SEMP)

Friday Flat and Middle Slopes Fan Gun Project

**Thredbo Alpine Resort
Kosciuszko National Park, NSW**

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Site Environmental Management Plan (SEMP)

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Document Control

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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 Friday Flat and Middle Slopes Fan Gun Project (the Project).

KT requires a SEMP to support the Development Application (DA) for the Project, situated in Thredbo Alpine Resort (Thredbo), approximately 30 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*;
- *Soil Conservation Act 1938*;
- *Waste Avoidance and Resource Recovery Act 2001*;
- *Water Management Act 2000*; and
- *Work Health and Safety Act 2011*.

1.5 Project Approvals and Licencing

Works will be undertaken within 40 m of an unnamed watercourse and Merritts Creek, therefore a Controlled Activity Approval (CAA) will be required.

2 Project Description

The Project comprises the following at Friday Flat:

- Removal of five (5) existing lance guns and pits;
- Installation of five (5) concrete pits for fan guns;
- Installation of five (5) TT10 fan guns;
- Installation of three (3) retractable concrete pits for mobile fan guns;
- Installation of one (1) manual hydrant for mobile fan gun;
- Trench for electrical services; and
- Trench for new short lateral snowmaking pipe.

The Project comprises the following at Middle Slopes:

- Installation of four (4) manual hydrants; and
- Trench for electrical services; and
- Trench for new short lateral snowmaking pipe.

The electrical and snowmaking lateral trenches will be approximately 0.6 m wide by 0.6-0.8 m deep, and the concrete pits supporting the snowmaking guns will be 1.6 m deep.

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

2.1 Project Location

The Project is located within the Friday Flat and Middle Slopes ski areas, within the head lease allotment, on land formally described as Lot 876/DP 1243112.

2.2 Site Description

The Project site and activities are located on a pre-disturbed and highly modified environment (NSW Government 2021a). The Project is located within 40 m of an unnamed watercourse and Merritts Creek (refer **Appendix B**).

2.3 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 Project site is accessible via Friday Drive and mountain summer access road (refer Appendix B).
Construction Program and Activities	<p>Pre-construction activities involve site preparation works, which will include:</p> <ul style="list-style-type: none"> • Establishment of site boundary; • Establishment of site compound; • Erection of site signage; and • Installation of erosion and sediment controls. <p>The proposed construction program will comprise the following:</p>

	<p><i>Friday Flat</i></p> <ul style="list-style-type: none"> • Temporary diversion of Friday Flat Loop Mountain Bike (MTB) Trail; • Removal of existing lance guns 1 – 5 and pits along skiers right of Easy Does It run; • Installation of five (5) concrete pits and five (5) TT10 fan guns within general location of existing lance guns 1 – 5; • Installation of three (3) retractable pits on lower section of Friday Flat (bottom of Giddy Up and Easy Does It runs and Tower 2 of Gunbarrel ski lift); • Installation of one (1) manual hydrant (north of the Thredboland Cubby House on Easy Does It run); • Trenching and laying of electrical cabling to new gun locations; • Trenching and laying of lateral snowmaking pipe; and • Backfilling of trenches. <p><i>Middle Slopes</i></p> <ul style="list-style-type: none"> • Temporary diversion of Cannonball Downhill MTB Trail; • Installation of four (4) manual hydrants within general location of existing pits along skiers right; • Trenching and laying of electrical cabling to new manual hydrants; • Trenching and laying of lateral snowmaking pipe; and • Backfilling of trenches. <p>Refer to the site plans included in Appendix B for further detail.</p> <p>Post-construction activities will comprise:</p> <ul style="list-style-type: none"> • Stabilisation and rehabilitation work in accordance with the Rehabilitation Management Plan; • Removal of erosion and sediment controls; • Demobilisation of plant and machinery; and • Site clean-up.
Machinery, Plant and Equipment	<p>Construction vehicles and plant will include (but not limited to):</p> <ul style="list-style-type: none"> • 4WD vehicles and utilities; • Excavator; • Front-end / skid-steer loader; • Telehandler; • Snow groomer with summer tracks; • Utility Terrain Vehicles (UTV); • Tipper trucks; and • Delivery trucks.
Stockpile Sites	<p>The main stockpile locations are identified in Appendix B. Access to these locations will be restricted to KT staff and contractors. Temporary stockpiles may be required within the construction corridor to effectively manage materials during the works. Where required, these sites will be located on disturbed areas and avoid native vegetation. Soil stockpiles will be managed in accordance with the <i>Soil Stockpile Guidelines for the Resort Areas of Kosciuszko National Park</i> (OEH 2017) (Soil Stockpile Guidelines) and ESCP (Appendix C).</p>
Site Facilities and Temporary Structures	<p>The site compound will be located at Friday Flat. Existing amenities (e.g. staff room and toilets) at Friday Flat, Gunbarrel bottom station and Catshed will be available for construction staff. There will be no compound or temporary structures within the construction corridor.</p>
Project Timing	<p>The anticipated timing for the commencement of construction works is February 2022. Project completion is anticipated in April 2022.</p>
Working Hours	<p>The working hours for construction will be stipulated in the conditions of consent.</p>

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**.

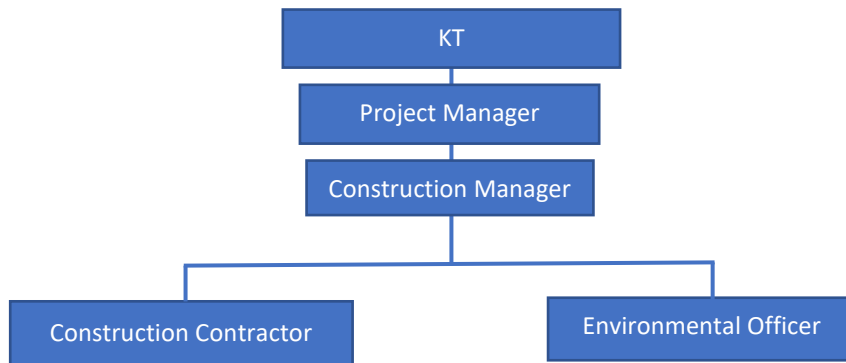


Figure 1: Project Team Structure

3.1.2 Roles and Responsibilities

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

Table 2: Roles and Responsibilities

Role	Responsibilities
Project Manager	<ul style="list-style-type: none"> 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 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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			
KT	Project Manager	TBC	TBC
TBC	Construction Manager	TBC	TBC
KT	Environmental Officer	TBC	TBC
TBC	Construction Contractor	TBC	TBC
Government Agency Contacts			
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
DPE	Details of any non-compliance in accordance with the requirements detailed in Section 7.5 .	Notify compliance@planning.nsw.gov.au and alpineresorts@planning.nsw.gov.au within 7 days after becoming aware of any non-compliance with the development conditions of approval.	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.

3.6 Communicable Diseases

To minimise the risks associated with the potential spread of communicable disease such as Covid-19, the following mitigations are to be implemented:

- Implementation of hygiene protocols to minimise the risk of potential spread of communicable disease (i.e. Covid-19) during construction works, such as:
 - providing hand sanitiser, antibacterial hand wash, tissues within the toilets and lunch rooms within the site offices
 - clean down frequently touched surfaces within shared areas
 - if Project personnel are experiencing cold or flu-like symptoms, do not attend work until you have received a Covid-19 test which provides negative results

- following the current health directions from the NSW Government at the time. Given the changing climate of NSW Government health directions, the latest health directions should be communicated via pre-start meetings or similar; and
- All construction staff to be made aware of hygiene protocols during the site induction and the Construction Contractor is responsible for implementing appropriate controls in line with current health directions from the NSW Government.

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 2021).

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	Earthworks; construction	Loss in population of fauna.	2	2	Low (4)	Flora and Fauna Management (Section 5.3)	2	1	Low (2)
Release of sediments and soils through disturbance of land	Earthworks; stockpiling	Loss of topsoil, reduction in water quality from the release of sediment laden water.	3	3	Mod (9)	Soil and Water Management (Section 5.2) ESCP (Appendix C)	2	3	Mod (6)
Generation of dust through movement of vehicles and plant	Removal of topsoil, stockpiling, 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 (closest sensitive receptors 60-90 m from site).	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; removal / installation of infrastructure.	Land and water contamination caused by the release of hydrocarbons.	2	3	Mod (6)	Fuels, Chemicals and Hazardous Substance Management (Section 5.8)	2	2	Low (4)
Release of noise and/or vibrations through use of heavy/loud plant or equipment	Earthworks; construction activities	Closest sensitive receptors 60-90 m from site. 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	Closest sensitive receptors 60-90 m from site. Potential noise impacts on sensitive land uses (e.g. tourist accommodation) 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	Potential damage or destruction of unknown Aboriginal or European cultural heritage items or sites; loss of cultural heritage values. Considered unlikely due to significant disturbance within Project footprint.	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)
Temporary diversions/closures of Friday Flat Loop Mountain Bike (MTB) Trail and Cannonball Downhill MTB Trail	Earthworks; construction activities	Inconvenience to MTB trail users expected to be low as diversions will be short-term.	2	2	Low (4)	Traffic and Transport Management (Section 5.10)	2	1	Low (2)
Rehabilitation of disturbed areas	Rehabilitation	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 D** 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 D** for controls checklist);
- Provide approved plans and relevant documentation in the site office or other suitable location so that they are easily accessible 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 Management	
Objective	<ul style="list-style-type: none"> • Minimise potential impacts to receiving water sources; and • Reduce the potential for erosion and sediment moving offsite.
Mitigation Measures	<ul style="list-style-type: none"> • Implement Erosion and Sediment Control Plan (ESCP) (Appendix C); • Erosion and sediment controls (ESCs) to be inspected daily and maintained to ensure compliance with the ESCP; • All stockpiles will be managed in accordance with the Soil Stockpile Guidelines; • Temporary stockpile sites within the construction corridor will adhere to the following criteria: <ul style="list-style-type: none"> – Avoid impacts to native vegetation and be located on disturbed areas – Located directly adjacent to the works – Located on relatively flat ground, where possible – Not within 40 m of any watercourse – In areas with sufficient room to accommodate the volume of material being stockpiled • Implement control measures included in Appendix D.
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 Management	
Objective	<ul style="list-style-type: none"> • 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

	<ul style="list-style-type: none"> Rehabilitate the site as soon as possible following completion of works to restore the habitat.
Mitigation Measures	<ul style="list-style-type: none"> 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; and Implement control measures included in Appendix D.
Performance Criteria	No death or injury to fauna as a result of on-site activities. No disturbance outside the approval disturbance area.
Corrective Actions	<ul style="list-style-type: none"> 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 Management	
Objective	Reduce the risk of introducing invasive pest species
Mitigation Measures	<ul style="list-style-type: none"> 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 weeds 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; and Implement control measures included in Appendix D.
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, cardboard, demolition and construction waste (e.g. existing electrical cables and lance guns).

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 cardboard packaging, paper, recyclable plastic;
- Skip bins; 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. Existing lance guns will be reused within other areas of the resort.

Waste Management	
Objective	<ul style="list-style-type: none"> Minimise construction waste as much as practicable; and Reduce the impact of waste on-site and beyond the site boundary.
Mitigation Measures	<ul style="list-style-type: none"> 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; and Implement control measures included in Appendix D.
Performance Criteria	No litter or waste material to be released from site in an uncontrolled manner.
Corrective Actions	<ul style="list-style-type: none"> 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 Management	
Objective	Minimise potential noise and vibration nuisance in the surrounding environment.
Mitigation Measures	<ul style="list-style-type: none"> 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 (refer Appendix D for controls) will be implemented for construction works and operation of plant in accordance with the Australian Standard AS 2436-2010 <i>Guide to noise and vibration control on construction, demolition and maintenance sites</i> and the <i>Interim Construction Noise Guideline</i> (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	<p>If complaints are received, the following steps will be taken:</p> <ul style="list-style-type: none"> 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 Management	
Objective	Minimise potential impacts to the existing air quality in the surrounding environment.
Mitigation Measures	<ul style="list-style-type: none"> 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; and Implement control measures included in Appendix D.
Performance Criteria	No complaints received in relation to air pollution.
Corrective Actions	If complaints are received, the following steps will be taken:

	<ul style="list-style-type: none"> 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.
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5.8 Fuels, Chemicals and Hazardous Substances

Fuels, Chemicals and Hazardous Substances Management	
Objective	Eliminate the potential for release of fuels, chemicals and hazardous substances to the environment
Mitigation Measures	<ul style="list-style-type: none"> 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 <i>Code of Practice: Labelling of Workplace Hazardous Chemicals, August 2019</i> (NSW Government 2019); Hazardous chemicals will be managed in accordance with the <i>Code of Practice: Managing risks of hazardous chemicals in the workplace, August 2019</i> (NSW Government 2019); Appropriate controls will be implemented when refuelling Project vehicles and machinery e.g. refuelling of vehicles and machinery performed on hard-stand areas, or with appropriate spill kit onsite, or temporary bunding in place; and Implement control measures identified in Appendix D.
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 Management (Indigenous and Non-indigenous)	
Objective	Minimise potential impacts on places and objects of cultural heritage significance
Mitigation Measures	<ul style="list-style-type: none"> 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; Implement control measures identified in Appendix D; and Where unexpected items of potential archaeological, built or Aboriginal cultural heritage significance are discovered, Project personnel will follow the below procedure: <ul style="list-style-type: none"> 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 Management	
Objective	Minimise potential impacts on existing road network
Mitigation Measures	<ul style="list-style-type: none"> • Traffic and construction vehicle access will be managed as per regular daily operation in the resort; • All construction vehicles to enter/exit site via dedicated access; • Temporary diversions and closures of Friday Flat Loop MTB Trail and Cannonball Downhill MTB Trail will be managed by KT or an authorised contractor; • Signage will be erected to inform MTB trail users of temporary trail diversions or closures during the construction period; • Design and construction of the temporary MTB diversions will be in accordance with the IMBA Design Guidelines; • Pedestrian access within the construction corridor will be managed and redirected (if required) by KT or an authorised contractor through the use of signage and exclusion from the construction corridor; and • Implement control measures identified in Appendix D.
Performance Criteria	<ul style="list-style-type: none"> • No 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 D** for SEMP checklist).

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

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 E)** 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.

7.2 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 emergencies, 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 (KT068) (Appendix E)** 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 E)**. 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 E)** 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 Non-compliance

A non-compliance refers to the failure to comply with a condition of consent and requires notification to DPE (refer notification protocols in **Section 3.3.1**). The Project Manager is responsible for investigation and management of corrective and preventive actions in the event of non-compliance.

DPE will be notified in writing within seven days of becoming aware of a non-compliance with a condition of consent. The following information will be provided:

- Development application reference;

- The condition of consent that the Development is non-compliant with;
- The way in which it does not comply and the reasons for the non-compliance (if known); and
- What actions have been, or will be, undertaken to address the non-compliance.

7.6 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.

7.7 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 non-compliances.

8 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) 2021, *Snowmaking Works, Friday Flat and Middle Slopes, Thredbo*, 7 December 2021, reference: 20761

Kosciuszko Thredbo Pty Ltd (KT) 2021, *Statement of Environmental Effects for Friday Flat and Middle Slopes Fan Gun Project*.

NSW Government 2021a, *Water Management (General) Regulation 2018 Hydro Line spatial data*, viewed 08 November, <https://trade.maps.arcgis.com/apps/webappviewer/index.html?id=07b967fd0bdc4b0099fc5be45b6d1392>

NSW Government 2021b, *Propose Aboriginal places and items for protection*, Heritage NSW, viewed 08 November 2021, <https://www.heritage.nsw.gov.au/protecting-our-heritage/nominating-an-aboriginal-place/>

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 Figures and Maps

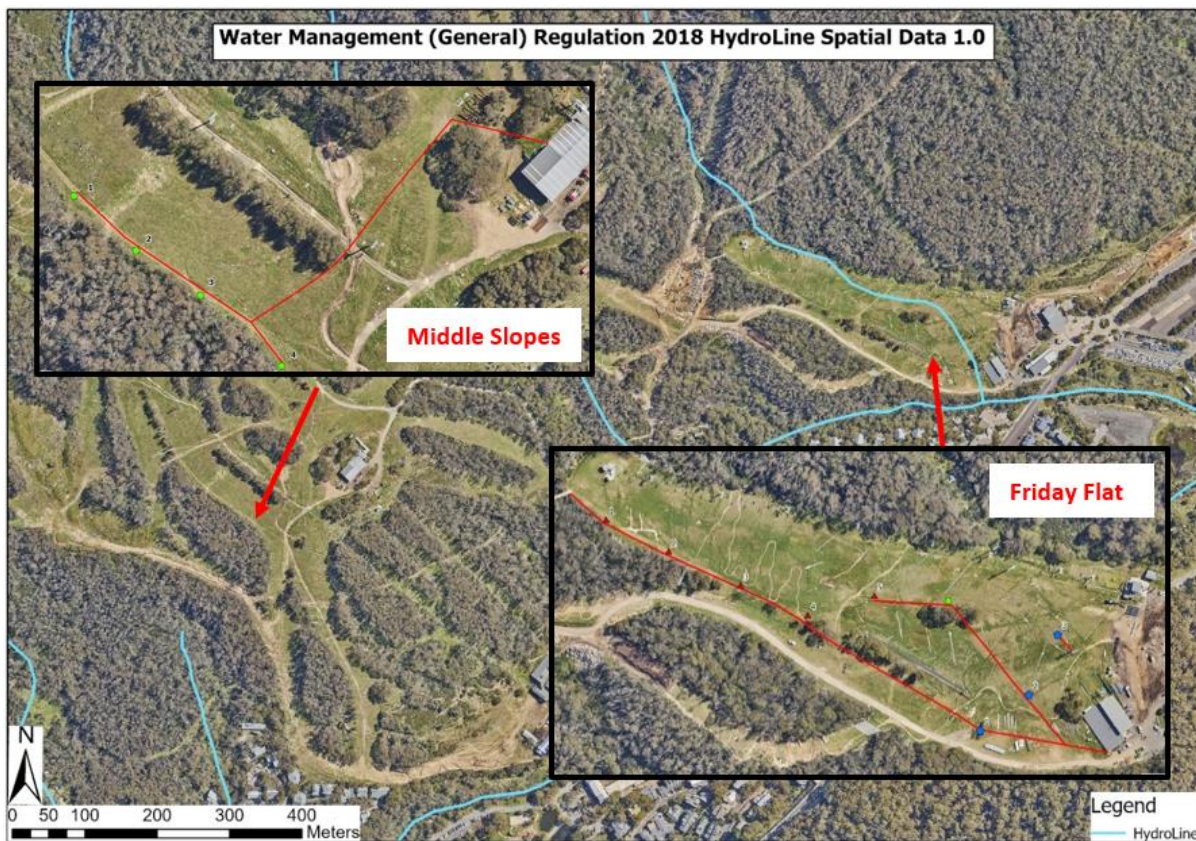
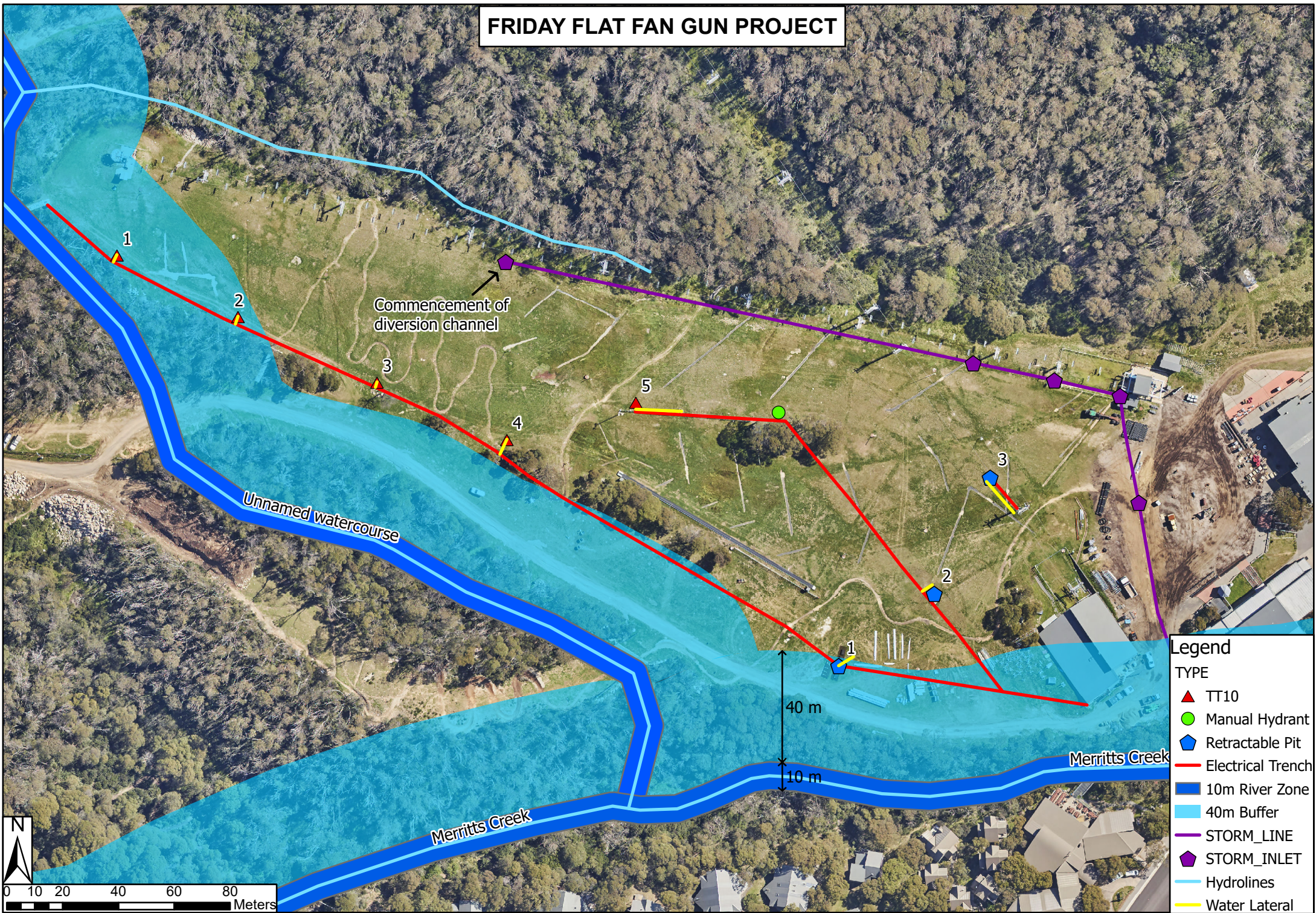


Figure B1: Project location within proximity to mapped watercourses (NSW Government 2021a)



Figure B2: Main stockpile location within Thredbo's top carpark

FRIDAY FLAT FAN GUN PROJECT



MIDDLE SLOPES FAN GUN PROJECT



Appendix C Erosion and Sediment Control Plan



Erosion and Sediment Control Plan (ESCP)

**Friday Flat and Middle Slopes Fan Gun Project,
Thredbo Alpine Resort, Kosciuszko National Park, NSW
March 2022**

Friday Flat and Middle Slopes Fan Gun Project

Erosion and Sediment Control Plan (ESCP)

Kosciuszko Thredbo Pty Ltd
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Wales 2625
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Document Control

REVISION	DATE	REVISION TYPE	AUTHOR	APPROVED BY
A	17.11.2021	Draft	C.Chalk	P.Fleming
0	2.12.2021	Final	C.Chalk	P.Fleming
1	14.01.2022	Final	C.Chalk	P.Fleming
2	24.03.2022	Updated site plan	C.Chalk	P.Fleming

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1 Introduction

This Erosion and Sediment Control Plan (ESCP) has been prepared for the Friday Flat and Middle Slopes Fan Gun Project (the Project). The Project site is located within Thredbo Alpine Resort (Thredbo), approximately 30 kilometres (km) south-west of Jindabyne, New South Wales (NSW).

2 Site Description

The Project site and activities are located on a pre-disturbed and highly modified environment. (**Figure 1**) (NSW Government 2021). The Project is located within 40 m of a unnamed watercourse and Merritts Creek (**Figure 2**).

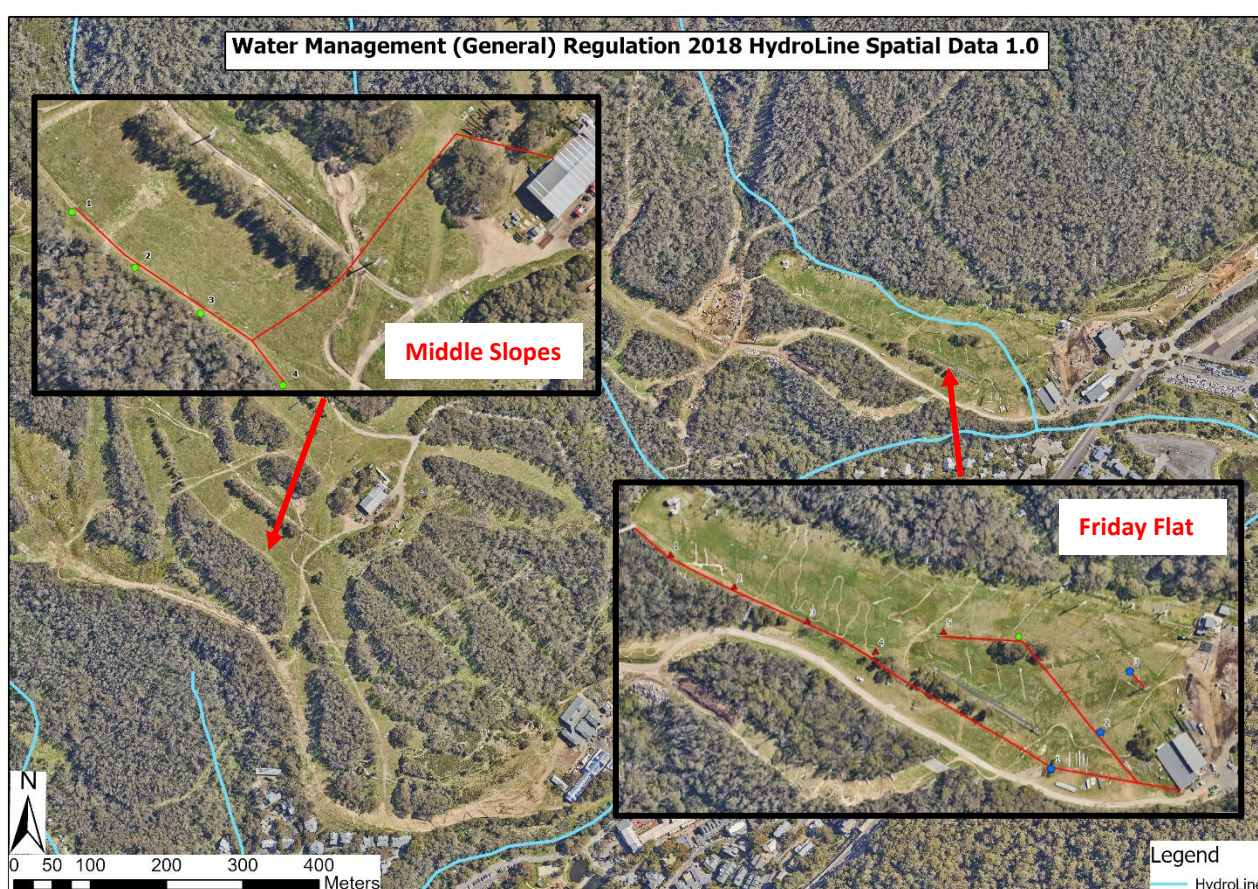
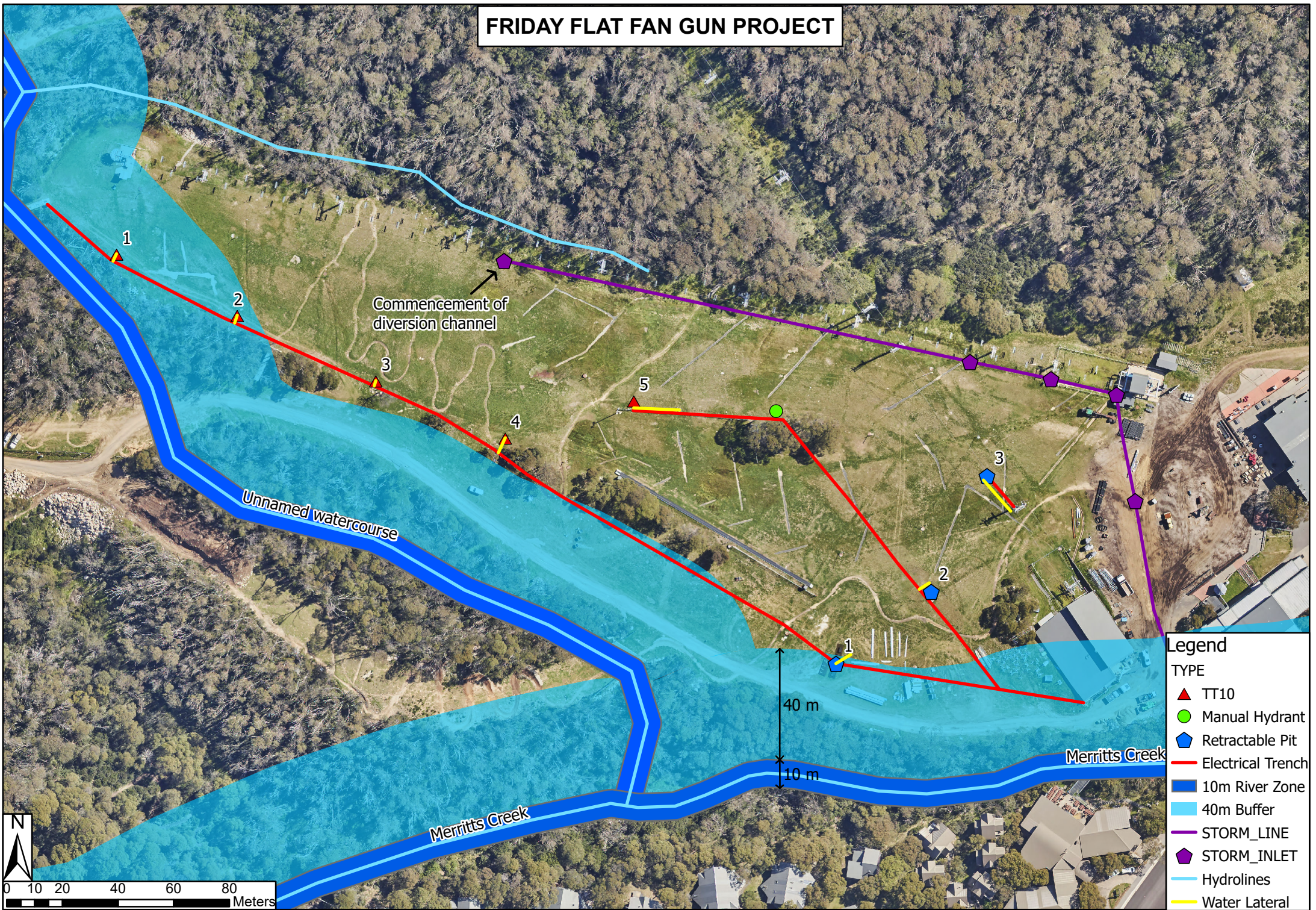


Figure 1: General Project location within proximity to mapped watercourses (NSW Government 2021)

FRIDAY FLAT FAN GUN PROJECT



3 Roles and Responsibilities

Role	Responsibilities
Project Manager	<ul style="list-style-type: none"> Ensure the ESCP is made available, communicated, maintained and understood by all Construction Personnel; and Ensure ESCP adheres to conditions of approval following the provision of Development Consent from DPIE.
Environmental Officer	<ul style="list-style-type: none"> Ensure implementation and compliance with the ESCP; Ensure all ESCs are installed and adequately functioning in accordance with ESCP; and Inspections and monitoring of all erosion and sediment control measures.
Construction Manager	<ul style="list-style-type: none"> Establishment and removal of erosion and sediment control measures; and Ongoing maintenance of erosion and sediment control measures.

4 Management Measures

4.1 General

- All erosion and sediment controls (ESCs) measures will be installed and maintained in accordance with **Sections 5** and **6** of this ESCP; and
- Works will cease during substantial rainfall events.

4.2 Vegetation

- No clearing of native vegetation is to occur;
- All reasonable and practicable efforts will be taken to delay the disturbance to existing ground cover (organic or inorganic) prior to land-disturbing activities; and
- All reasonable and practicable measures must be taken to minimise the disturbance to trees, shrubs and ground covers outside of the construction corridor.

4.3 Site Access Protection Measures

- Site access points will be appropriately managed to minimise the risk of sediment being tracked onto sealed, public roadways.

4.4 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). For stockpiles within the construction corridor, they will adhere to the following criteria:
 - Located directly adjacent to the works and in areas with sufficient room to accommodate the volume of material being stockpiled
 - Situated on relatively flat ground (where possible)
 - Not within 40 m of a watercourse; and
- Sediment controls to be installed down-slope of stockpiles, where required (refer **Section 5.7**).

4.5 Trenches

- The maximum length of pipeline to remain open overnight is approximately 100 metres (m);
- ESCs will be installed in accordance with **Sections 4.7** and **5**;
- Backfill will be placed at equivalent compaction of the surrounding soil with an excavator to minimise possibility of soil subsidence; and

- Where trenches are left open overnight, egress points for fauna (e.g. timber ramps) will be installed.

4.6 Waste Management

- All building and construction waste onsite to be minimise in the first instance;
- Designated waste collection areas will be established on-site with covered receptacles;
- Building and construction waste will be managed in accordance with KT's waste management procedures; and
- No material is to be swept or hosed into any waterways or waterbodies.

4.7 Drainage, Erosion and Sediment Control

The installation of effective drainage and ESCs are essential to ensure soils and waterways are protected and the success of rehabilitation. A summary of the controls to be implemented onsite are provided in **Table 1**. Any additional or alternative controls must be approved by the Environmental Officer prior to use.

4.8 Site Rehabilitation

- All ESC measures will remain in place until all exposed areas of soil are stabilised and/or revegetated; and
- All rehabilitation will be undertaken in accordance with the *Rehabilitation Guidelines for the Resort Areas of Kosciuszko National Park* (DECC 2007). See Appendix 10 of Guideline for list of recommended species for rehabilitation.

Table 1: Drainage, Erosion and Sediment Controls

Activity	Control	Purpose	Timing	Location	Installation Requirements	Materials required
Excavations, trenching	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	To be in accordance with construction notes in Section 5.1	Geotextile fabric (non-woven), star pickets/wooden stakes
Trenching	Straw bale filter fencing	To prevent sediment run-off	Where required, during excavation of trenches	Drier areas of trenches, across or at the toe of slope	To be in accordance with construction notes in Section 5.4	Straw bales; support posts/stakes; geofabric
	Trench breakers	Reduce erosive run-off velocities	Prior to forecast rain event, where required	Within open trenches	In accordance with construction notes in Section 5.5	Straw bales
Down-slope excavations	Straw bales	Divert water around and away from open excavation works	Installed once the trenches have been excavated and retained in place until excavations are stabilised/rehabilitated	To be placed at each end of the open trenches	To be in accordance with the construction notes in Section 5.4	Straw bales; stakes
Cross-slope excavations	Straw bales; Coir logs	Divert water around and away from excavation works	Installed once trenches have been excavated, where required	To be installed on the uphill side of excavations running cross-slope (where required)	To be in accordance with the construction notes in Sections 5.2, 5.3 and 5.4	Straw bales; stakes; coir logs
Dewatering excavations	Geofabric filter dam	To capture sediment	In the event water enters an excavation and its required to be pumped out prior to recommencement of works	Equipment and pumping operation to be confined to construction corridor	To be in accordance with the construction notes in Section 5.6	Geotextile filter fabric (heavy duty non-woven); support posts/stakes; straw bales

*Straw bales to be certified weed-free

5 Control Installation Notes

This section details the installation requirements for controls listed in **Table 1**.

5.1 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.

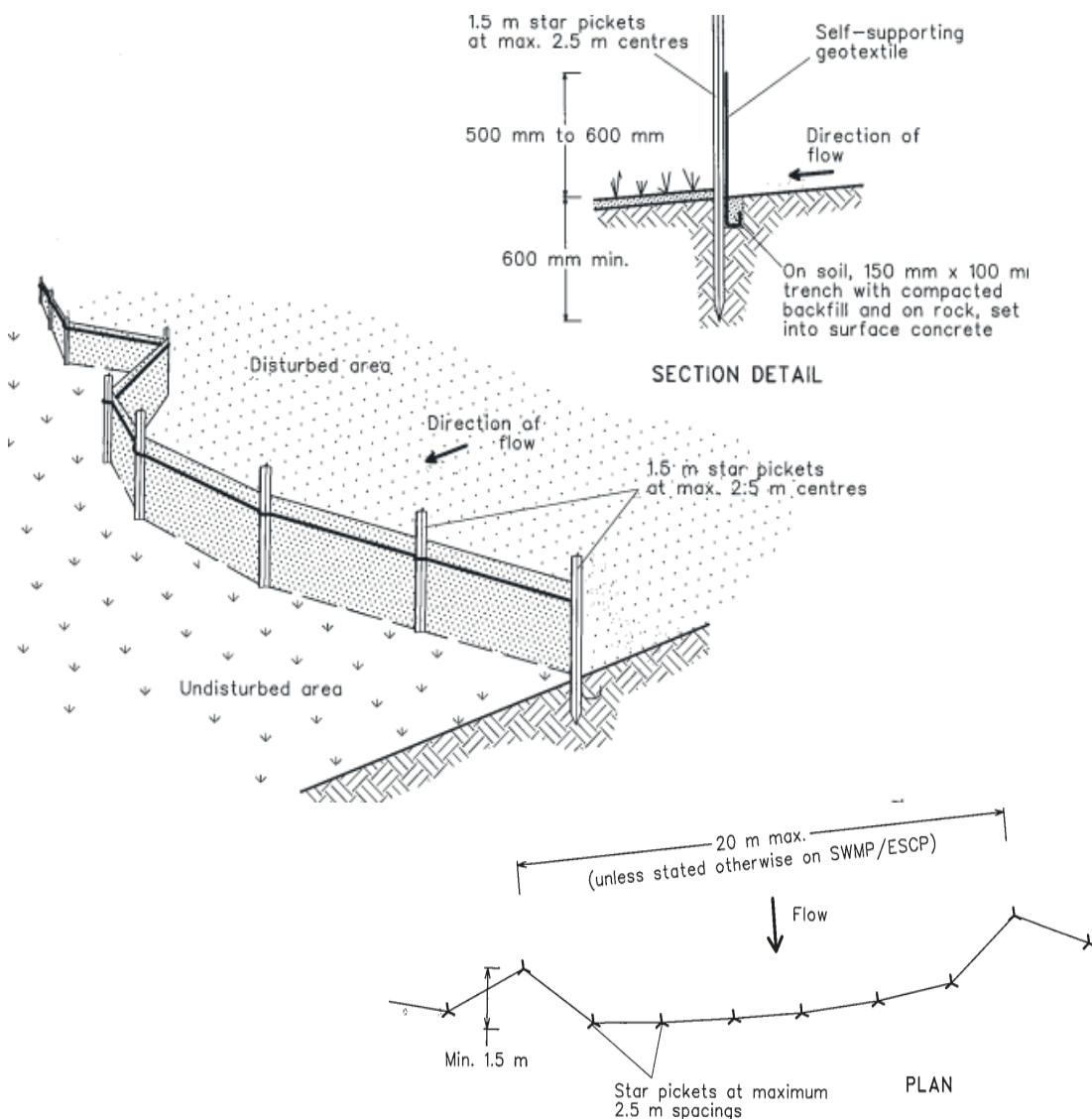


Figure 3: Standard Sediment Fence Installation (Source: Landcom 2004)

5.2 Cross Drainage and Sediment Barriers

The recommended spacing for cross drainage and sediment barriers is provided in **Table 2**.

Table 2: Recommended spacing for cross drains and sediment barriers

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

5.3 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.

5.4 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.

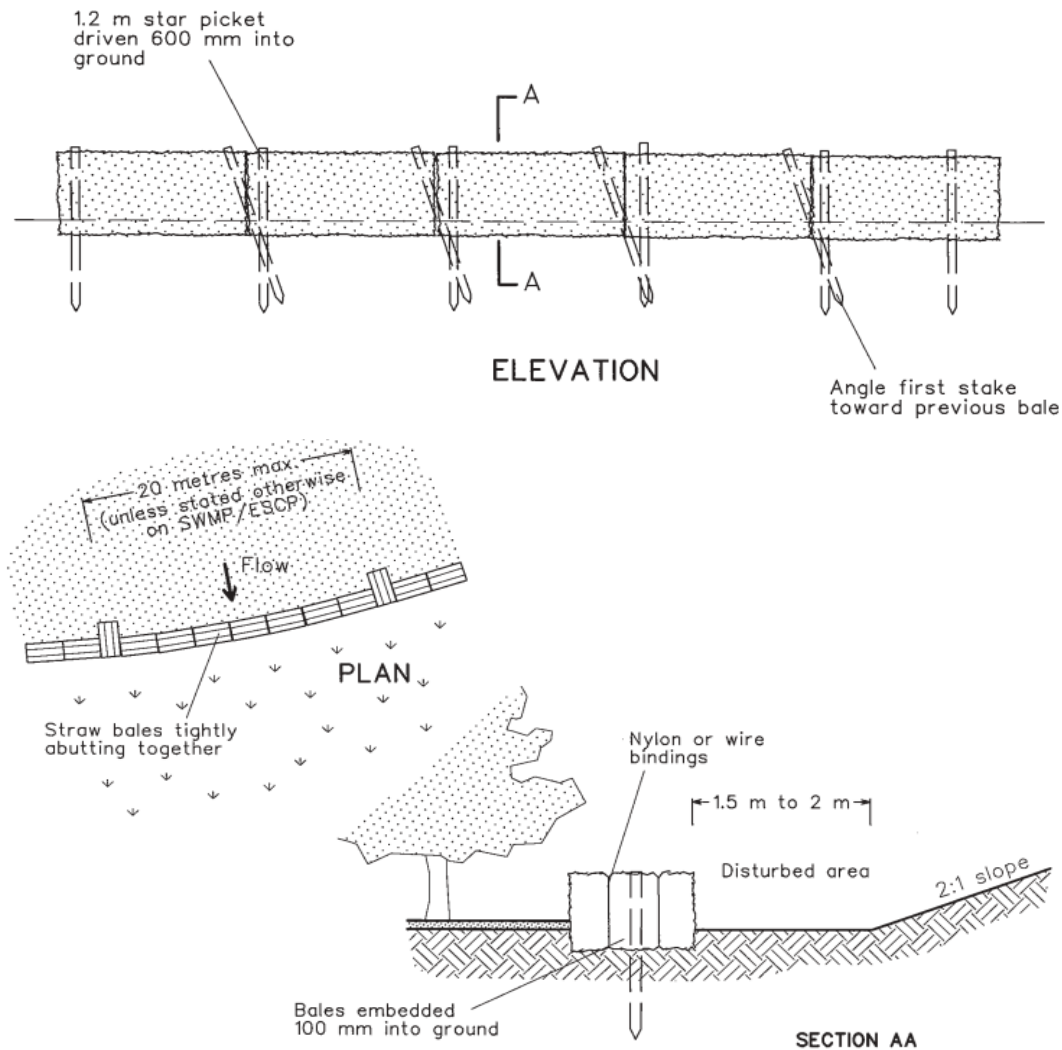


Figure 4: Standard Straw Bale Filter Installation (Source: Landcom 2004)

5.5 Trench Breakers

Construction notes:

- Trench breakers may comprise soil or straw bales (or a combination).
- The recommended spacing of trench breakers to be determined on-site according to the slope and potential for subsurface flow, refer **Table 2** for recommended spacing.

5.6 Geofabric 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) Arrange straw bales to form an enclosure and securely anchor each bale with at least one (1) star picket or stake.
- 4) Securely attach the filter fabric to the straw bales and reinforce with stakes. If more than one sheet of fabric is used, then overlap within a minimum of 600 mm at all joints.



Figure 5: Standard Installation of Geofabric Filter Dam

5.7 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.*

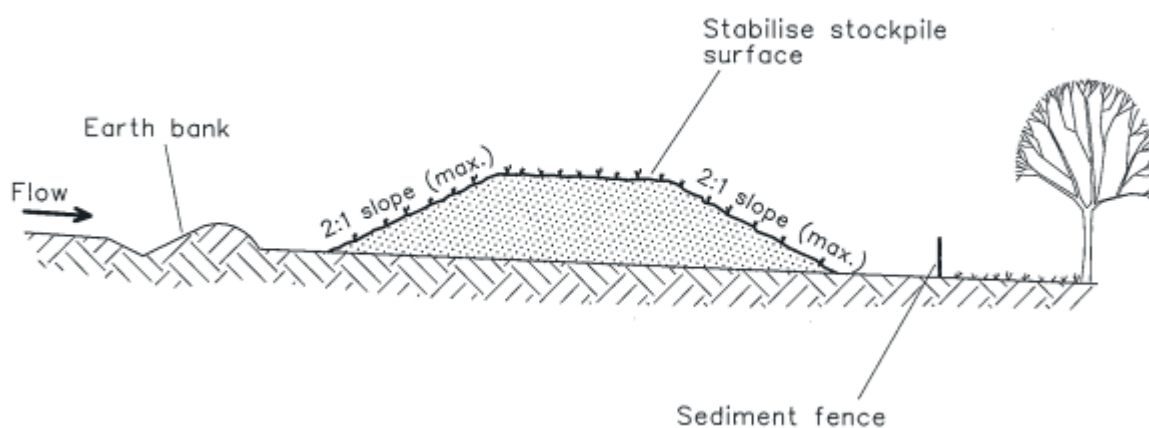


Figure 6: Stockpile Management (Source: Landcom 2004)

6 Monitoring and Maintenance

6.1 Inspections and Monitoring

The Environmental Officer appointed for the Project will be responsible for ensuring that all erosion and sediment controls are installed in accordance with this plan. Regular monitoring and maintenance will be the responsibility of all construction personnel. The Environmental Officer will undertake weekly inspections of all erosion and sediment controls for the duration of the works.

Table 3: Erosion and Sediment Control Inspections Summary

Control	Inspections
Sediment fence	<ul style="list-style-type: none"> • Ensure sediment fence will adequately pond water up-slope of the fence; • Ensure fabric is adequately buried; • Check the space of support stakes; • Check for excessive sediment deposition; • Check for damage to fabric; • Check for erosion down-slope of any spill through weirs; and • Ensure the fence is not concentrating or diverting flows in an undesirable manner.
Straw bale filter	<ul style="list-style-type: none"> • Check that water will either pass through or over the bale, but not around the bales.
Geofabric filter dam	<ul style="list-style-type: none"> • Inspect the filter medium for leaks resulting from holes, tears or joint failure; • Check for displacement of straw bales; • Check the clarity of the outflow; and • Inspect the dam at least daily during de-watering operations.
Coir logs	<ul style="list-style-type: none"> • Check for displacement of the logs; and • Check for soil erosion adjacent to the logs.

6.2 Maintenance Program

All erosion and sediment control measures will 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).

Table 4: Erosion and Sediment Control Maintenance Measures

Control	Maintenance
Sediment fence	<ul style="list-style-type: none"> • Repair any torn sections; • If fencing is sagging between stakes, install additional support posts; and • Remove accumulated sediment if the sediment deposit exceeds a depth of 1/3 the height of the fence.
Straw bale filter	<ul style="list-style-type: none"> • Replace the straw bale filter if full or partial collapse of the bale occurs; and • Remove and suitably dispose of accumulated sediment prior to replacing the bales.
Geofabric filter dam	<ul style="list-style-type: none"> • Replace the filter fabric when it becomes blocked with sediment and/or the flow rate through the barrier becomes unacceptably low.
Coir logs	<ul style="list-style-type: none"> • Repair or replace displaced logs that are likely to cause erosion issues.

7 Reporting

The Environmental Officer will report on the effectiveness of controls and details on any non-conformance on the **Erosion and Sediment Control Inspection Report (Appendix A)**. The report forms part of the weekly environmental inspections and will be provided to the Project Manager with weekly internal reporting requirements.

8 References

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Eco Logical Australia Pty Ltd (ELA) 2021, *Snowmaking Works, Friday Flat and Middle Slopes, Thredbo*, reference: 20761

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Landcom 2004, *Managing Urban Stormwater: Soils and Construction, Volume 1, 4th Edition*, NSW Government.

NSW Government 2021, *Water Management (General) Regulation 2018 Hydro Line spatial data*, viewed 08 November 2021, <https://trade.maps.arcgis.com/apps/webappviewer/index.html?id=07b967fd0bdc4b0099fc5be45b6d1392>

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.

Witheridge 2012, *Erosion and Sediment Control – A Field Guide for Construction Site Managers*. Catchment & Creeks Pty Ltd., Brisbane, Queensland.

9 Acronyms

Acronyms	
%	percent
°	degrees
DA	Development Application
DECC	Department of Environment and Climate Change
DPIE	NSW Department of Planning, Infrastructure and Environment
ESCP	Erosion and Sediment Control Plan
ESCs	Erosion and Sediment Controls
KNP	Kosciuszko National Park
KT	Kosciuszko Thredbo Pty Ltd
m	metre
NSW	New South Wales
SEE	Statement of Environmental Effects
SEMP	Site Environmental Management Plan
Thredbo	Thredbo Alpine Resort

10 Appendices

Appendix A ESC Inspection Report

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: _____	



Appendix B ESC Non-conformance Report

Project:			
Date:		Raised by:	
Details of non-conformance:			
Details of specification / procedure not conforming to:			
Corrective Actions:			
Preventative Actions:			
Non-conformance resolved:		Yes: <input type="checkbox"/> No: <input type="checkbox"/> Date:	
Environmental Officer Signature		Project Manager Signature	

Appendix D 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				
DPE notified in writing of the commencement date of the Project	Project Manager	48 hours prior to commencement of works				
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				
Maintenance of equipment to be undertaken at the Valley Terminal maintenance shed	Construction Manager	During construction				
All plant and equipment to be removed off-site post-construction	Construction Manager	Upon completion				
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 the approved ESCP	Construction Manager	Pre- construction; during construction			ESCP (Appendix C)	
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	During construction (daily / following significant rainfall event)			ESCP (Appendix C)	

Stockpiles are managed appropriately e.g. erosion and sediment controls installed around stockpiles, stockpiles shall not encroach within the dripline of trees, stabilise stockpiles to prevent weed infestation	Construction Manager	During construction			ESCP (Appendix C)	
All exposed areas shall be progressively stabilised/rehabilitated in accordance with the Erosion and Sedimentation Control Plan (ESCP)	Construction Manager	During and post-construction			ESCP (Appendix C)	
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	
Follow up weed control to be carried out if deemed necessary	Environmental Officer	As required			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			Section 5.3 of SEMP	
Disturbance areas are to be rehabilitated immediately following the completion of 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, upon completion			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 re-fuelling Project vehicles and machinery e.g. no refuelling within close proximity of a watercourse, re-fuelling of performed on hard-stand areas or with appropriate spill kit and temporary bunding in place	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	Site induction			Section 5.9 of SEMP	
In the event of an unexpected discovery of Aboriginal or Historic Cultural Heritage items, works shall cease and NPWS notified.	All personnel	Earthworks; during construction			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 traffic controls implemented to direct pedestrians and MTB users, including signage for temporary MTB diversions/closures (Friday Flat Loop and Cannonball Downhill) and exclusion from the construction corridor.	Construction Manager	Prior to construction; operation of temporary MTB trail diversions			Section 5.10 of SEMP	
Construction of the temporary MTB diversions is in accordance with the IMBA Design Guidelines	Construction Manager	During construction of MTB diversion			Section 5.10 of SEMP	

Appendix E Environmental Schedules

This Appendix includes the following environmental schedules:

- Weekly Inspection Report;
- Complaints Form template; and
- 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
Silt Fence			
Hay Bale retention ponds			
Hay Bale sediment protection			
Stormwater Pit protection			
Cyclone Fence (including gates)			
Para-web Fence			
Site Signage			
Paint Washout facility			
Vehicle Wash-down			
Waste Skips			
Tree Protection			
Verbal Discussion with Contractor:		Verbal discussion with others:	
Materials Received / Required:		Site Instructions Issued:	
Inspectors Report / Summary:		Action required:	
Signature: _____ Date: _____			

Record of complaint

Date / Time: _____

Reference Number: _____

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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 <input type="checkbox"/> No <input type="checkbox"/>
If 'No', provide sketch and attach to the rear of this document.
What was the estimated duration of the incident?

Type of incident

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

Environmental Incident Reporting Form

Level of incident

Level	Example
<input type="checkbox"/> Minor	eg. No material has escaped the site or caused material harm to the environment – it is easy to clean up without additional assistance.
<input type="checkbox"/> 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

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

Type of Spill

<input type="checkbox"/> Spilt onto ground	<input type="checkbox"/> Spilt into stormwater drain
<input type="checkbox"/> Spilt into waterway	<input type="checkbox"/> Poured down sink
<input type="checkbox"/> Poured down sewer	<input type="checkbox"/> Released into atmosphere
<input type="checkbox"/> Caused odour	<input type="checkbox"/> Caused fire/explosion
<input type="checkbox"/> Caused infectious contamination	<input type="checkbox"/> Other (specify)

Immediate Actions

Was spill contained? Yes <input type="checkbox"/> No <input type="checkbox"/>
Detail immediate actions/controls measures taken to rectify or contain the incident
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.....
.....
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Environmental Incident Reporting Form

Corrective Actions

Detail corrective clean up action taken

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Disposal

Detail disposal method/plans and location

.....

.....

.....

.....

Recommended follow up and preventative actions

Detail recommendations

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.....

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.....

.....

Persons present at Incident

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

.....

.....

.....

.....

Spill Kit stock used – for restock purposes

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

.....

.....

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