Statement of Environmental Effects

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

Friday Flat and Middle Slopes Fan Gun Project

Statement of Environmental Effects

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Development Proposal	This Statement of Environmental Effects (SEE) has been prepared to support the Development Application (DA) for the Friday Flat and Middle Slopes Fan Gun Project (the Project). The DA is for the installation of snowmaking infrastructure within the Friday Flat Ski Area (Friday Flat) and Middle Slopes, Thredbo Alpine Resort, located in the southern part of Kosciuszko National Park, approximately 30 km south-west of Jindabyne, New South Wales. The purpose of the Project is to improve the reliability and capability of artificial snowmaking within Friday Flat and Middles Slopes which will improve snow cover within these areas. Achieving good snow cover on Friday Flat in May / early June greatly enhances early season visitation, as well as providing guests the opportunity to still be skiing and snowboarding in late September / early October. The Project comprises the following at Friday Flat: • Removal of five (5) existing lance guns; • Installation of five (5) concrete pits and 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; and • Trenching and laying of electrical cabling to new guns and manual hydrant. The Project comprises the following at Middle Slopes: • Installation of four (4) manual hydrants; and • Trenching and laying of electrical cabling to manual hydrants.
Site Details	**Lot Description**: Lot 876/DP 1243112
	Total Disturbance Area: Approximately 0.0677 hectares (ha)
	Zoning: Kosciuszko National Park
	Local Government Area: Snowy Monaro Regional Council
Applicant	Kosciuszko Thredbo Pty Ltd
Key Planning Considerations	The proposed development is subject to the requirements of the *State Environmental Planning Policy (Kosciuszko National Park – Alpine Resorts) 2007* (Alpine SEPP). As such, the Department of Planning, Industry and Environment (DPIE) Minister for Planning and Public Spaces is the consent authority for the DA. The Project has been assessed against the relevant requirements of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act), *Environmental Planning and Assessment Act 1979* (EP&A Act), *National Parks and Wildlife Act 1974* (NPW Act), *Biodiversity Conservation Act 2016* (BC Act), *Water Management Act 2000* (WM Act) and associated statutory instruments.
Summary of Impacts	The majority of new infrastructure will be installed within the existing snowmaking infrastructure footprint. Given the highly disturbed nature of the Project site and no native vegetation clearing is required, significant impacts to conservation significant flora and fauna, ecological communities or their habitats are not anticipated. Works will be undertaken within 40 m of an unnamed watercourse and Merritts Creek, however no impacts to these watercourses are anticipated. All disturbed areas will be stabilised and rehabilitated following construction completion. With the implementation of appropriate environmental controls outlined in the Site Environmental Management Plan (SEMP), the impacts from the Project on the existing natural environment are considered low. The impacts on the built environment are expected to be negligible as snowmaking infrastructure is common in several parts of the resort and the new infrastructure will predominately replace the existing snowmaking infrastructure at Friday Flat and Middle Slopes. In response to the challenges posed by the sustainability of natural snow fall within a changing climate, artificial snowmaking improves seasonal length and viability, which may allow the winter visitation period to be maintained or potentially extended. This will provide positive social and economic impacts through the provision of improved snow cover which will contribute to an enhanced guest experience, as well as direct investment into the resort, and generation of construction jobs. The Project is therefore considered critical infrastructure for the operation of the resort.

1 Introduction

This Statement of Environmental Effects (SEE) has been prepared to support the Development Application (DA) for the Friday Flat and Middle Slopes Fan Gun Project (hereinafter referred to as the Project). The Applicant for the DA is Kosciuszko Thredbo Pty Ltd (KT) (ABN 95 000 139 015).

The Project site is located at the Friday Flat Ski Area (Friday Flat) and Middle Slopes within Thredbo Alpine Resort (Thredbo), approximately 30 kilometres (km) south-west of Jindabyne, New South Wales (NSW).

Developments in the NSW alpine resort areas are governed by the *State Environmental Planning Policy (Kosciuszko National Park – Alpine Resorts (2007)* (Alpine SEPP). The Department of Planning, Industry and Environment (DPIE) Minister for Planning and Public Spaces is the consent authority under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

This SEE has been prepared in accordance with the requirements of Schedule 1 (2)(1)(c) of the *Environmental Planning and Assessment Regulation 2000* (EP&A Regulation).

1.1 Purpose

The purpose of this SEE is to:

- Describe the proposed development in relation to the existing environment;
- evaluate the proposed development against the relevant statutory planning framework; and
- Assess the following key issues in relation to the proposed development –
  - the impacts of the development on the natural, human and built environment and how these impacts have been identified
  - mitigation and management measures that will be taken to protect the environment or to reduce expected environmental harm
  - any specific matters identified by the Secretary of DPIE.

2 Site Context

2.1 Site Locality

2.1.1 Regional Context

The Project site is located in Thredbo, within the southern part of Kosciuszko National Park (KNP), approximately 30 km south-west of Jindabyne, NSW, within the Snowy Monaro Regional Council Local Government Area (LGA) (**Figure** 1).

Figure 1: Regional Site Context (Source: Google Maps 2021)

2.1.2 Local Context

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 (**Figure 2**).

The Project site within Friday Flat is located on the Easy Does It run (**Figure 3**).

The Project site within Middle Slopes is located on the skiers right below the Kosciuszko Express Chairlift (**Figure 4**).

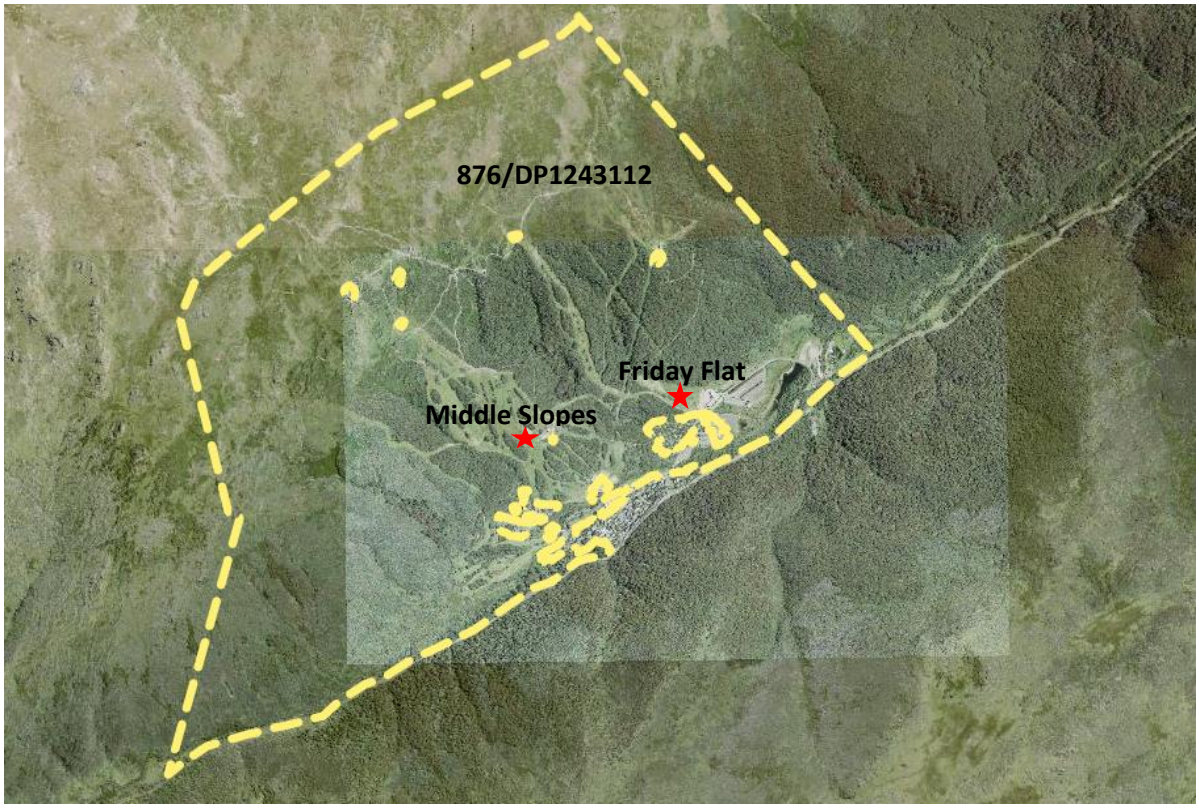

Figure 2: Local Site Context (Source: NSW Government 2021a)

2.2 Site Description and Suitability

The Project site (**Figure 3** and **Figure 4**) is located within a highly disturbed environment, comprising existing snowmaking infrastructure (i.e. underground pipes and aboveground hydrants and guns). The surrounding environment comprises ski runs, chairlifts, and associated infrastructure and buildings. There are no records of contamination within or adjacent to the site.

The Project site is considered suitable for the proposed development as the site and surrounds contains existing snowmaking infrastructure which forms part of the ski resort operation. This Project will contribute to the efficiency and effectiveness of artificial snowmaking within Friday Flat and Middles Slopes.

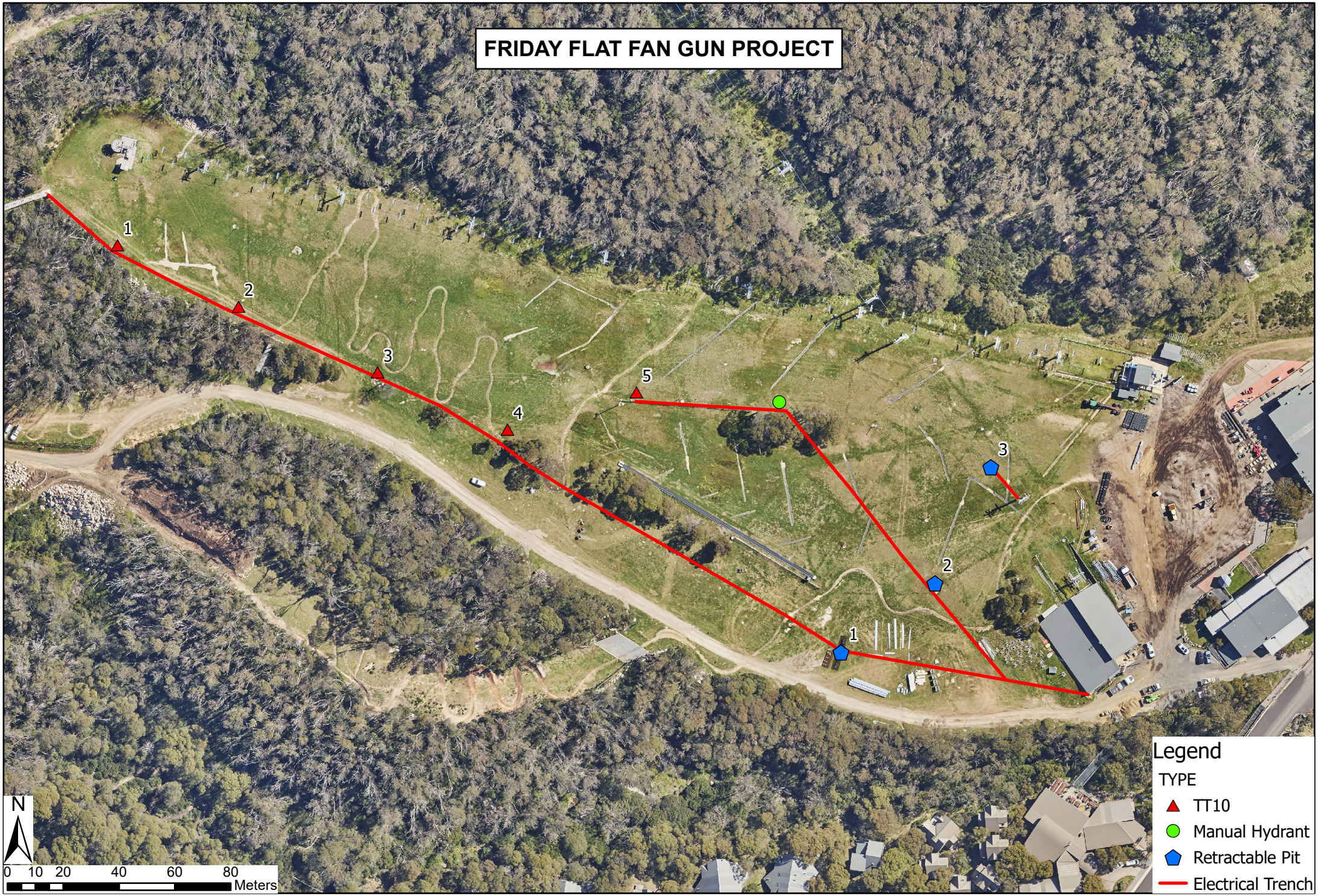

Figure 3: Project Site - Friday Flat

Figure 4: Project Site - Middle Slopes

2.3 History of the Site / Present and Previous Land Uses

The Project site is zoned as E1 – National Parks and Nature Reserves (NSW Government 2021a).

2.3.1 Friday Flat

Friday Flat was established in the 1980s and has been subject to expansion and various maintenance projects over the past 40+ years, including (but not limited to) the installation of snowmaking infrastructure, extension to ski area and installation of minor structures.

The Project site within Friday Flat comprises five (5) existing lance guns and associated snowmaking infrastructure (e.g. hydrants, power cabling) along Easy Does It (skiers right).

2.3.2 Middle Slopes

Middle Slopes was established in the 1960s and forms part of the Supertrail and runs below the Kosciuszko Express Chairlift comprising four (4) existing snowmaking guns and associated infrastructure (e.g. hydrants, power cabling) along the skiers right of the run. The existing snowmaking infrastructure was installed in 1987.

3 Development Proposal Overview

3.1 Background of Development Proposal

KT operate a snowmaking system which provides air and water via pipes to a network of snowmaking guns to produce snow across the resort. These guns are broadly grouped into the categories of lance or fan guns. Lance guns rely on the supply of air, water and electricity, whilst fan guns can be configured with onboard air compressors, relying only on water and electricity to operate.

The improved technology of fan guns to increase efficiencies and performance has been at the forefront of snowmaking companies research and development within recent years. The fan guns allow for a higher snow output, optimum energy efficiency as well as resource conservation (TechnoAlpin 2021).

Friday Flat currently utilises 31 lance guns and two fixed fan guns for artificial snowmaking. Friday Flat currently relies on the snow making pumphouse compressors to provide the necessary air for the lance guns, whilst the two fan guns can operate without the reliance on the snowmaking pumphouse compressors, enabling vastly increased flexibility for early season operations without the buy in to the electricity grid currently experienced.

3.2 Purpose of the Development

The purpose of the Project is to increase the efficiency of artificial snowmaking within Friday Flat and Middles Slopes which will enhance snow cover within these areas. Achieving good snow cover on Friday Flat in May / early June greatly enhances early season visitation, as well as KT's ability to still be skiing and snowboarding in late September / early October.

In response to the challenges posed by the sustainability of natural snow fall within a changing climate, artificial snowmaking improves seasonal length and viability and is considered critical infrastructure for the operation of the resort.

3.3 Project Description

The Project comprises the following at Friday Flat:

- Removal of five (5) existing lance guns;
- Installation of five (5) concrete pits (2.2 m x 1.5 m x 1.5 m) for fan guns;
- Installation of five (5) TT10 fan guns (**Figure 5**);
- Installation of three (3) retractable concrete pits (2.2 m x 1.5 m x 1.5 m) for mobile fan guns (**Figure 6**);
- Installation of one (1) manual hydrant for mobile fan gun (**Figure 6**); and
- Trenching (0.6 m wide x 0.60-0.80 m deep) and laying of electrical cabling to new guns and manual hydrant (**Figure 7**).

The Project comprises the following at Middle Slopes:

- Installation of four (4) manual hydrants (**Figure 7**); and
- Trenching (0.6 m wide x 0.60-0.80 m deep) and laying of electrical cabling and short lateral snowmaking pipe to manual hydrants.

Figure 5: Example of TT10 Fan Gun (Source: TechnoAlpin 2021)

Figure 6: Example of TR10 Fan Gun (Source: TechnoAlpin 2021)

Figure 7: Example of Manual Hydrant

3.4 Project Timing

The anticipated timing for the commencement of construction works is February 2022. Project completion is anticipated in April 2022.

3.5 Disturbance Footprint

The disturbance footprint for each development component is provided in **Table 1**.

Table 1: Disturbance Footprint

Development Component	Approx. Disturbance Footprint
Electrical trench (approx. 1000 x 0.60 m)	600 m^2
Five (5) Manual hydrants (approx. 1.0 x 1.0 m = 1.0 m^2)	5 m^2
Three (3) retractable pits (approx. 3.0 x 3.0 m wide = 9 m^2)	27 m^2
Five (5) concrete pits (approx. 3.0 x 3.0 m wide = 9 m^2)	45 m^2
Total:	**677 m^2 (0.0677 ha)**

*Excavation depths: electrical trench = 0.6-0.8 m, manual hydrants = 0.6-0.8 m, pits = 1.6 m.
*The TT10 fan guns are located within the concrete pit disturbance area.

3.6 Site Access

The Project site is accessible via Friday Drive and the mountain summer access road (**Figure 8**).

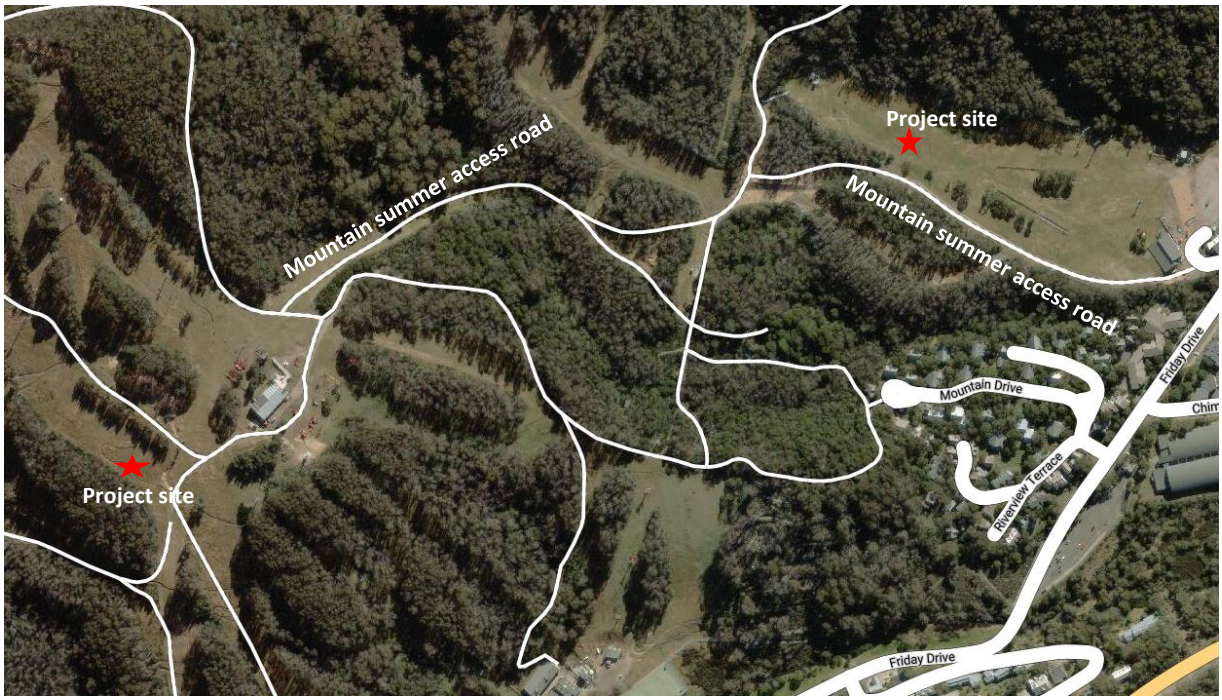

Figure 8: Site Access (Source: NSW Government 2021d)

3.7 Development Components

3.7.1 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; and
- Delivery trucks.

3.7.2 Stockpile Sites

The main stockpile locations will be located within Thredbo's top carpark identified in the SEMP (**Appendix B**). Access to these locations will be restricted to KT staff and contractors. Temporary stockpiles will be required within the construction corridor to effectively manage materials during the works. 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), SEMP and ESCP (**Appendix B**).

3.7.3 Site Facilities and Temporary Structures

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.

3.7.4 Pre-construction Activities

Pre-construction activities involve site preparation works, which will include:

- Establishment of site boundary;
- Establishment of site compound;
- Erection of site signage; and
- Installation of erosion and sediment controls.

3.7.5 Construction Activities

The proposed construction program will comprise the following:

3.7.5.1 Friday Flat

- Temporary diversion of Friday Flat Loop Mountain Bike (MTB) Trail;
- Removal of existing lance guns 1 – 5 along skiers right of Easy Does It run (**Photos A1 and A3**, **Appendix A**);
- Installation of five (5) concrete pits and five (5) TT10 fan guns within general location of existing lance guns 1 – 5 (**Photos A3 – A7**, **Appendix A**);
- 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 Chairlift (**Photos A9 – A11**, **Appendix A**);
- Installation of one (1) manual hydrant (north of the Thredboland Cubby House on Easy Does It run) (**Photo A8**, **Appendix A**);
- Trenching and laying of electrical cabling to new gun locations; and
- Backfilling of trenches.

Refer to **Figure 3** for Friday Flat site plan.

3.7.5.2 Middle Slopes

- Temporary diversion of Cannonball Downhill MTB Trail;
- Installation of four (4) manual hydrants within general location of existing pits along skiers right (**Photos A5 – A18**, **Appendix A**);
- Trenching and laying of electrical cabling to new manual hydrants (**Photos A12 – A14**, **Appendix A)**; and
- Backfilling of trenches.

Refer to **Figure 4** for Middle Slopes site plan.

3.7.5.3 Post-construction

Post-construction activities will comprise:

- 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.

3.7.6 Operational Activities

The snowmaking infrastructure will operate as required.

4 Relevant Legislation and Planning Instruments

A review of key legislation and planning instruments applicable to the Project is provided in **Table 2**.

Table 2: Key Legislative Review

Acts & Planning Instruments	Summary
Commonwealth	
Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)	The EPBC Act provides a legal framework to protect and manage nationally and internationally important aspects of the Australian environment. The EPBC Act is administered by the Department of Agriculture, Water and the Environment (DAWE) and was established to: • Provide for the protection of the environment, especially Matters of National Environmental Significance (MNES); • Promote ecologically sustainable development (ESD) through the conservation and ecologically sustainable use of natural resources; • Promote the conservation of biodiversity; • Provide for the protection and conservation of heritage; • Promote a cooperative approach to the protection and management of the environment involving governments, the community, landholders and Indigenous peoples; • Assist in the cooperative implementation of Australia's international environmental responsibilities; • Recognise the role of Indigenous people in the conservation and ecologically sustainable use of Australia's biodiversity; and • To promote the use of Indigenous peoples' knowledge of biodiversity with the involvement of, and in cooperation with, the owners of the knowledge. Under Part 3 of the EPBC Act, a person must not undertake an action (e.g. a development) that will have, or is likely to have, a significant impact on a protected matter (MNES), without approval from the Australian Government Minister for the Environment. Refer to **Section 7.4** for detail.
State	
Environmental Planning and Assessment Act 1979 (EP&A Act) Environmental Planning and Assessment Regulation 2000 (EP&A Regulation)	The EP&A Act is the primary piece of legislation governing development within NSW. Some of the key objects of the EP&A Act are to: • Promote the social and economic welfare of the community and a better environment facilitate ESD; • Promote the orderly and economic use and development of land and the delivery and maintenance of affordable housing; • Protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats; • Promote the sustainable management of built and cultural heritage; and • Promote good design and amenity of the built environment, including the protection of the health and safety of their occupants. DPIE assesses development proposals within NSW alpine resort areas where the Minister for Planning and Public Spaces is the consent authority under Part 4 of the EP&A Act. Refer **Section 5.1** for matters to be considered. This SEE has been prepared in accordance with the requirements of Schedule 1 of the EP&A Regulation. Throughout the planning and design phases of the Project, KT has considered the principles of ESD.
National Parks and Wildlife Act 1974 (NPW Act)	The objects of the NPW Act include: • The conservation of nature; • The conservation of objects, places or features (including biological diversity) of cultural value within the landscape;

National Parks and Wildlife Regulation 2019 (NPW Regulation)	• Fostering public appreciation, understanding and enjoyment of nature and cultural heritage and their conservation; and • Providing for the management of land reserved under the Act in accordance with the management principles applicable for each type of reservation. The NPW Act provides that a person who exercises due diligence in determining that their actions will not harm Aboriginal objects has a defence against prosecution if they later unknowingly harm an object without an Aboriginal heritage impact permit. A due diligence assessment has been undertaken in **Section 7.11**. All development proposals in KNP require authorisation under the *National Parks and Wildlife Regulation 2019* and must be referred to the NSW National Parks and Wildlife Service (NPWS) for referral comment prior to commencement of works.
Biodiversity Conservation Act 2016 (BC Act) Biodiversity Conservation Regulation 2017 (BC Regulation)	The purpose of the BC Act is to maintain a healthy, productive and resilient environment for the greatest well-being of the community, now and into the future, consistent with the principles of ESD. The Project is consistent with principles of ESD, as demonstrated in the subsequent sections of this report. The BC Regulation sets out threshold levels for when the Biodiversity Offsets Scheme (BOS) will be triggered. If clearing and other impacts exceeds one of the thresholds, the BOS applies to the proposed development. If the BOS is not triggered, the test of significance detailed in section 7.3 of the BC Act must be used to determine whether a local development is likely to significantly affect threatened species. Refer **Section 7.3** for detail.
Water Management Act 2000 (WM Act) *Water Management (General) Regulation 2018* (WM (General) Regulation)	Controlled activities carried out in, on, or under waterfront land are regulated by the WM Act. Waterfront land includes the bed and bank of any river, lake or estuary and all land within 40 m of the highest bank of the river, lake or estuary. The Natural Resources Access Regulator (NRAR) administers the WM Act and is required to assess the impact of any proposed controlled activity to ensure minimal harm to waterfront land as a consequence of carrying out the controlled activity. As such, a controlled activity approval (CAA) must be obtained from NRAR before commencing a controlled activity, unless an exemption applies under the WM (General) Regulation. Refer **Section 7.2** for detail.
Environmental Planning Instruments	
State Environmental Planning Policy (Kosciuszko National Park – Alpine Resorts) 2007 (Alpine SEPP)	The aim and objectives of the Alpine SEPP include: • To encourage the carrying out of a range of development in the alpine resorts that do not result in adverse environmental, social or economic impacts on the natural or cultural environment; • Provide planning controls to encourage ESD; and • Minimise the risk of community exposure to environmental hazards within the alpine resort areas. Development in NSW alpine resort areas are governed by the Alpine SEPP. Key requirements of the Alpine SEPP include an assessment of the environmental impacts of the development on the alpine environment and rigorous assessment of geotechnical and land stability issues. Applications are also required to consider the socio-economic and cultural impacts of proposed development. Refer **Sections 5.2** and **7** for detail.

5 Planning Framework

An assessment against the relevant matters of the EP&A Act and relevant environment planning instruments, policies and plans is provided in this section.

5.1 Environmental Planning and Assessment Act 1979

As per Part 4, Clause 4.15 of the EP&A Act, DPIE is to consider the matters listed in **Table 3** in relation to the Project.

Table 3: Matters for Consideration – General

(1) Matters for consideration – General	Comment
(a) the provisions of—	
(i) any environmental planning instrument	The relevant sections of the Alpine SEPP have been addressed in **Section 0**.
(ii) any proposed instrument that is or has been the subject of public consultation under this Act and that has been notified to the consent authority (unless the Planning Secretary has notified the consent authority that the making of the proposed instrument has been deferred indefinitely or has not been approved)	There are no draft Environmental Planning Instruments that are applicable to the Project.
(iii) any development control plan	There are currently no development control plans applicable to the Alpine SEPP.
(iiia) any planning agreement that has been entered into under section 7.4, or any draft planning agreement that a developer has offered to enter into under section 7.4	There are no planning agreements applicable to Thredbo under the Alpine SEPP.
(iv) the regulations (to the extent that they prescribe matters for the purposes of this paragraph)	The DA and supporting information has been prepared in accordance with the requirements of the EP&A Regulation.
(b) the likely impacts of that development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality	The likely impacts of the Project on the natural and built environment, and social and economic impacts in the locality have been assessed in **Section 7**.
(c) the suitability of the site for the development	The suitability of the site for the Project is described in **Sections 2.2** and **7.1**.
(d) any submissions made in accordance with this Act or the regulations	The DPIE (2019) *Community Participation Plan* outlines where DAs are assessed under the Alpine SEPP, no public exhibition will be undertaken for proposals where the site is located more than 50 m away from a tourist accommodation building. Tourist accommodation is located more than 50 m south of the Project site, therefore public exhibition is not required. Further, the Project is not considered a major development; therefore, the undertaking of any notification processes is not anticipated.
(e) the public interest.	The Project is considered to be within the public interest as it aligns with the aim and objectives of the Alpine SEPP; and will result in improved reliability of snow cover that will contribute to the length of the ski season and quality of snow within Middle Slopes and Friday Flat, and therefore enhanced guest experience.

5.2 Alpine SEPP

The relevant clauses of the Alpine SEPP are addressed in the subsequent sections.

5.2.1 Alpine SEPP Clause 11 – Land Use Table (Thredbo Alpine Resort)

Pursuant to Clause 11 of the Alpine SEPP, 'snowmaking infrastructure' is permissible with consent within the Thredbo Alpine Resort.

5.2.2 Alpine SEPP Clause 14 – Matters to be considered by Consent Authority

Table 4 addresses Clause 14 – Matters to be considered by consent authority in relation to the Project.

Table 4: Matters to be Considered by Consent Authority

Matters for Consideration	Comment
(1) In determining a development application that relates to land to which this Policy applies, the consent authority must take into consideration any of the following matters that are of relevance to the proposed development—	
a) the aim and objectives of this Policy, as set out in clause 2	The Project is consistent with the objectives of the Policy, as demonstrated in this SEE.
b) the extent to which the development will achieve an appropriate balance between the conservation of the natural environment and any measures to mitigate environmental hazards (including geotechnical hazards, bush fires and flooding)	The Project is located in a highly modified site. No environmental hazards have been identified during the desktop and site assessment. Appropriate controls will be installed during construction to mitigate any potential impacts to the existing environment. Refer to the SEMP for detailed controls (**Appendix B**).
c) having regard to the nature and scale of the development proposed, the impacts of the development (including the cumulative impacts of development) on the following— i. the capacity of existing transport to cater for peak days and the suitability of access to the alpine resorts to accommodate the development ii. the capacity of the reticulated effluent management system of the land to which this Policy applies to cater for peak loads generated by the development iii. the capacity of existing waste disposal facilities or transfer facilities to cater for peak loads generated by the development, iv. the capacity of any existing water supply to cater for peak loads generated by the development	The Project will not impact on the capacity of the existing transport, reticulated effluent management system, existing waste disposal facility or existing water supply.
d) any statement of environmental effects required to accompany the development application for the development	This SEE addresses this requirement.
e) if the consent authority is of the opinion that the development would significantly alter the character of the alpine resort—an analysis of the existing character of the site and immediate surroundings to assist in understanding how the development will relate to the alpine resort	The Project will not impact on the existing character of the site or immediate surroundings. The Project is compatible with the existing infrastructure.
f) the *Geotechnical Policy—Kosciuszko Alpine Resorts* (2003, Department of Infrastructure, Planning and Natural Resources) and any measures proposed to address any geotechnical issues arising in relation to the development	In accordance with the *Geotechnical Policy Kosciuszko Alpine Resorts* (DIPNR 2003), the Project requires a Minimal Impact Certification (Form 4). Refer **Section 7.1.3** for details.
g) if earthworks or excavation works are proposed—any sedimentation and erosion control measures proposed to mitigate any adverse impacts associated with those works	Excavation works are required for the trenching of power cabling and installation of pits. An Erosion and Sediment Control Plan (ESCP) has been prepared and will be implemented during construction, refer SEMP (**Appendix B**).

h) if stormwater drainage works are proposed—any measures proposed to mitigate any adverse impacts associated with those works	No stormwater drainage works are required for the Project.
i) any visual impact of the proposed development, particularly when viewed from the Main Range	Snowmaking infrastructure currently exists within Friday Flat and Middle Slopes and it is common in other parts of the resort. The Project will result in the installation of new fan guns within the existing snowmaking infrastructure footprint. The Project will not be visible from the Main Range. As such, visual impacts are considered negligible.
j) the extent to which the development may be connected with a significant increase in activities, outside of the ski season, in the alpine resort in which the development is proposed to be carried out	The Project will not increase activities outside the ski season.
k) if the development involves the installation of ski lifting facilities and a development control plan does not apply to the alpine resort— i. the capacity of existing infrastructure facilities, and ii. any adverse impact of the development on access to, from or in the alpine resort	The Project does not involve the installation of ski lifting facilities.
l) if the development is proposed to be carried out in Perisher Range Alpine Resort— i. the document entitled *Perisher Range Resorts Master Plan*, as current at the commencement of this Policy, that is deposited in the head office of the Department, and ii. the document entitled *Perisher Blue Ski Resort Ski Slope Master Plan*, as current at the commencement of this Policy, that is deposited in the head office of the Department	Not applicable.
m) if the development is proposed to be carried out on land in a riparian corridor— i. the long term management goals for riparian land, and ii. whether measures should be adopted in the carrying out of the development to assist in meeting those goals.	The Project is not located within a riparian corridor. Refer to **Section 7.2.2** for detail.
(2) The *long term management goals* for riparian land are as follows—	
a) to maximise the protection of terrestrial and aquatic habitats of native flora and native fauna and ensure the provision of linkages, where possible, between such habitats on that land,	-
b) to ensure that the integrity of areas of conservation value and terrestrial and aquatic habitats of native flora and native fauna is maintained,	
c) to minimise soil erosion and enhance the stability of the banks of watercourses where the banks have been degraded, the watercourses have been channelised, pipes have been laid and the like has occurred.	
(3) A reference in this clause to land in a riparian corridor is a reference to land identified as being in such a corridor on a map referred to in clause 5.	

5.3 Plans, Policies and Guidelines

5.3.1 Kosciuszko National Park Plan of Management 2006

The *Kosciuszko National Park Plan of Management 2006* (KNP POM) outlines objectives and management strategies to guide the long-term management of values within specific areas of KNP. The KNP POM includes several management zones, which comprise of seven management units that contain places and values of exceptional significance. Thredbo is included in the Thredbo Management Unit, considered an area of exceptional recreational significance. As such, the management provisions applicable to this unit (Section 10) apply.

Under the provisions of the Alpine SEPP, all development applications within KNP are referred to NPWS who are responsible for administering the KNP POM.

The Project will improve the quality of the resort experience for guests by improving the quality of snow cover within Friday Flat and Middle Slopes and contributing to a longer ski season. Relevant technical specialists have been engaged to ensure the potential Project impacts on key environmental values are avoided, mitigated and/or managed appropriately through the implementation of appropriate controls. As demonstrated in this SEE and supporting documentation, the Project meets the applicable management objectives and provisions in Section 10 the KNP POM.

5.4 Integrated Development

5.4.1 Water Management Act 2000

The Development is located within 40 m of a watercourse, therefore it is classified as integrated development requiring referral to NRAR.

6 Assessment Method

The impact assessment for the Project consisted of a desktop review of publicly available data sources and information. The desktop review was followed by a site visit carried out within the Project area to describe the environmental values present on the site and to aid the evaluation of potential impacts of the Project to those values. A summary of the assessment method is provided in subsequent sections.

6.1 Desktop Assessment

A desktop assessment was carried out to identify relevant environmental values, that potentially occur within the Project area. Key database and information sources utilised in the desktop assessment are listed in **Table 5**. Relevant database search results are provided in **Appendix E**. Other resources were also investigated to inform the impact assessment (refer **Section 10**).

Table 5: Key Database Searches

Database	Date of Search
Aboriginal Heritage Information Management System Web Services (Heritage NSW)	8 November 2021
Biodiversity Values Map and Threshold Tool (NSW Government 2021b)	15 November 2021
Protected Matters Search Tool (DAWE)	8 November 2021
NSW BioNet	8 November 2021
Water Management (General) Regulation 2018 hydroline spatial data 1.0 (NSW Government 2021c)	15 November 2021
ePlanning Spatial Viewer (NSW Government 2021a)	4 – 15 November 2021

6.2 Site Assessment

A site assessment was undertaken by Project personnel and DPIE representatives on 24 November 2021 to validate the desktop assessment results, inform the design process and ensure appropriate environmental controls are implemented to avoid, mitigate and/or management potential impacts on environmental values.

6.3 Flora and Fauna Assessment

A Flora and Fauna Assessment (**Appendix B**) comprising desktop assessment and review of site photos was undertaken by Eco Logical Australia Pty Ltd (ELA) on 30 November 2021 (**Appendix C**) to assess the potential impacts of the Project on the existing ecological values of the site.

6.4 Geotechnical Assessment

A geotechnical assessment of the Project was undertaken by Asset Geotechnical Engineering Pt Ltd (Asset Geo), comprising: a review of existing regional maps and reports relevant to the site and visual observations of surface features were undertaken by Senior Principal Engineer on 4 November 2021. A summary of the findings is provided in **Section 7.1.3**.

7 Existing Environment and Impact Assessment

This section outlines the existing environmental values of the site and potential impacts of the Project on the natural, human and built environment of the site and surrounds.

7.1 Land

The Project is located within a highly disturbed environment as a result of the existing ski run and associated snowmaking and chairlift infrastructure. The total disturbance footprint is 0.0677 ha. The majority of new infrastructure will be installed within the existing infrastructure footprint.

Temporary soil stockpiles within the construction corridor will be required to manage excavated soil material during trenching works. Temporary stockpiles will be located within disturbed areas, avoid adjacent native vegetation and managed in accordance with the Soil Stockpile Guidelines) and ESCP (**Appendix B**).

7.1.1 Land Uses

The Project is consistent with the current land use (alpine resort) and it is not anticipated to impact on the surrounding land uses.

7.1.2 Topography

The Project site at Friday Flat is located between approximately 1370 and 1420 m Australian Height Datum (AHD). The Project site at Middle Slopes is located between approximately 1490 and 1510 m AHD (NSW Government 2021d).

7.1.3 Geotechnical

The Geotechnical Assessment (Asset Geo 2021) (**Appendix D**) determined the Project will have 'minimal or no geotechnical impact' on the site, based on the relatively shallow depths of excavation required, the lack of obvious signs of hillside instability observed or expected, and previous test pitting observations by the undersigned in the area.

7.2 Water

7.2.1 Mapped Watercourses

As shown on the *Water Management (General) Regulation 2018 hydroline spatial data 1.0* map (NSW Government 2021c) (**Figure 9**), two mapped watercourses are located within proximity of the Project site at Friday Flat.

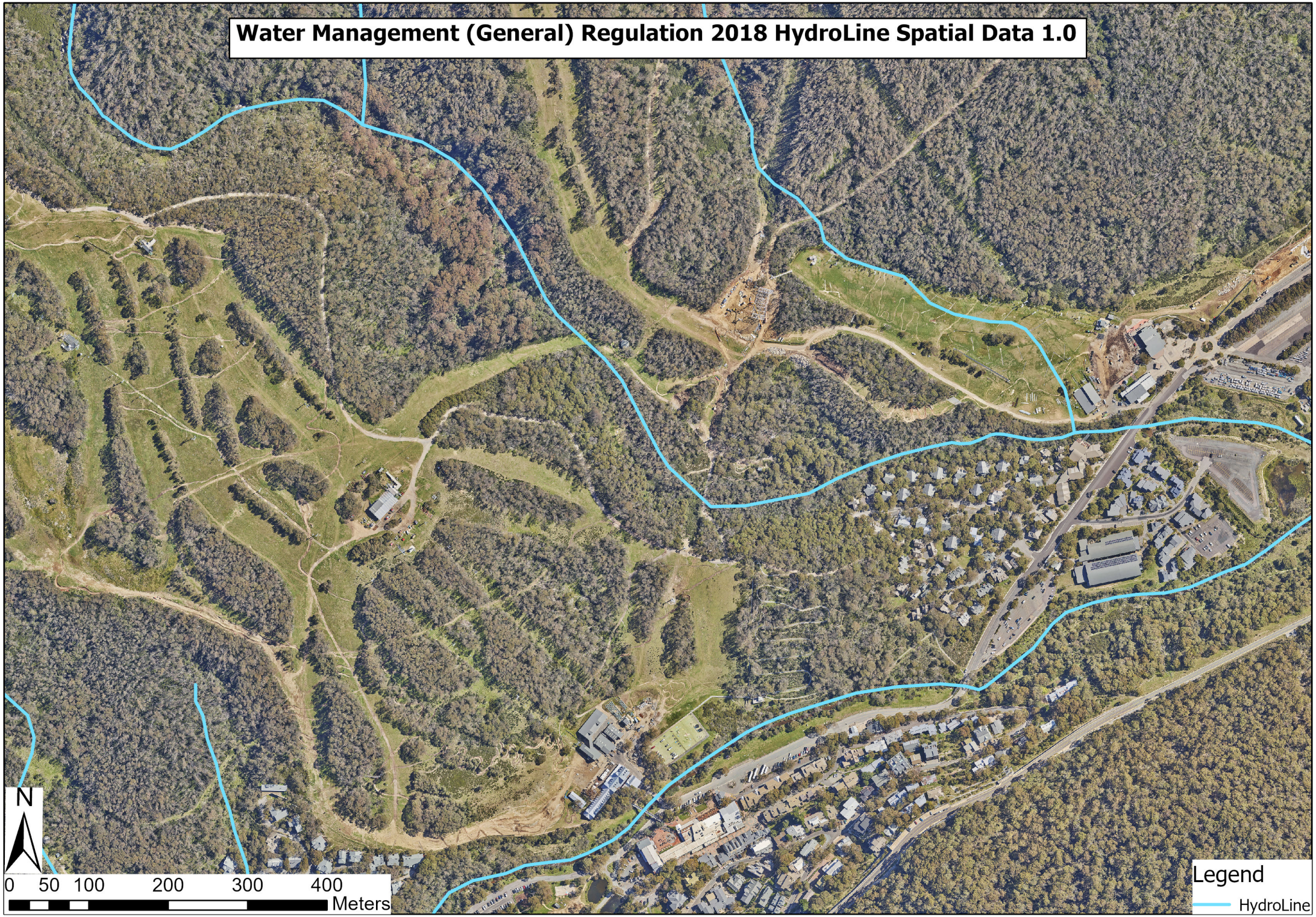

Figure 9: Mapped Watercourses

7.2.2 Riparian Corridor and Waterfront Land Assessment

Waterfront land includes the bed and bank of any river, lake or estuary and all land within 40 m of the highest bank of the river, lake or estuary (NRAR 2018). A *riparian corridor* forms a transition zone between the land, and the river of watercourse or aquatic environment. The *riparian corridor* consists of the channel (bed and banks) and the vegetated riparian zone (VRZ) adjoining the channel.

An assessment in accordance with the *Guidelines for controlled activities waterfront land: Riparian corridors* (NRAR 2018) is provided in the subsequent sections.

7.2.2.1 Unnamed Mapped Watercourse

The portion of the unnamed mapped watercourse which traverses the Project site does not exhibit the features of a defined channel with bed and banks (refer **Figure 10** and Error! Reference source not found. for field verification photos). This drainage line was diverted in the 1980s when Friday Flat was first developed. The diversion resulted in the drainage line being diverted around the ski slope area (approximately halfway down the slope), below the Easy Does It Quad lift (to the north-north-east) into a network of underground pipes, including several inlets/drains (refer **Figure 13** and **Figure 13**) nearby the Beginner Bowl / Friday Flat base area. As such, it is determined the portion of the mapped watercourse within the Project site is not waterfront land for the purposes of the WM Act. Therefore, no further assessment is required.

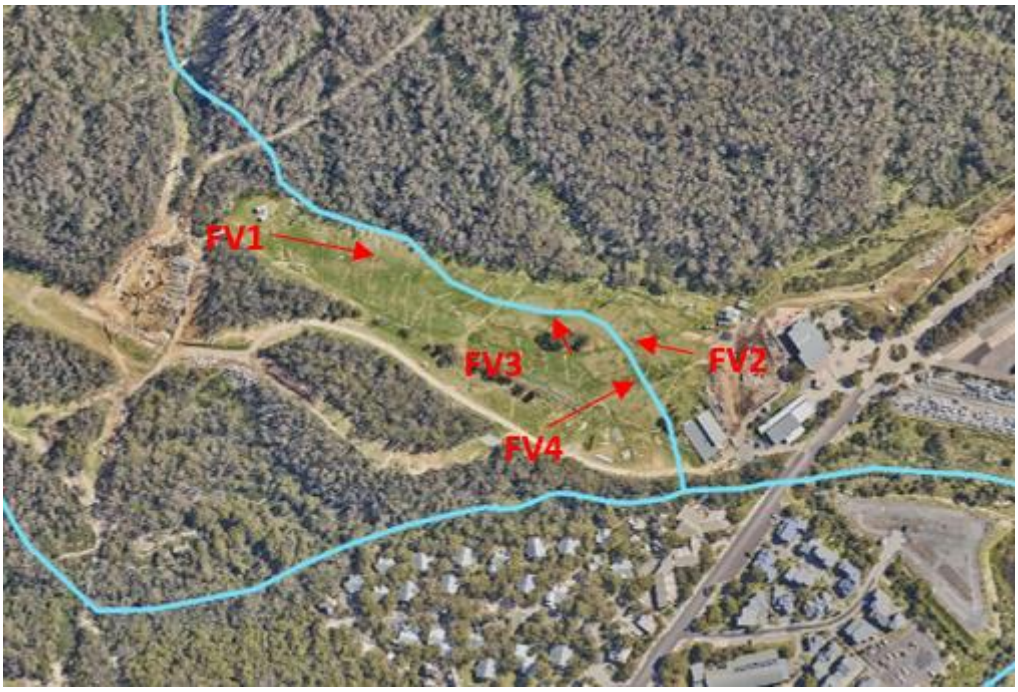

Figure 10: Field Verification Locations (Source: NSW Government 2021c)

FV1

FV2

FV3

FV4

Figure 11: Unnamed Mapped Watercourse Field Verification Photos

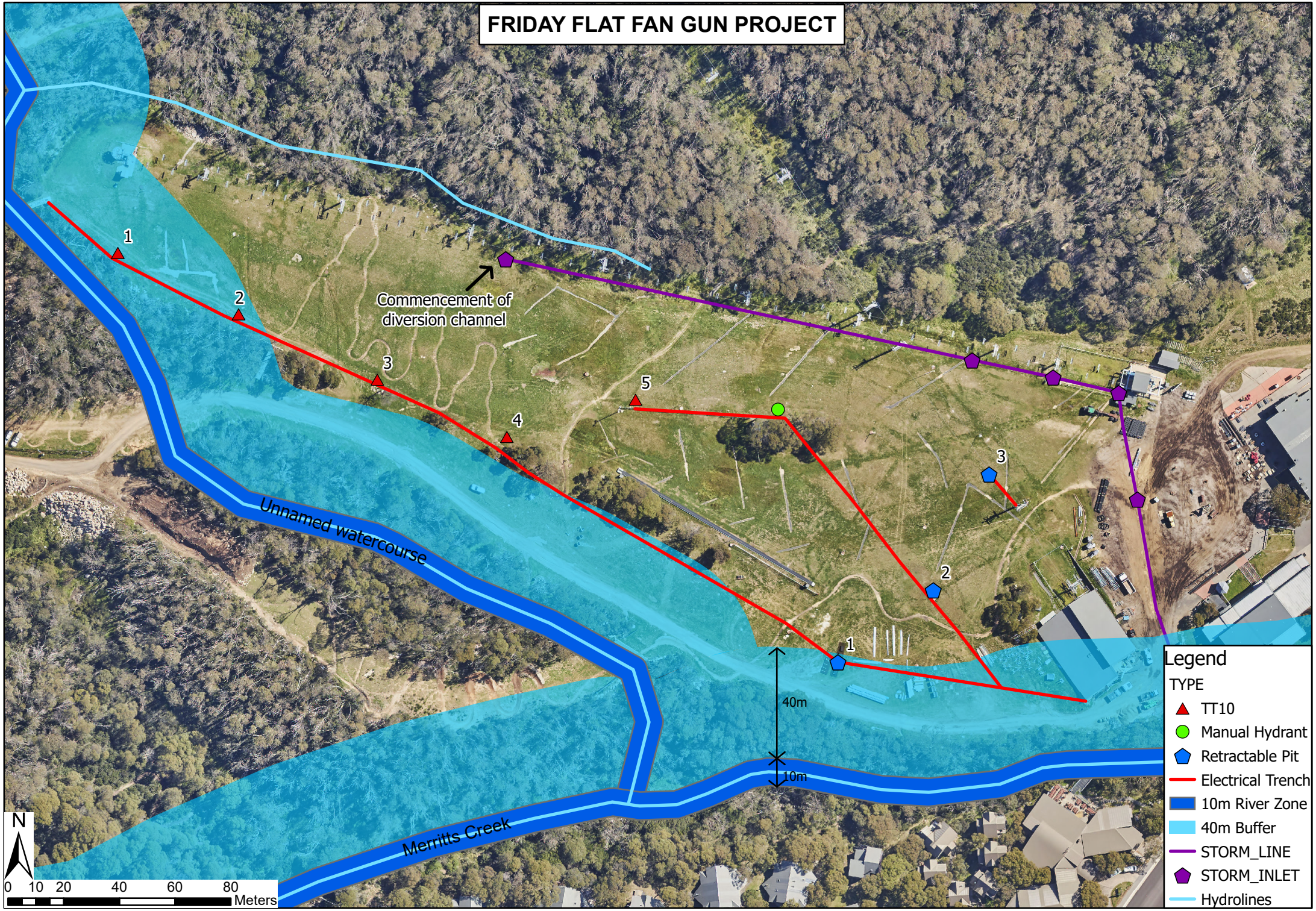

Figure 12: Waterfront land and riparian corridors

Drain 1

Drain 3

Drain 2

Figure 13: Inlets within diverted drainage line below Easy Does It Quad Lift

7.2.2.2 Merritts Creek

Merritts Creek is located to the south-south-east of Friday Flat. Merritts Creek is classified as a third order watercourse under the Strahler System. The VRZ (each side of watercourse) for a third order watercourse is 30 m (NRAR 2018). The channel width of Merritts Creek at this location is 10 m. Therefore, the total riparian corridor of Merritts Creek is 70 m (60 m + 10 m).

To determine whether the Project is located within 40 m of Merritts Creek, an assessment has been undertaken in accordance with method outlined in the *Guidelines for controlled activities waterfront land: Riparian corridors* (NRAR 2018).

As demonstrated on **Figure 12**, a portion of the electrical trench (approx. 100 m) and retractable pit 1 is located within 40 m of Merritts Creek. No impacts to Merritts Creek or its associated riparian corridor (nearby retractable pit 1 and Gunbarrel bottom station) are anticipated from the works at this location, given the following:

- This area has been significantly disturbed for the existing ski slope and the Mountain summer access road;
- The grassed area and mountain summer access road acts as a buffer between the disturbance area and Merritts Creek;
- The mountain summer access road contains several drainage berms which divert up-slope run-off in a non-erosive manner and acts as a buffer between the riparian vegetation and the site;
- The trench excavation at this location is no greater than 100 m in length with a maximum depth of 0.6-0.8 m and 0.6 m in width;
- The excavation for the retractable pit is 3.0 x 3.0 x 1.6 m;
- Appropriate mitigation measures will be implemented during construction in accordance with the SEMP and ESCP; and
- The disturbed areas will be rehabilitated following completion of the works.

7.2.2.3 Unnamed watercourse

As demonstrated on **Figure 13**, two (2) TT10 fan guns (1 and 2) and two (2) sections of the electrical trench (approximately 80 m each in length) are located within 40 m of the unnamed watercourse. It should be noted this unnamed watercourse is not mapped on the 2018 Hydro Line 1.0 spatial data set, however it is mapped on the State Environmental Planning Policy (Kosciuszko National Park – Alpine Resort) 2007 Thredbo Alpine Resort Map.

No impacts to the watercourse or its associated riparian corridor are anticipated from the installation of the TT10 fan guns (1 and 2) and electrical trench at this location, given the following:

- The site has been previously disturbed due to the existing ski slope and associated snowmaking infrastructure at this location;
- A grassed section and existing vegetation act as a buffer between the disturbance area and the watercourse;
- The works at this location will be undertaken in approximately seven (7) days;
- The trench excavation at this location is no greater than 160 m in length with a maximum depth of 0.6-0.8 m and 0.6 m in width;
- The excavations for the two (2) concrete pits at this location are 3.0 x 3.0 x 1.6 m;

- The Mountain summer access road is located between the lower segment of the trench (below gun 4) and contains several drainage berms which divert up-slope run-off in a non-erosive manner and acts as a buffer between the riparian vegetation and the site;
- Appropriate mitigation measures will be implemented during construction in accordance with the SEMP and ESCP; and
- The disturbed areas will be rehabilitated following completion of the works.

7.3 Flora and Fauna

7.3.1 Biodiversity Values Map Threshold and Area Clearing Threshold

The Biodiversity Values Map (BVM) and Threshold Tool (NSW Government 2021b) identifies land with high biodiversity value that is particularly sensitive to impacts from development and clearing. The BOS applies to clearing of native vegetation and other biodiversity impacts prescribed by Clause 6.1 of the BC Regulation on land identified on the BVM.

The BVM (Figure 1, **Appendix B**) identifies Friday Flat does not comprise land mapped with high biodiversity values. No native vegetation will be cleared for the installation of fan guns and manual hydrants at Friday Flat. Where the electrical trench traverses a tree island, it will be located in an existing gap to avoid any tree removal (Photo 3, **Appendix B**).

The BVM (Figure 2, **Appendix B**) identifies land with high biodiversity values is mapped within Middle Slopes. No native vegetation will be cleared for the installation of the four (4) manual hydrants as this will occur within the existing snowmaking infrastructure footprint. The electrical cable trench at the Catshed will be located within an existing cleared area to avoid the removal of any tree or native vegetation mapped on the BVM (refer Photo 4, **Appendix B**).

As identified by ELA (2021), the Project will not directly or indirectly affect any land with high biodiversity values mapped within the BVM, nor will it trigger the area clearing threshold.

7.3.2 Species of Significance

The test of significance outlined in Section 7.3 of the BC Act is used to determine whether proposed development or an activity is likely to significantly affect threatened species or ecological communities, or their habitats.

As identified above, the Project is located on ski runs and other highly disturbed areas that are devoid of native vegetation. The Project has been designed to avoid any tree or native vegetation removal. Impacts to conservation significant flora and fauna, ecological communities or their habitats are not anticipated. The Project will not adversely affect habitat connectivity or any other biodiversity value of conservation significance (ELA 2021).

7.4 Matters of National Environmental Significance

A person must not take an action that has, will have or is likely to have a significant impact on any of the MNES without approval from the Australian Government Minister for the Environment.

A search of the EPBC Act Protected Matters Search Tool (PMST) (DAWE 2021) (records within a 1 km buffer of the Project site) was undertaken on 8 November 2021 to determine whether any MNES are likely to occur within the Project area. The Protected Matters Report (PMR) (Error! Reference source not found.) identified the five (5) categories (as listed under the EPBC Act) of MNES (**Table 6**) that may be relevant to the Project area and surrounds.

To determine whether a referral and formal assessment is required for the Project, an assessment has been undertaken in **Table 6** with consideration of the relevant significant impact criteria in the *Matters of National Environmental Significance: Significant Impact Guidelines 1.1* (DEE 2013).

Table 6: MNES Assessment

MNES Categories	No.	Comment
National Heritage Places	**2**	The Project is located in KNP, part of the Australian Alps National Parks and Reserves (AANP). Given the nature of the Project, it is unlikely to cause one or more of the National Heritage values of the AANP or the Snowy Mountain Scheme to be lost, degraded, damaged or notably altered, modified, obscured or diminished. Notably, the Project will provide direct benefits for guests during the winter season. No further assessment is required.
Wetlands of International Importance	**1**	Blue Lake is located more than 10 km north of the Project site. As such impacts to the ecological character of Blue Lake are considered unlikely. No further assessment is required.
Listed Threatened Ecological Communities (TECs)*	**2**	ELA (2021) (**Appendix B**) confirmed the Project is located within a heavily modified environment, comprising existing ski runs and other highly disturbed areas that are devoid of native vegetation. The Project has been designed to avoid removal of trees and native vegetation. As such, the Project will not result in any significant impacts on TECs, listed threatened species, listed migratory species or their habitat. No further assessment is required.
Listed Threatened Species*	**26**	
Listed Migratory Species*	**11**	

* While based on some species records, the PMST relies on predictive modelling of suitable habitats and does not necessarily reflect an actual record of the species/community for a particular location.

The Project will not have a significant impact on any of the MNES identified in the PMR. Therefore, a referral to the Australian Government Minister for the Environment is not required.

7.5 Social and Economic

Once operational, the Project will have a beneficial social contribution in the locality through the provision of improved snow cover which will create more reliable skiing and snowboarding conditions for guests and may allow winter visitation numbers to be maintained or potentially increased. Without the installation of more efficient snowmaking guns, KT's snowmaking operations would be compromised which could impact on the resort's ability to provide better snow conditions for guests early and later in the winter season, as well as quality snow throughout the season.

The economic impacts generated by the Project will be positive in terms direct investment into the resort and the generation of short-term construction jobs, however these are anticipated to be nominal given the scale and timing for construction works.

7.6 Traffic and Access

All construction vehicles and plant will enter and exit the Project site via the mountain summer access road via Friday Drive (refer **Figure 8**). All machinery and plant will be confined to the construction corridor and dedicated stockpile locations identified in the SEMP (**Appendix B**).

Temporary diversions and closures of the Friday Flat Loop MTB Trail within Friday Flat, and the Cannonball Downhill MTB Trail within Middle Slopes will be required during construction and managed in accordance with the SEMP (**Appendix B**). Temporary diversion and closures will be short-term and impacts to MTB trail users are expected to be low.

7.7 Landscape Character and Visual Amenity

The majority of new infrastructure is located belowground (i.e. pits, power cabling) and the aboveground infrastructure (i.e. hydrants, fan guns) is similar to the existing snowmaking infrastructure across the resort. Therefore, the Project is not anticipated to negatively impact on the landscape character of the resort.

The Project may contribute to the visual amenity and alpine resort character of Friday Flat through improved snow cover during the winter season.

7.8 Air Quality

The following land uses have been identified within proximity (less than 1 km) of the Project site at Friday Flat:

- Thredboland (comprising KT offices) – located approximately 75 m east-south-east;
- KT restaurant and retail spaces at Friday Flat – located approximately 90 m east; and
- Accommodation (River Inn and Woodridge accommodation) – located approximately 60 m south.

There is potential for dust emissions to be generated from truck movements, and during earthworks. However, these impacts will be short-term and negligible with the implementation of proposed mitigation measures outlined in the **Section 8** and the SEMP (**Appendix B**). Further, the riparian vegetation along the southern boundary of Friday Flat acts a buffer zone between the River Inn, Woodridge accommodation and the site.

Given the locality of Middle Slopes, no impacts are anticipated.

7.9 Noise and Vibration

Works will take place during off-peak visitation periods. Given the nature of the construction method, some of the offices located at Friday Flat and surrounding accommodation (River Inn and Woodridge areas) may at times be sensitive to noise from construction (e.g. loading/unloading materials, movement alarms). However, noise and vibration impacts are expected to be low given the following:

- Works will be conducted during standard hours;
- The duration of works is short-term (i.e. maximum two (2) months);
- Existing riparian vegetation along the southern boundary of site acts as a screen between the site and accommodation (River Inn and Woodridge area); and
- Appropriate mitigation measures will be implemented during construction to control noise at the source (refer **Section 8** and SEMP (**Appendix B**).

Given the locality of Middle Slopes, no impacts are anticipated.

7.10 Heritage

A review of the Alpine SEPP, NSW historic inventory and the Thredbo Alpine Village Conservation Plan, Vol.2 Inventory (Clive Lucas, Stapleton and Partners 1997) was undertaken on 4 November 2021. No heritage items are located within the Project site or within close proximity. Therefore, no impacts to heritage items are proposed and a heritage impact statement is not required.

7.11 Aboriginal Cultural Heritage

The *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* (DECCW 2010) sets out reasonable and practicable steps for individuals and organisations to take in order to:

- Identify whether or not Aboriginal objects are, or are likely to be, present in an area;
- Determine whether or not the activity is likely to harm Aboriginal objects (if present); and
- Determine whether an Aboriginal Heritage Impact Permit (AHIP) application is required.

To establish due diligence for the Project, an assessment against the Due Diligence Code of Practice has been provided in **Table 7**.

Table 7: Aboriginal Cultural Heritage Due Diligence Process

Due Diligence Process	Applicability (Yes/No)	Comment
1. Will the activity disturb the ground surface or any culturally modified trees?	Yes – refer Q2 No – AHIP application not necessary.	The Project will result in ground disturbance within a highly disturbed area. There are no culturally modified trees within the Project site and no native vegetation clearing is required.
2. Are there any: a) relevant confirmed site records or other associated landscape feature information on AHIMS? And/or	Yes, any or all, refer Q3 No, none – AHIP not necessary.	A search of the Aboriginal Heritage Information Management System (AHIMS) was undertaken on 18 November 2021. The search results (Error! Reference source not found.) identified no Aboriginal sites are recorded in or near the Project site.
b) any other sources of information of which a person is already aware? And/or		Several historical independent assessments have been undertaken within the resort including Friday Flat and Middle Slopes and immediate surrounds by Past Traces Heritage Consultants (2017), NGH Environmental (2017), Iron Bark (2013), and URS Australia Pty Ltd (2004; 2005). All studies provide an indication that the ski slope areas have low archaeological potential due to the level of disturbance associated with the previous ski slope work. The studies also concluded that given the steepness and exposed aspect/lack of sheltering tors, the ski slopes are unlikely to have been favourable campsite locations.
c) landscape features that are likely to indicate presence of Aboriginal objects?		The Project site is located in a highly disturbed environment, which has been subject to previous disturbance for the construction of existing ski slopes, huts, buildings and snowmaking infrastructure. Previous disturbance has comprised extensive earthworks, vegetation clearing and removal and disturbance to top soils and soil profiles, thus removing potential for Aboriginal sites to remain within the Friday Flat and Middle Slopes. There are no landscape features within the Project site that would indicate the presence of Aboriginal objects due to the previous disturbance for the installation of existing snowmaking infrastructure. As such, it is considered the Project has low potential to impact on unrecorded Aboriginal objects or sites. There is no requirement to move onto Steps 3 and 4.
3. Can harm to Aboriginal objects listed on AHIMS or identified by other sources of information and/or can the carrying	Yes – AHIP application not necessary No – refer Q4	Not applicable.

	out of the activity at the relevant landscape features be avoided?		
4.	Does a desktop assessment and visual inspection confirm that there are Aboriginal objects or that they are likely?	Yes – further investigation and impact assessment required No – AHIP application not necessary	Not applicable.

As identified in **Table 7**, all reasonable steps have been undertaken to ensure the Project fulfils the requirements of the Aboriginal Cultural Heritage Due Diligence Process. Potential impacts from the Project on objects or sites of Aboriginal Cultural Heritage significance are considered unlikely. Therefore, an independent impact assessment for Aboriginal heritage and archaeology is not required.

In the unlikely event that Aboriginal objects are discovered, management measures outlined in **Section 8** and the SEMP (**Appendix B**) will be implemented.

7.12 Built Environment

The Project will complement the existing snowmaking infrastructure at these locations, therefore the impacts on the built environment are expected to be negligible.

7.13 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. 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 carboard 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 locations at the top carpark for re-use within the resort. Existing lance guns will be reused within other areas of the resort.

8 Mitigation and Management Measures

Recommended mitigation and management measures to reduce potential impacts on the key values of the natural, built and human environment within the site and surrounds are provided in **Table 8**.

Table 8: Recommended Mitigation and Management Measures

Mitigation and Management Measures	
General	
1	A Site Environmental Management Plan (SEMP) will be prepared and implemented prior to the commencement of construction activities. The SEMP will address matters such as construction hours, chemical and hazardous material storage, waste management, erosion and sediment controls, biosecurity and complaints management.
2	All Project staff and contractors should undergo a site-specific induction which will cover environmental awareness training, environmental obligations and compliance requirements, emergency and incident response, reporting, and relevant procedures.
3	Prior to commencement of works, the Project site will be temporarily fenced, roped or flagged to clearly delineate the construction area and no-go zones.
Land	
1	Preparation and implementation of site-specific Erosion and Sediment Control Plan (ESCP).
2	Erosion and sediment controls to be inspected and maintained in accordance with the ESCP.
3	All stockpiles will be managed in accordance with the *Soil Stockpile Guidelines for the Resort Areas of Kosciuszko National Park, version 1.0* (OEH 2017) (Soil Stockpile Guidelines).
4	All storage of petroleum products, oils or chemicals to be in accordance with Australian Standards.
5	Refuelling procedures to be implemented to minimise spills of fuel products.
6	Progressive rehabilitation of disturbed areas to reduce erosion risks in accordance with the *Rehabilitation Guidelines for the Resort Areas of Kosciuszko National Park* (DECC 2007) (Rehabilitation Guidelines)
Water	
1	Appropriate drainage, erosion and sediment controls will be implemented at the site to minimise impacts to the water quality of run-off and the potential for sediment to leave the site and impact on the surrounding environment.
Flora and Fauna	
1	Project machinery and vehicles to arrive/depart from KNP and the Project site in a clean condition, free of mud and vegetative propagules
2	Machinery to be regularly maintained and manoeuvred to prevent the spread of weeds and pathogens.
3	Disposal and storage of putrescible wastes must be undertaken appropriately to ensure feral animals aren't attracted to the site.
4	Prior to the commencement of construction works, all weed species identified within the construction corridor to be treated in accordance with best practice methods to ensure these weeks are not spread further within the site or throughout KNP.
5	Rehabilitate all disturbed areas in accordance with the Rehabilitation Plan.
Traffic and Access	
1	Traffic and construction vehicle access will be managed as per regular daily operation in the resort.
2	All vehicle and plant operators will be licensed and trained.
3	Appropriate signage will be installed to ensure the safety of road users, cyclists and pedestrians, and prevent unauthorised access to the construction site.
4	Temporary diversions of the Friday Flat Loop and Cannonball Downhill MTB Trails will be constructed to minimise disruptions to these trails during construction works. Appropriate signage will be erected to inform trail users.
5	Design and construction of the temporary diversions will be in accordance with the IMBA Design Guidelines.
Air Quality	
1	Reasonable and practicable measures (e.g. water sprays, vehicles carrying rubble must be covered) will be implemented to prevent dirt and dust from affecting the amenity or the surrounding environment during construction. Measures will be detailed in the SEMP.
2	In the event a complaint is received in relation to air quality/dust nuisance, the source of the complaint will be investigated, and if required corrective actions will be implemented to minimise or avoid impacts.
Noise and Vibration	
1	Project staff will take reasonable and practicable management measures to avoid and mitigate environmental nuisance from noise associated with the works e.g. avoid dropping materials from a height, turn off plant that is not being used.

2	Construction works and operation of plant will comply with 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, keep drivers informed of designated vehicle routes and parking locations
3	Construction works will be conducted during standard hours stipulated in the conditions of approval.
4	In the event a noise complaint is received, the source of the complaint will be investigated, and if required corrective actions will be implemented to minimise or avoid noise impacts.
Cultural Heritage	
1	Where unexpected items of potential archaeological, built or Aboriginal cultural heritage significance are discovered, works will cease, relevant authorities (i.e. NPWS) will be notified and the site will be secured by erecting a no-go zone. If human remains are found, works will cease, the site will be secured and NSW Police will be notified immediately.
Waste	
1	Waste to be managed in accordance with the waste hierarchy – avoid and reduce → reuse waste→ recycle waste → recover energy→ treat waste→ dispose of waste.
2	All construction waste and litter to be minimised and contained within appropriate receptacles. All receptacles will be in good condition.
3	All waste to be managed and disposed of in accordance with legislative requirements and relevant standards, for instance: • General litter will be segregated from recyclables; and • Excess spoil will be removed off-site and transported to KT's main soil stockpile locations and managed in accordance with the Soil Stockpile Guidelines.
4	All waste transportation vehicles should be covered appropriately to ensure waste cannot spill, leak or escape onto the road or wash into stormwater drains.

9 Conclusion

The Project will incorporate fan guns into the existing snowmaking infrastructure at Friday Flat and provide fan gun outlets (manual hydrants) on Middle Slopes, which will allow KT to improve the efficiency of its snowmaking operation, as well as the quality and reliability of snow cover within these areas.

In accordance with the relevant legislative requirements, this SEE has assessed the potential impacts of the Project on the human, built and natural environment of the Project site and surrounds. The Project has been designed to improve the operation of the snowmaking system whilst minimising impacts on the surrounding environment.

The total disturbance footprint is 0.0677 ha. The majority of new infrastructure will be installed within the existing snowmaking infrastructure footprint. Given the highly disturbed nature of the Project site and no native vegetation clearing is required, significant impacts to conservation significant flora and fauna, ecological communities or their habitats are not anticipated. A portion of the electrical trench and three (3) concrete pits within Friday Flat are located on waterfront land, however no impacts are anticipated. With the implementation of appropriate environmental controls, the impacts from the Project on the existing natural environment are considered low.

The impacts on the built environment are expected to be negligible as the new infrastructure will predominately replace the existing snowmaking infrastructure at Friday Flat and add minimal additional infrastructure on Middle Slopes.

In response to the challenges posed by the sustainability of natural snow fall within a changing climate, artificial snowmaking improves seasonal length and viability, which may allow the winter visitation period to be maintained or potentially extended. This will provide positive social and economic impacts through the provision of improved snow cover which will contribute to an enhanced guest experience, as well as direct investment into the resort, and generation of construction jobs. The Project is therefore considered critical infrastructure for the operation of the resort.

10 References

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11 Acronyms

Acronyms	
AANP	Australian Alps National Parks and Reserves
AHD	Australian Height Datum
AHIP	Aboriginal heritage impact permit
Alpine SEPP	State Environmental Planning Policy (Kosciuszko National Park – Alpine Resorts) 2007
BC Act	*Biodiversity Conservation Act 2016*
BOS	Biodiversity Offset Scheme
BVM	Biodiversity Values Map
BC Regulation	Biodiversity Conservation Regulation 2017
CAA	Controlled Activity Approval
DA	Development Application
DAWE	Department of Agriculture, Water and the Environment (Commonwealth)
DEE	Department of Environment and Energy (now DAWE)
DPIE	NSW Department of Planning, Industry and Environment
EP&A Act	*Environmental Planning and Assessment Act 1979*
EP&A Regulation	*Environmental Planning and Assessment Regulation 2000*
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
ha	hectare
km	kilometres
KNP	Kosciuszko National Park
KNP POM	Kosciuszko National Park Plan of Management
KT	Kosciuszko Thredbo Pty Ltd
LGA	Local Government Area
OEH	Office of Environment and Heritage (NSW)
m	metres
mm	millimetres
MNES	Matters of National Environmental Significance
NPW Act	*National Parks and Wildlife Act 1974*
NPWS	National Parks and Wildlife Service
NRAR	Natural Resources Access Regulator
NSW	New South Wales
PMR	Protected Matters Report
PMST	Protected Matters Search Tool
SEE	Statement of Environmental Effects
SEMP	Site Environmental Management Plan
TEC	Threatened Ecological Community
Thredbo	Thredbo Alpine Resort
UTV	Utility terrain vehicle
VRZ	Vegetated riparian zone

12 Appendices

Appendix A Site Photos

Friday Flat Site Photos

Photo A1: Easy Does It facing downslope – replacement of existing lance guns down skiers right

Photo A2: Friday Flat facing upslope

Photo A3: TT10 #1 (Easy Does It, skiers right) – replacement of existing lance gun with new TT10 fan gun

Photo A4: TT10 #2 (Easy Does It skiers right) – replacement of existing lance gun with TT10 fan gun

Photo A5: TT10 #3 (Easy Does It, skiers right) – replacement of existing lance gun with TT10 fan gun

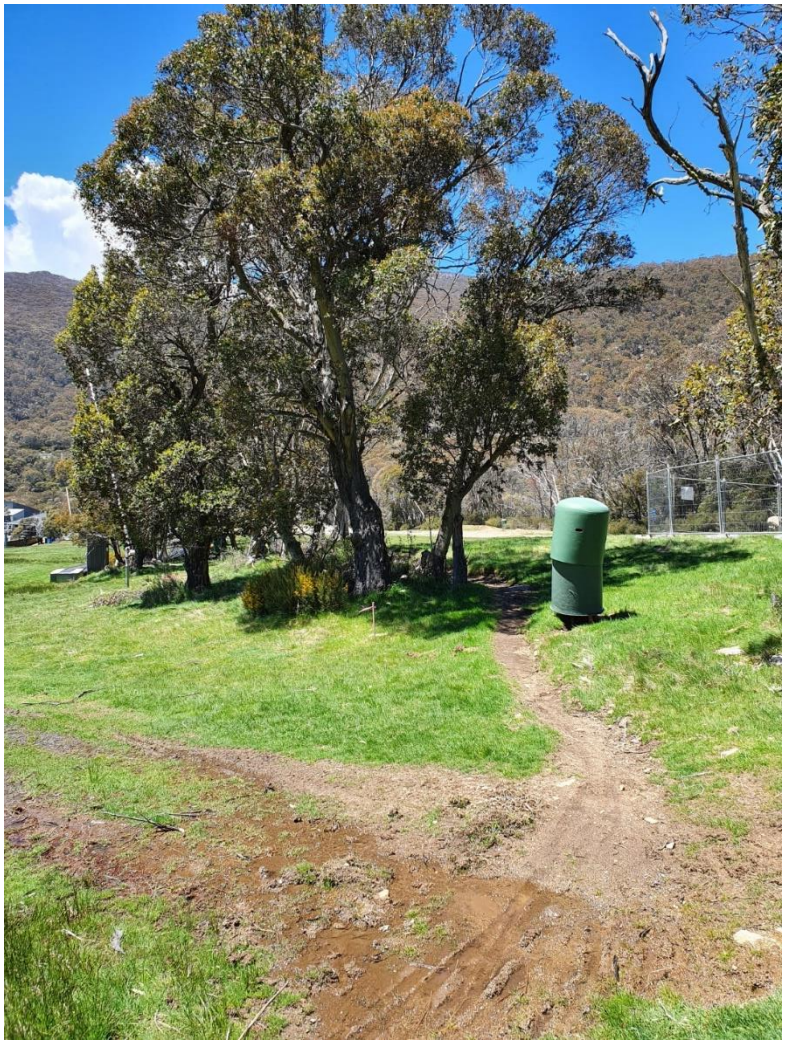

Photo A6: TT10 #4 – installation of TT10 fan gun

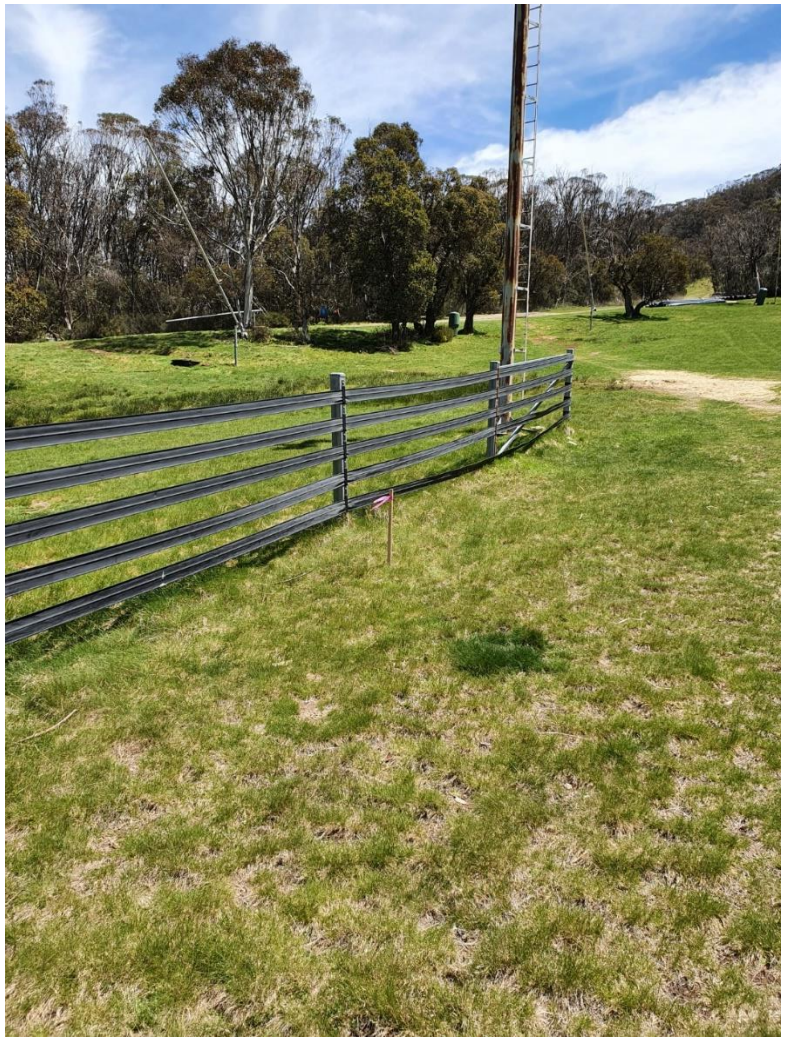

Photo A7: TT10 #5 – installation of TT10 fan gun

Photo A8: Manual hydrant location (north of Thredboland Cubby House)

Photo A9: Retractable Pit 1 (lower section of Friday Flat / parallel to summer mountain access road)

Photo A10: Retractable Pit 3 (lower section of Friday Flat)

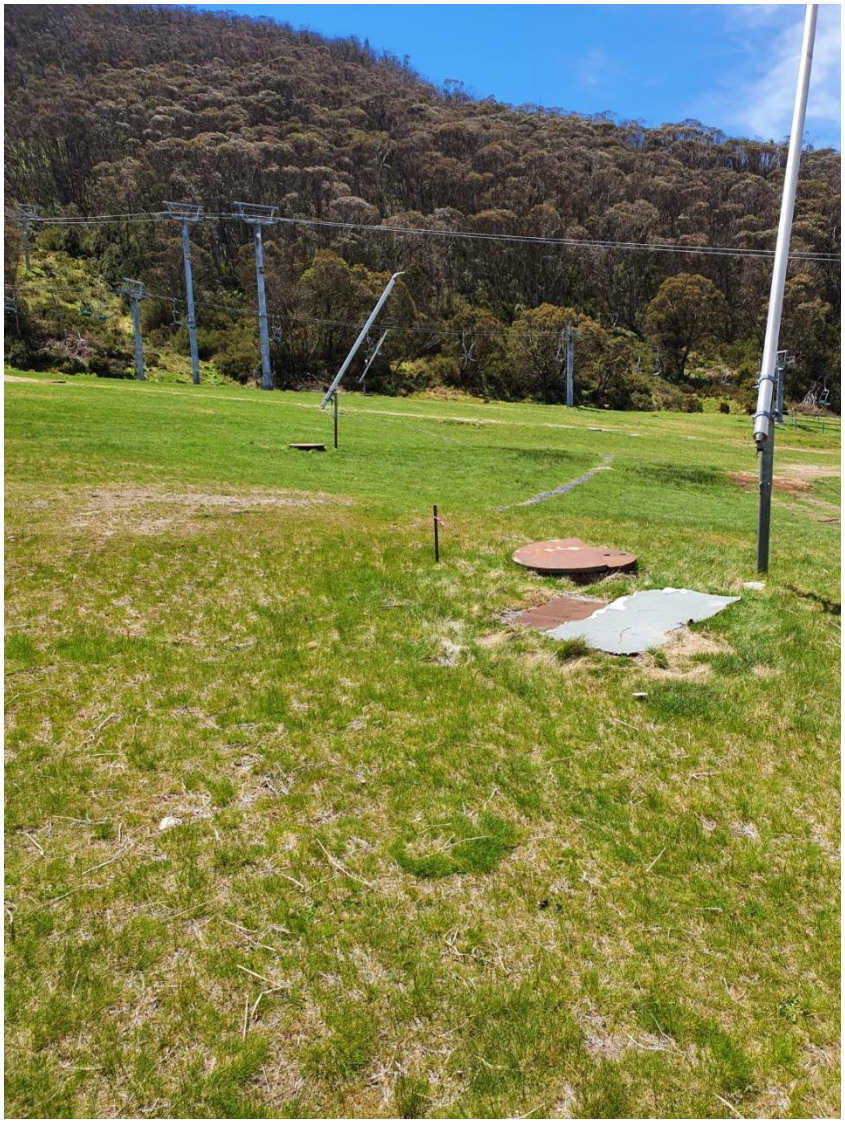

Photo A11: Retractable Pit 2 (lower section of Friday Flat)

Middle Slopes Site Photos

Photo A12: Middle Slopes manual hydrant downslope view

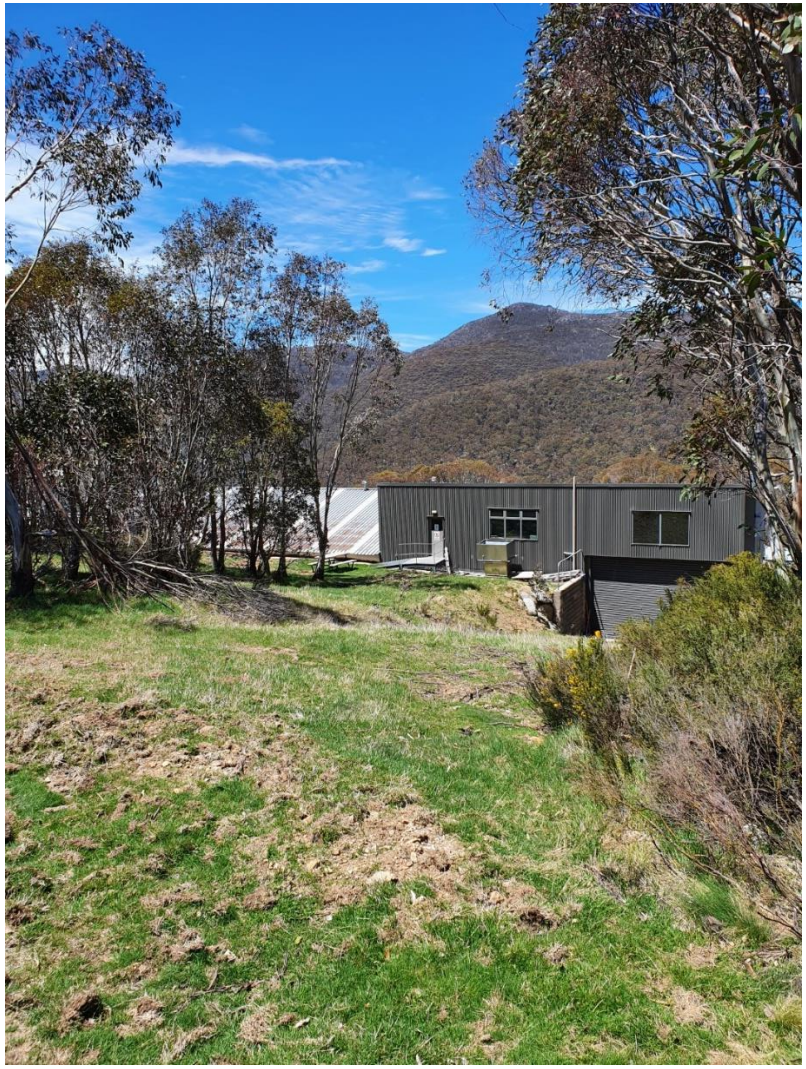

Photo A13: Electrical trench route at catshed

Photo A14: Electrical trench route across Middle Slopes

Photo A15: Middle Slopes Manual Hydrant #1 (skiers right)

Photo A16: Middle Slopes Manual Hydrant #2 (skiers right)

Photo A17: Middle Slopes Manual Hydrant #3 (skiers right)

Photo A18: Middle Slopes Manual Hydrant #4 (skiers right)

Appendix B Site Environmental Management Plan (SEMP)

Site Environmental Management Plan (SEMP)

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

Friday Flat and Middle Slopes Fan Gun Project

Site Environmental Management Plan (SEMP)

Kosciuszko Thredbo Pty Ltd
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Document Control

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Contents

Figures

Tables

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;
- Installation of five concrete pits (2.2 m x 1.5 m x 1.5 m) and five (5) TT10 fan guns;
- Installation of three (3) retractable concrete pits (2.2 m x 1.5 m x 1.5 m) for mobile fan guns;
- Installation of one (1) manual hydrant for mobile fan gun; and
- Trenching (0.6 m wide x 0.60-0.80 m deep) and laying of electrical cabling to new guns and manual hydrant.

The Project comprises the following at Middle Slopes:

- Installation of four (4) manual hydrants; and
- Trenching (0.6 m wide x 0.60-0.80 m deep) and laying of electrical cabling to manual hydrants.

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	Pre-construction activities involve site preparation works, which will include: • Establishment of site boundary; • Establishment of site compound; • Erection of site signage; and • Installation of erosion and sediment controls. The proposed construction program will comprise the following: *Friday Flat* • Temporary diversion of Friday Flat Loop Mountain Bike (MTB) Trail; • Removal of existing lance guns 1 – 5 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; and • Backfilling of trenches. *Middle Slopes* • 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; and • Backfilling of trenches. Refer to the site plans included in **Appendix B** for further detail. Post-construction activities will comprise: • 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	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; and • Delivery trucks.
Stockpile Sites	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 *Soil Stockpile Guidelines for the Resort Areas of Kosciuszko National Park* (OEH 2017) (Soil Stockpile Guidelines) and ESCP (**Appendix C**).
Site Facilities and Temporary Structures	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.
Project Timing	The anticipated timing for the commencement of construction works is February 2022. Project completion is anticipated in April 2022.
Working Hours	The working hours for construction will be stipulated in the conditions of consent.

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**.

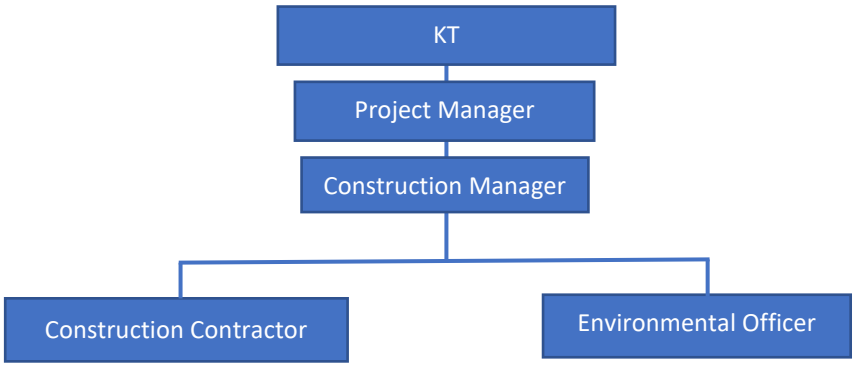

Figure 1: Project Team Structure

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 DPIE; • 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			
KT	Project Manager	TBC	TBC
TBC	Construction Manager	TBC	TBC
KT	Environmental Officer	TBC	TBC
TBC	Construction Contractor	TBC	TBC
Government Agency Contacts			
DPIE (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 DPIE 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
DPIE	Commencement of construction	DPIE will be notified in writing at least 48 hours prior to the commencement of construction.	Project Manager
DPIE	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 heath 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 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 Management	
Objective	• Minimise potential impacts to receiving water sources; and • Reduce the potential for erosion and sediment moving offsite.
Mitigation Measures	• 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: – 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	• 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	• 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	• 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	• 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; 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, carboard, 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 carboard 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	• 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; 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	• 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	• 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 *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 Management	
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; 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:

	• 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 Management	
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 DPIE 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); • Appropriate controls will be implemented when re-fuelling Project vehicles and machinery e.g. re-fuelling of vehicles and machinery will be performed on hard-stand areas or with appropriate spill kit and 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	• 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: – **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	• 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	• 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 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 (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 DPIE (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.

DPIE 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 no-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

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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

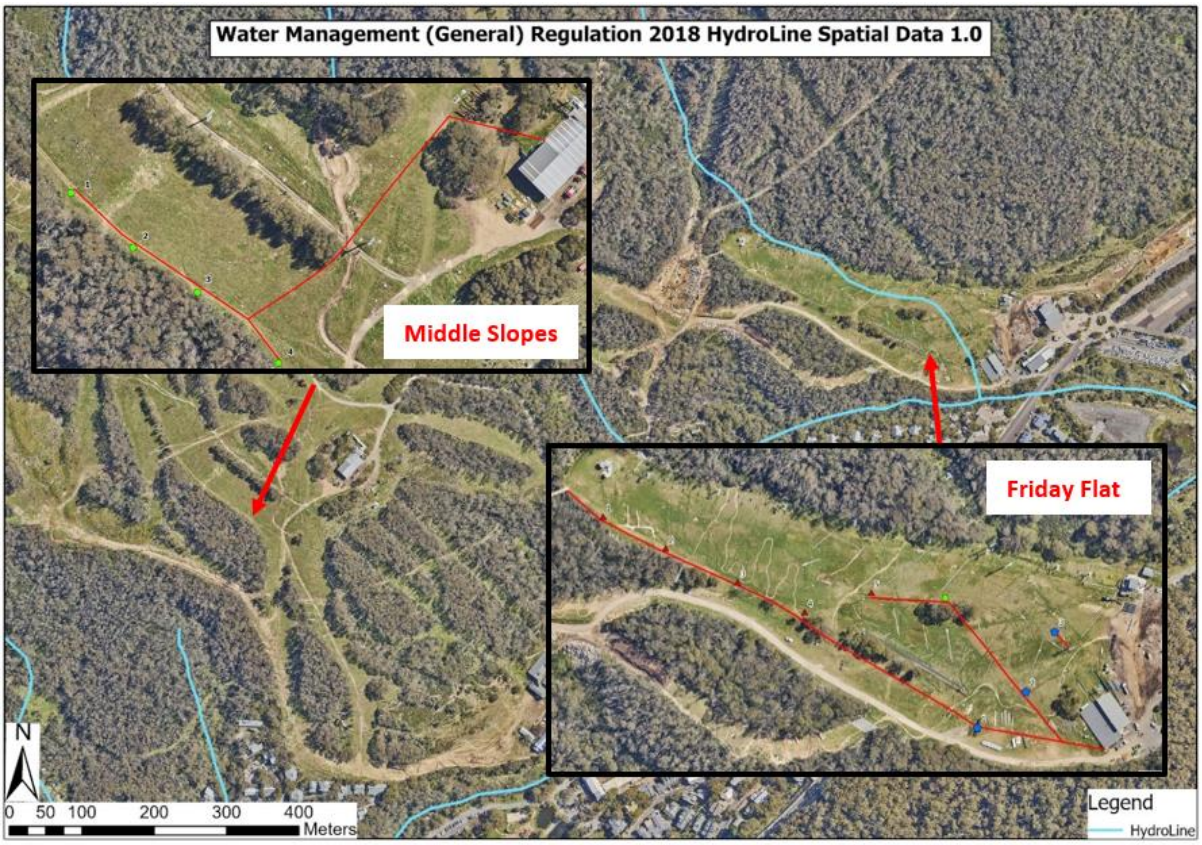

Figure B1: Project location within proximity to mapped watercourses (NSW Government 2021a)

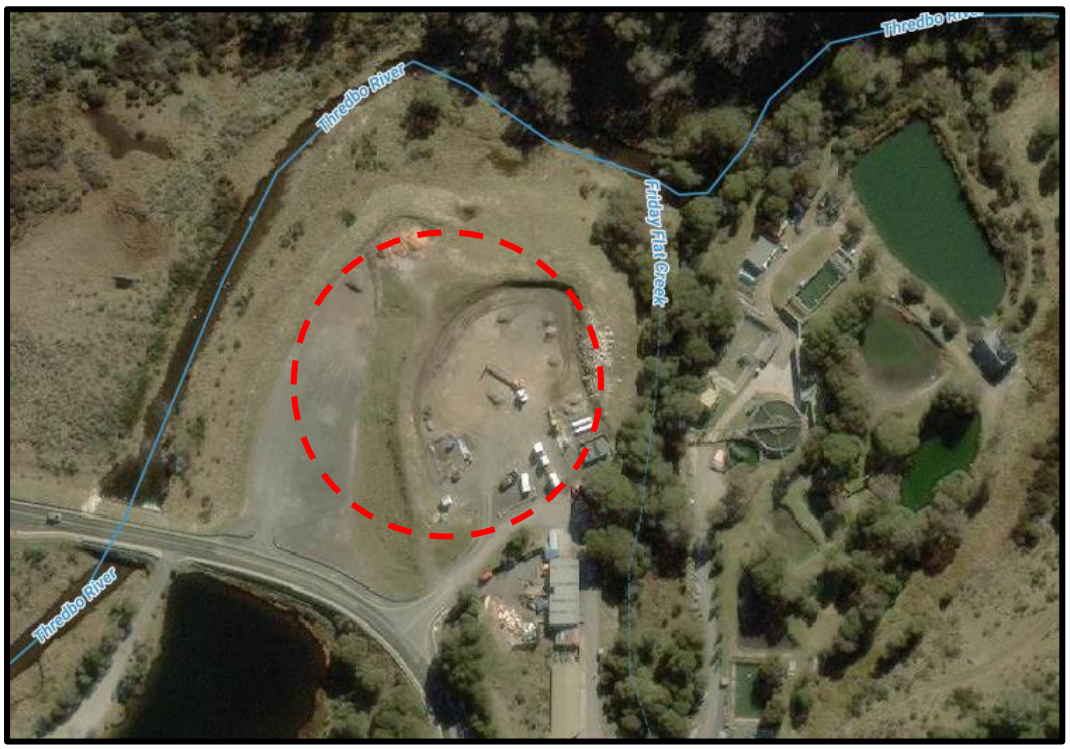

Figure B2: Main stockpile location within Thredbo's top carpark

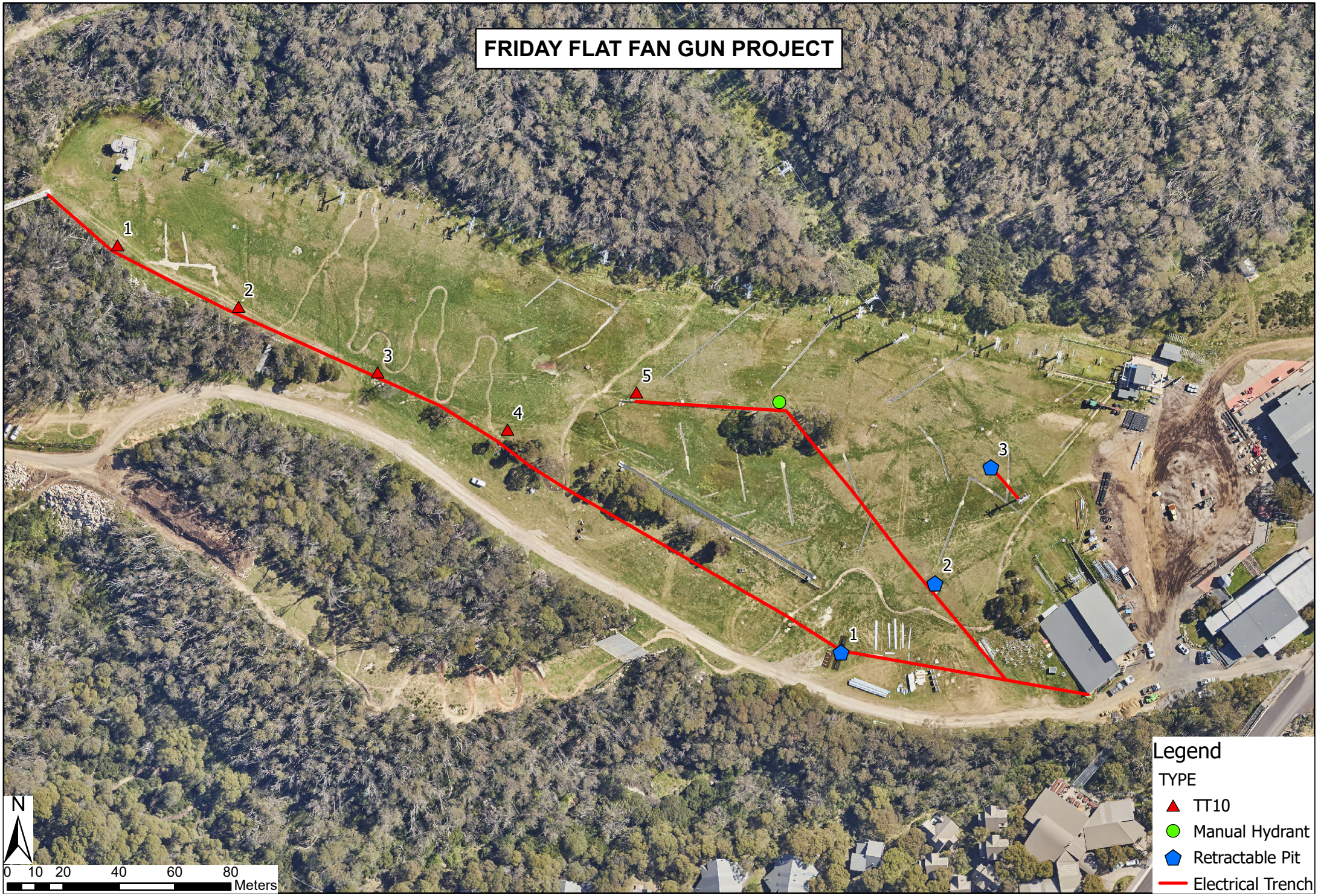

Figure 3: Project Site - Friday Flat

Figure 4: Project Site - Middle Slopes

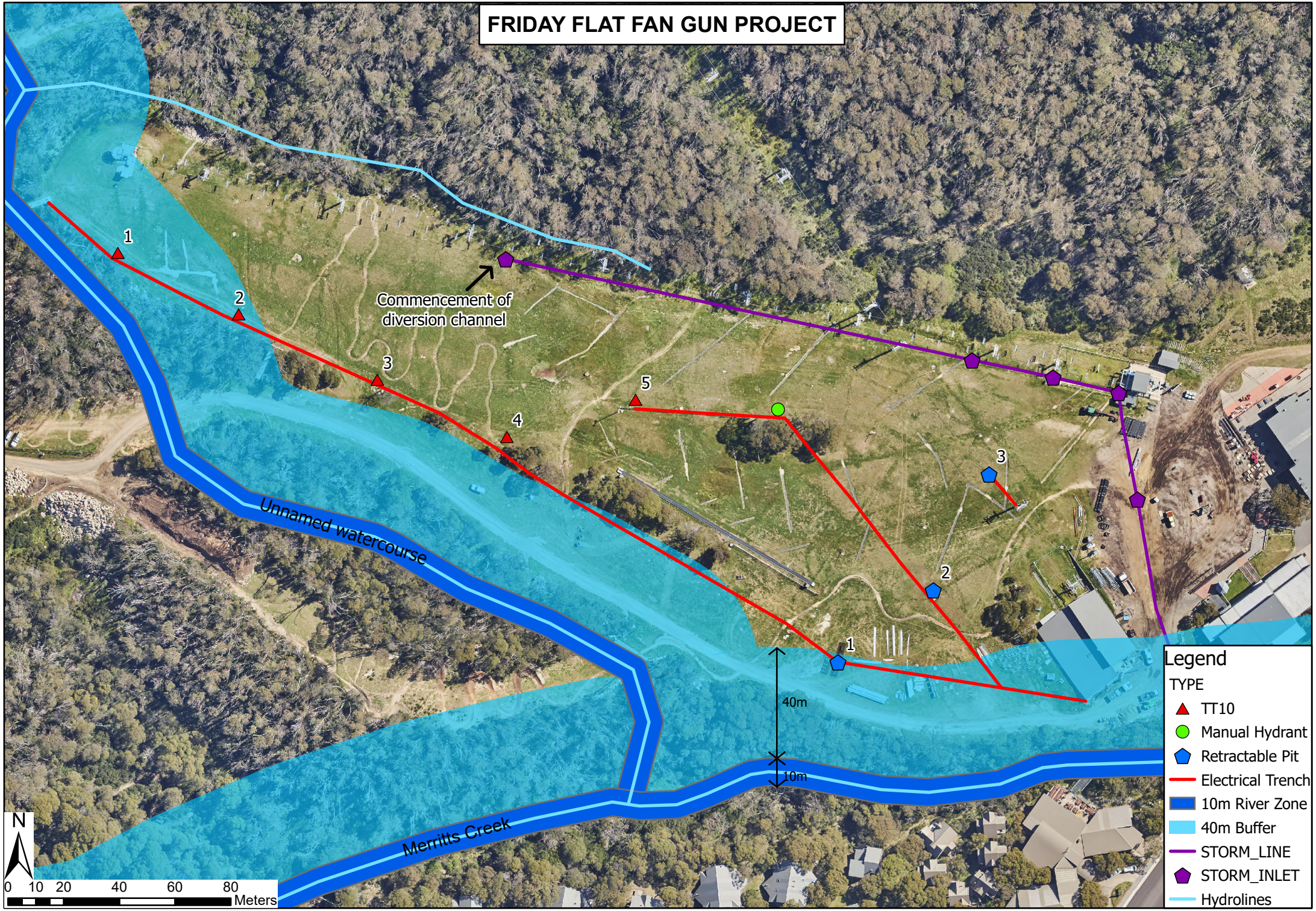

Figure 12: Waterfront land and riparian corridors

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
January 2022

Friday Flat and Middle Slopes Fan Gun Project

Erosion and Sediment Control Plan (ESCP)

Kosciuszko Thredbo Pty Ltd
1 Friday Drive, Thredbo, New South 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

Contents

Figures

Tables

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**).

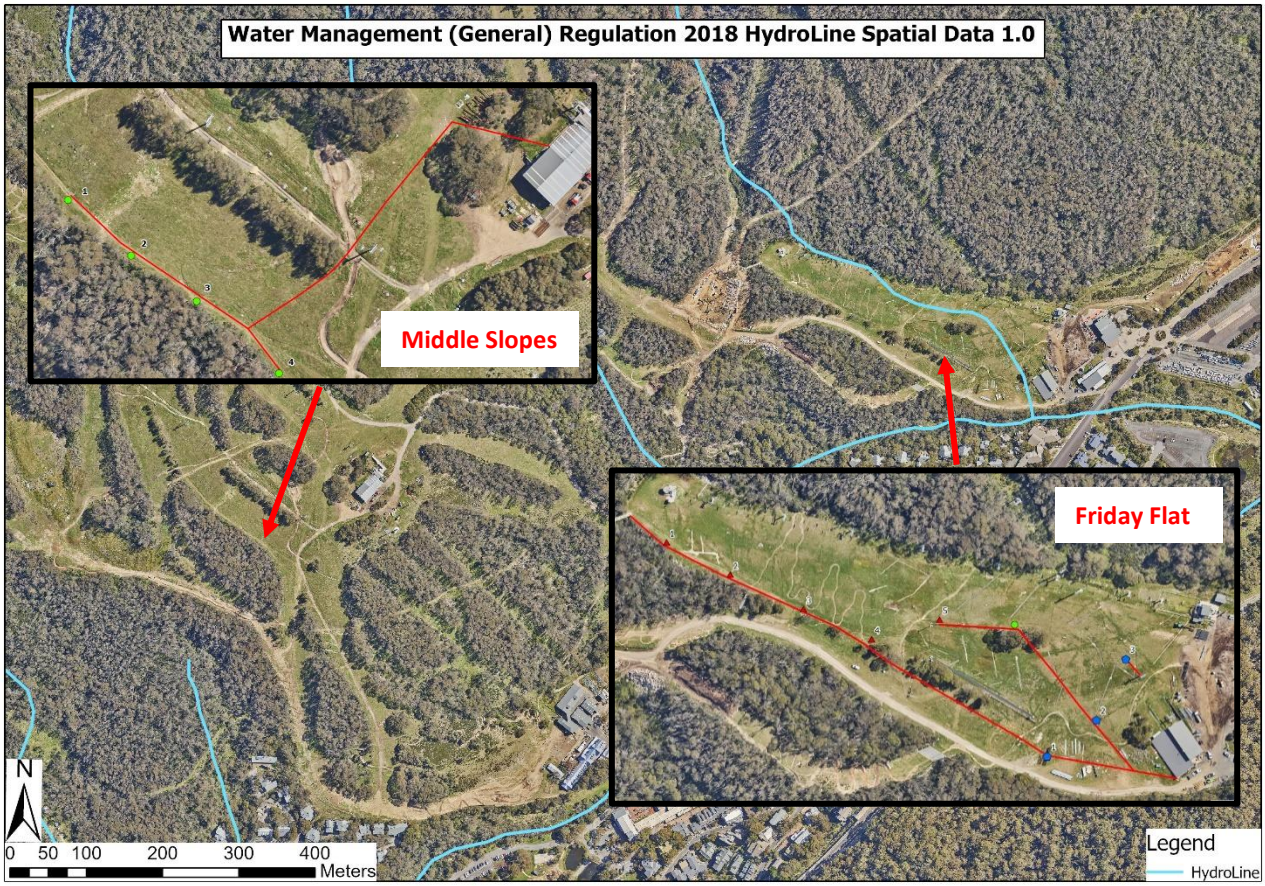

Figure 1: General Project location within proximity to mapped watercourses (NSW Government 2021)

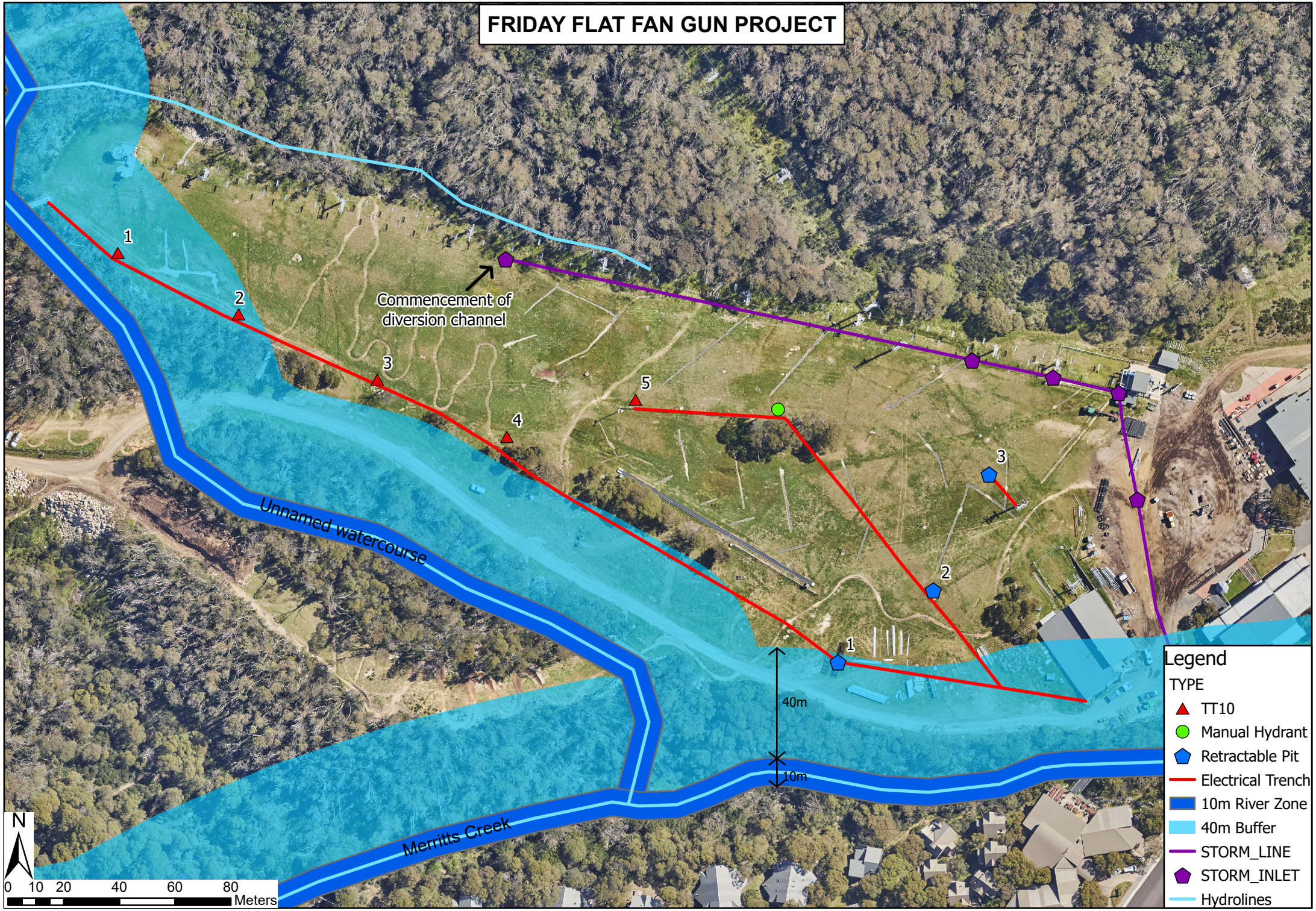

Figure 2: Waterfront land and riparian corridors

3 Roles and Responsibilities

Role	Responsibilities
Project Manager	• 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	• 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	• 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.

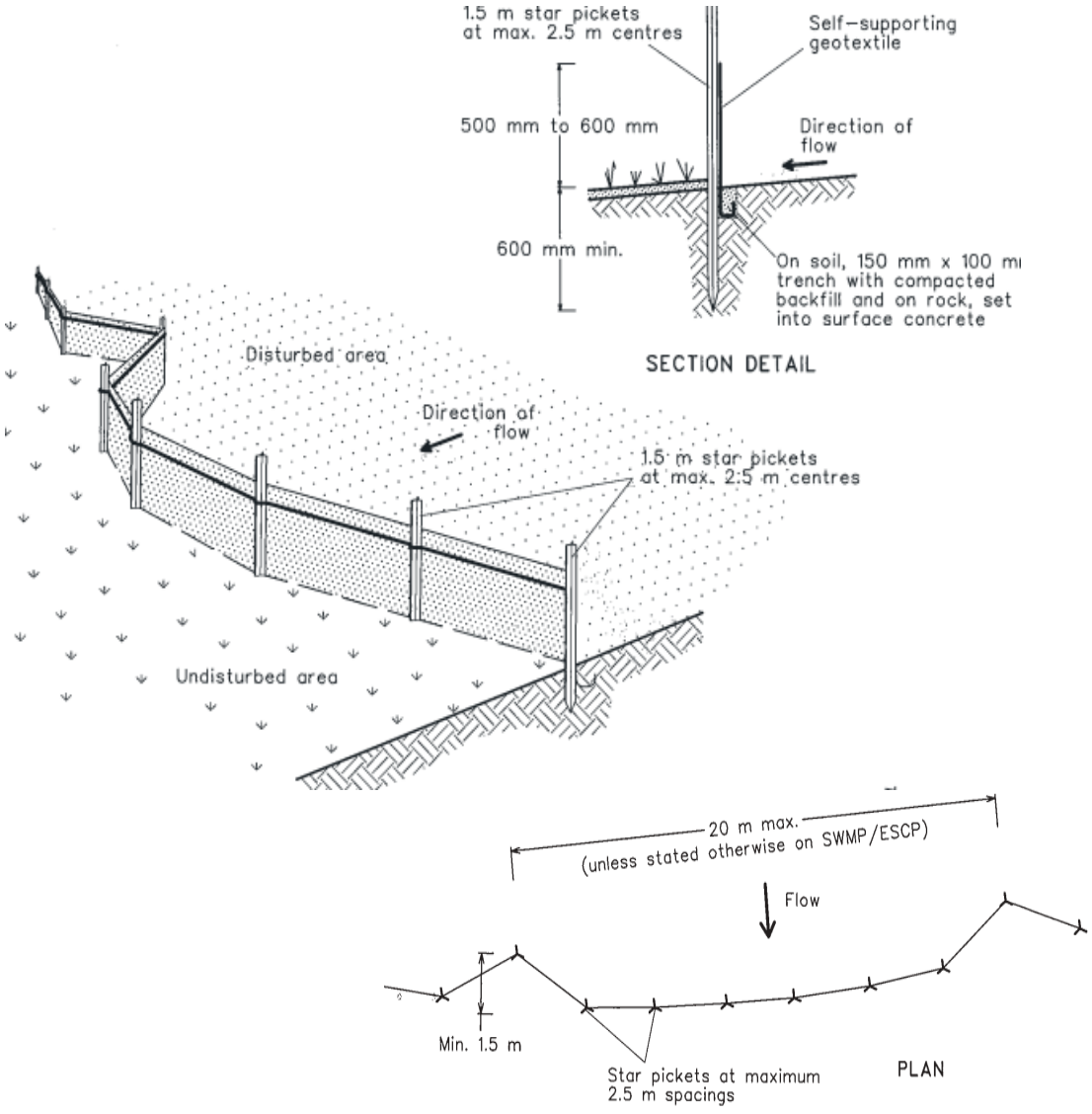

Figure 3: Standard Sediment Fence Installation (Source: Landcom 2004)

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.

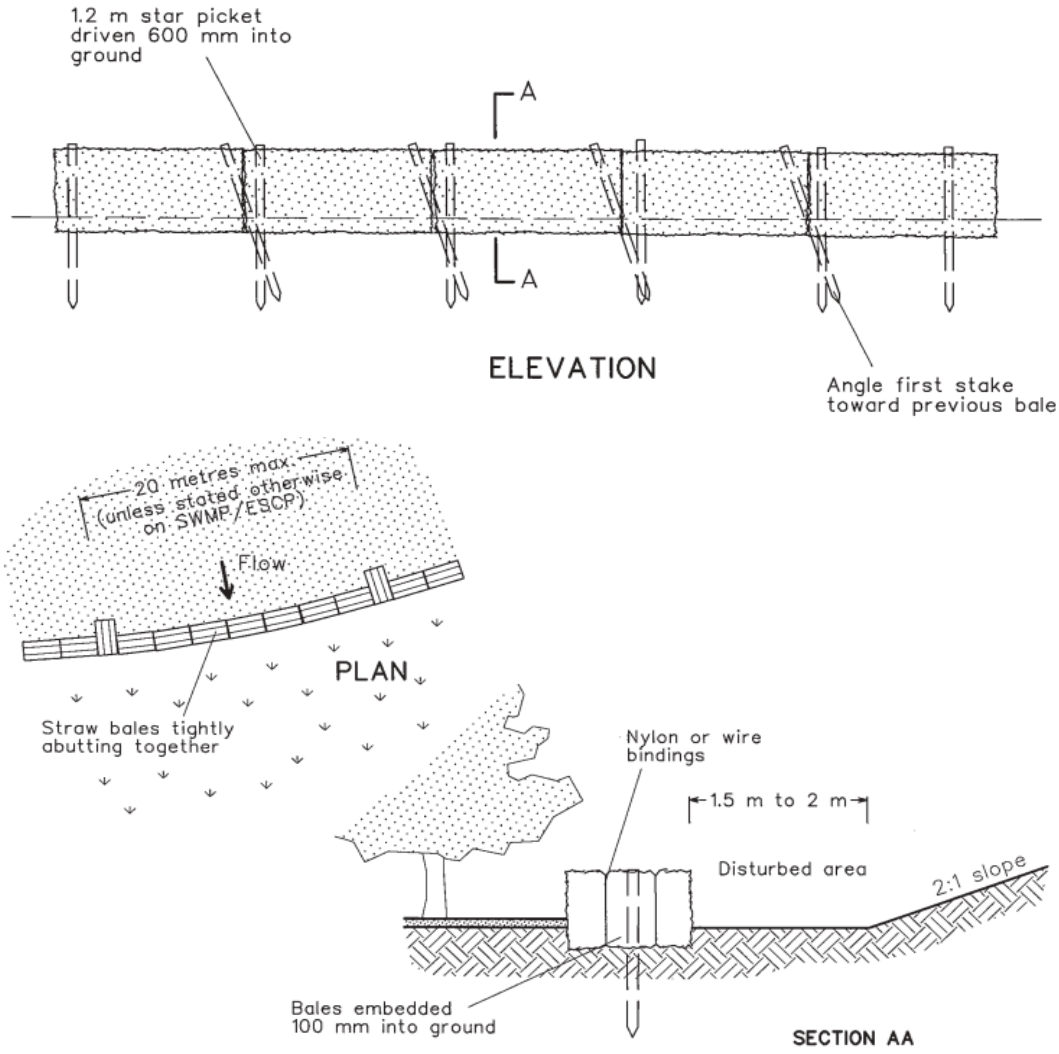

Figure 4: Standard Straw Bale Filter Installation (Source: Landcom 2004)

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.*

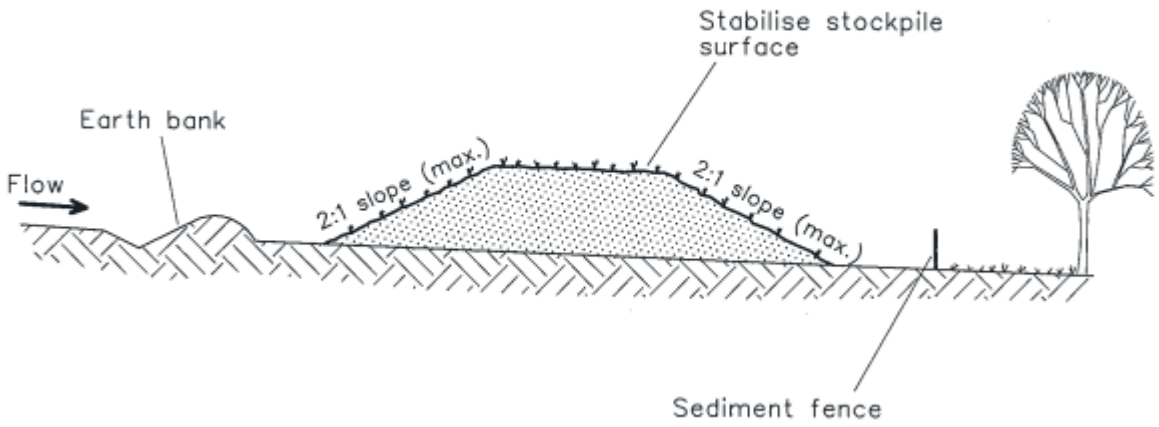

Figure 6: Stockpile Management (Source: Landcom 2004)

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	• 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	• Check that water will either pass through or over the bale, but not around the bales.
Geofabric filter dam	• 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	• 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	• 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	• 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	• Replace the filter fabric when it becomes blocked with sediment and/or the flow rate through the barrier becomes unacceptably low.
Coir logs	• 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

Department of Environment and Climate Change (DECC) 2004, *Rehabilitation Guidelines for the Resort Areas of Kosciuszko National Park*, https://www.environment.nsw.gov.au/research-and-publications/publications-search/rehabilitation-guidelines-for-the-resort-areas-of-kosciuszko-national-park

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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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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: ☐ No: ☐ 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				
DPIE 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: _____

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'*

……

……

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 C Flora and Fauna Assessment

5/20 Canty Street
Narooma
NSW 2546
t: (02) 4302 1266

Date: 7 December 2021

Our ref: 20761

Kosciuszko Thredbo Pty Ltd
1 Friday Drive
Thredbo NSW 2625

Attention: Peter Fleming

Dear Peter,

Snowmaking Works, Friday Flat and Middle Slopes, Thredbo

As requested, I have reviewed the proposed installation of snowmaking fan guns on Friday flat and four snowmaking outlets on Middle slopes, as described in the Statement of Environmental Effects (SEE) for the proposed works, and Figure 1 and Figure 2 below. I understand that the proposed works involve:

- Trenching (requiring 1000 m x 0.6 m x 0.6-0.8 m excavation) for electrical cabling to the snowmaking pits and guns.
- The installation of three retractable concrete pits (requiring a 3 m x 3 m x 2 m excavation)
- The installation of five concrete pits (requiring a 3 m x 3 m x 2 m excavation) for fan guns
- The installation of five fan guns
- The installation of five manual hydrants (within 0.6-0.8 m trench).

The proposed works will be located on ski runs and other highly disturbed areas that are devoid of native vegetation, as shown in Photo 1 and Photo 2. Where the electrical trench on Friday Flat traverses a tree island, it will be located in an existing gap to avoid any tree removal, as shown in Photo 3. As such, there will be no impacts on native vegetation communities or associated fauna habitats. Similarly, there will not be any impacts on threatened flora or important fauna habitats nor will the proposed works adversely affect habitat connectivity or any other biodiversity values of conservation significance.

The proposed works will not affect directly or indirectly any area of land mapped within the Biodiversity Values Map as defined in the NSW *Biodiversity Conservation Regulation 2017* (BC Reg), as shown in Figures 1-2. Whilst the electrical trench from the Catshed at Middle Slopes appears to affect mapped vegetation, the trench will be located in a highly disturbed area and not require the clearing of any native vegetation, as shown in Photo 4. Similarly the trenching to the manual hydrants at Middle Slopes, will not require the removal of native vegetation, as shown in Photo 2.

The proposed works will not result in any adverse impacts on threatened species, populations or ecological communities and will not have a significant impact on these entities pursuant to the NSW *Biodiversity Conservation Regulation 2016* or the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999*.

Photo 1: Looking down Friday Flat showing the location of the proposed works.

Photo 2: Looking down Middle Slopes showing the location of the proposed works.

Photo 3: Where the electrical trench on Friday Flat traverses a tree island, it will be located in an existing gap to avoid any tree or native vegetation removal.

Photo 4: Where the electrical trench exits the Catshed at Middle Sloeps, it will be located in an existing gap to avoid any tree or native vegetation removal.

Should you require any further information please contact me on 4476 1151 or 0422 802 447.

Regards,

Ryan Smithers
Senior Ecologist

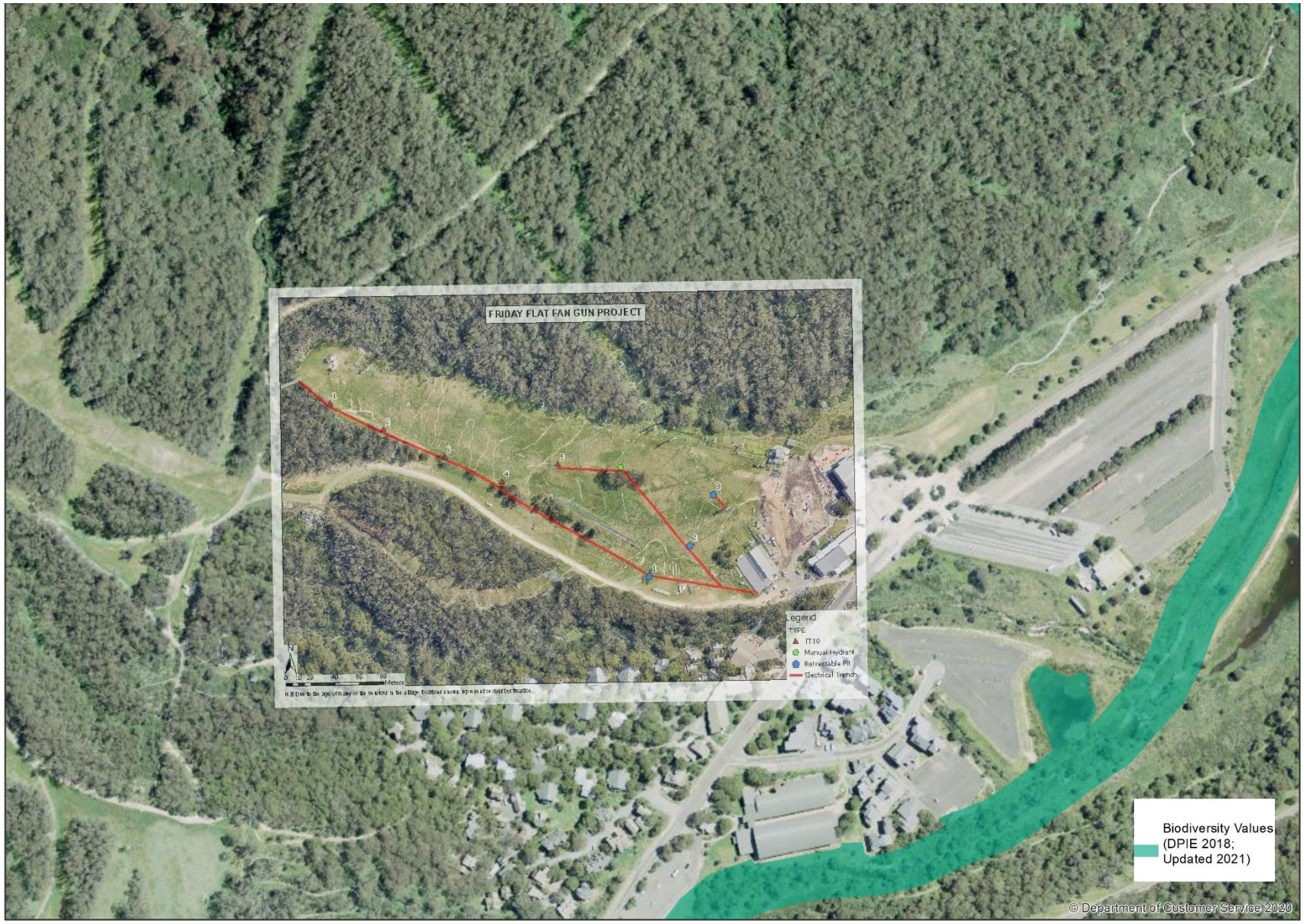

Figure 1: Proposed works at Friday Flat relative to Biodiversity Values Map.

Figure 2: Proposed works at Middle slopes relative to Biodiversity Values Map

Appendix D Geotechnical Assessment

assetgeoenviro

EVT / Kosciuszko Thredbo Pty Ltd

Friday Flat & Middle Slopes Fan Gun Project Thredbo NSW

Geotechnical Assessment

Our ref: 6725-G1
10 December 2021

Your trusted engineering professionals

Form 4 – Minimal Impact Certification

DA Number: _____

This form may be used where minor construction works which present minimal or no geotechnical impact on the site or related land are proposed to be erected within the "G" line area of the geotechnical maps.

A geotechnical engineer or engineering geologist must inspect the site and/or review the proposed development documentation to determine if the proposed development requires a geotechnical report to be prepared to accompany the development application. Where the geotechnical engineer determines that such a report is not required then they must complete this form and attach design recommendations where required. A copy of Form 4 with design recommendation, if required, must be submitted with the development application.

Please contact the Alpine Resorts Team in Jindabyne for further information - phone 02 6456 1733.

To complete this form, please place a cross in the appropriate boxes ☐ and complete all sections.

1. Declaration made by geotechnical engineer or engineering geologist in relation to a nil or minimal geotechnical impact assessment and site classification

I,

Mr [X] Ms [ ] Mrs [ ] Dr [ ] Other [ ]

First Name	Family Name
Mark	Bartel

OF

Company/organisation

AssetGeoEnviro

certify that I am a geotechnical engineer /engineering geologist as defined by the "Policy" and I have inspected the site and reviewed the proposed development known as

Friday Flat & Mid Slopes Fan Gun Project

As a result of my site inspection and review of the following documentation

(List of documentation reviewed) – and attached to the report

- Friday Flat Fan Gun Project
- Mid Slopes Fan Gun Project
- Concrete Pit Plans by Techno Alpin
-
-
-
-

I have determined that;

- ☒ the current load-bearing capacity of the existing building will not be exceeded or adversely impacted by the proposed development, and
- ☒ the proposed works are of such a minor nature that the requirement for geotechnical advice in the form of a geotechnical report, prepared in accordance with the "Policy", is considered unnecessary for the adequate and safe design of the structural elements to be incorporated into the new works, and
- ☒ in accordance with AS 2870.1 Residential Slabs and Footings, the site is to be classified as a type

(insert classification type)

Class 'P'

☐ ~~I have attached design recommendations to be incorporated in the structural design in accordance with this site classification.~~ Not applicable, no structural design

I am aware that this declaration shall be used by the Department as an essential component in granting development consent for a structure to be erected within the "G" line area (as identified on the geotechnical maps) of Kosciuszko Alpine Resorts without requiring the submission of a geotechnical report in support of the development application.

2. Signatures

Signature

Mark Bartel

Chartered professional status

CPEng 35641 NER (Civil)

Name

Mark Bartel

Date

10 December 2021

3. Contact details

Alpine Resorts Team
Shop 5A, 19 Snowy River Avenue
P O Box 36, JINDABYNE NSW 2627
Telephone: 02 6456 1733
Facsimile: 02 6456 1736
Email: alpineresorts@planning.nsw.gov.au

Document Authorization

Friday Flat & Middle Slopes Fan Gun Project
Thredbo NSW
Geotechnical Assessment

Prepared for EVT / Kosciuszko Thredbo Pty Ltd

Our ref: 6725-G1
10 December 2021

For and on behalf of
AssetGeoEnviro

Mark Bartel
BE, MEngSc, GMQ, CPEng, RPEQ/NER(Civil), APEC IntPE(Aus)
Managing Director | Senior Principal Geotechnical Engineer

Document Control

Distribution Register

Copy	Media	Recipient	Location
1	Secure PDF	Peter Fleming	EVT / Kosciuszko Thredbo Pty Ltd
2	Secure PDF	Mark Bartel	AssetGeoEnviro

Document Status

Rev	Revision Details	Author	Reviewer		Approved for Issue		
			Name	Initials	Name	Initials	Date
0	Initial issue	M. Bartel			M. Bartel		10 December 2021

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North Ryde NSW 2113
02 9878 6005
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ISO 9001:2015
ISO 14001:2015
ISO 45001:2018 AS/NZS 4801:2001

Contents

1. Introduction

This report presents the results of a geotechnical assessment for a proposed installation of snowmaking infrastructure and associated works at Friday Flat, Thredbo NSW (the Site). The assessment was commissioned by Mr Peter Fleming of EVT / Kosciuszko Thredbo Pty Ltd, purchase order KTM038806.

Documents supplied to us for this investigation comprised:

- Friday Flat Fan Gun Project (prepared by: Kosciuszko Thredbo Pty Ltd; undated; unreferenced) – attached.
- Mid Slopes Fan Gun Project (prepared by: Kosciuszko Thredbo Pty Ltd; undated; unreferenced) – attached.
- Drawing of Concrete Pit housing services beneath snow making gun (Techno Alpin) (attached).

We understand that the project involves:

Friday Flat:

- Install 5 concrete pits marked as TT10 1-5 on plan and 3 retractable pits on the lower section of Friday Flat.
- Trench for electrical and communication cables.

Mid Slopes:

- Trench for electrical services.
- Trench for new short lateral snowmaking pipe.

The electrical trenches will be approximately 0.6m to 0.8m deep, and the concrete pits supporting the snowmaking guns will be 1.6m deep. Trenches for laterals will be about 0.4m to 0.6m deep.

This report must be read in conjunction with the attached "Important Information about your Geotechnical Report".

2. Assessment Procedure

The assessment comprised the following scope of work:

- A review of existing regional maps and reports relevant to the site held within our files.
- Visual observations of surface features by a Senior Principal Geotechnical Engineer on 4 November 2021.
- Engineering assessment and reporting.

3. Regional Topography

The regional topography comprises moderately to steeply sloping terrain flanking the north-easterly flowing Thredbo River, with ground slopes over the land flanking the river generally ranging from 10º to 30º and some locally steeper sections, and more gentle slopes over the river shoulders. Numerous drainage depressions and watercourses flow towards the river, with some of the persistent watercourses to the north of the river carved several metres into the underlying granite bedrock. Side slopes to creeks and watercourses are typically steeper at 20 to 35º, and typically include numerous granite boulders and cobbles.

The site lies within an area designated as "G" as defined in the maps accompanying DIPNR's "Geotechnical Policy – Kosciuszko Alpine Resorts", November 2003, and therefore a geotechnical report is required to accompany the development application as per the requirements of the Geotechnical Policy.

4. Site Observations

The site is located within Thredbo, north of the Alpine Way and north of the Thredbo River. The Friday Flat section is within gently sloping terrain with overall slopes of up to about 5 to 8º. The Mid Slopes section is located just beyond the ridge at the summit of the Sundowner Snowmaking extension, with slopes about 10º.

The alignment of the electrical trenching and the snowmaking pits are shown on the attached plans and will generally be on existing grass-covered ski slopes with occasional small shrubs.

Development of the ski slopes has involved some minor surficial reshaping and disturbance, typically relatively shallow (less than about 1m depth). No granite exposures were observed. Recent test pitting carried out within Friday Flat and for Sundowner Snowmaking Extension indicated variable subsurface conditions including fill, clay slopewash soils, completely decomposed granite (sands), with granite cobbles and boulders interspersed throughout the profile, and occasionally granite bedrock that might be encountered for some of the excavations for the concrete box supports for the snowmaking guns.

No obvious signs of slope instability were observed during the site inspection.

5. Discussions & Recommendations

The proposed works will have 'minimal or no geotechnical impact' on the site, based on the relatively shallow depths of excavation required, the lack of obvious signs of hillside instability observed or expected, and previous test pitting observations by the undersigned in the area. We therefore consider that a geotechnical report prepared in accordance with the Geotechnical Policy for Kosciuszko Alpine Resorts (2003) is not required. A completed Form 4 – Minimal Impact Certification is provided on the second page of this report.

The following recommendations are provided for the development:

- Based on our site observations and previous test pitting, we expect that due to previous site disturbance and observed slopes, the site is Class 'P', in accordance with AS2870-2011 'Residential slabs and footings'.
- Excavation is anticipated to be predominantly within soils of variable nature including completely weathered granite and cobbles and boulders. Excavation could be achieved by suitably sixed excavator.
- Excavation sides may be cut vertically for the trenches, up to maximum 1m depth. Excavation for the concrete boxes may also be cut vertically up to maximum 1.6m depth due to the limited lateral extent.
- Filling may comprise the excavated soils provided they are not too wet and do not contain too much organic matters that prevents achieving reasonable compaction levels. The fill should be placed in layers not more than 0.2m loose thickness and compacted using wheel roller on an excavator or

other suitable compaction equipment (e.g. whacker-packer). Compaction should continue until no further subsidence or compression of the compacted surface is observed.

6. Limitations

In addition to the limitations inherent in site investigations (refer to the attached Information Sheets), it must be pointed out that the recommendations in this report are based on assessed subsurface conditions from limited observations.

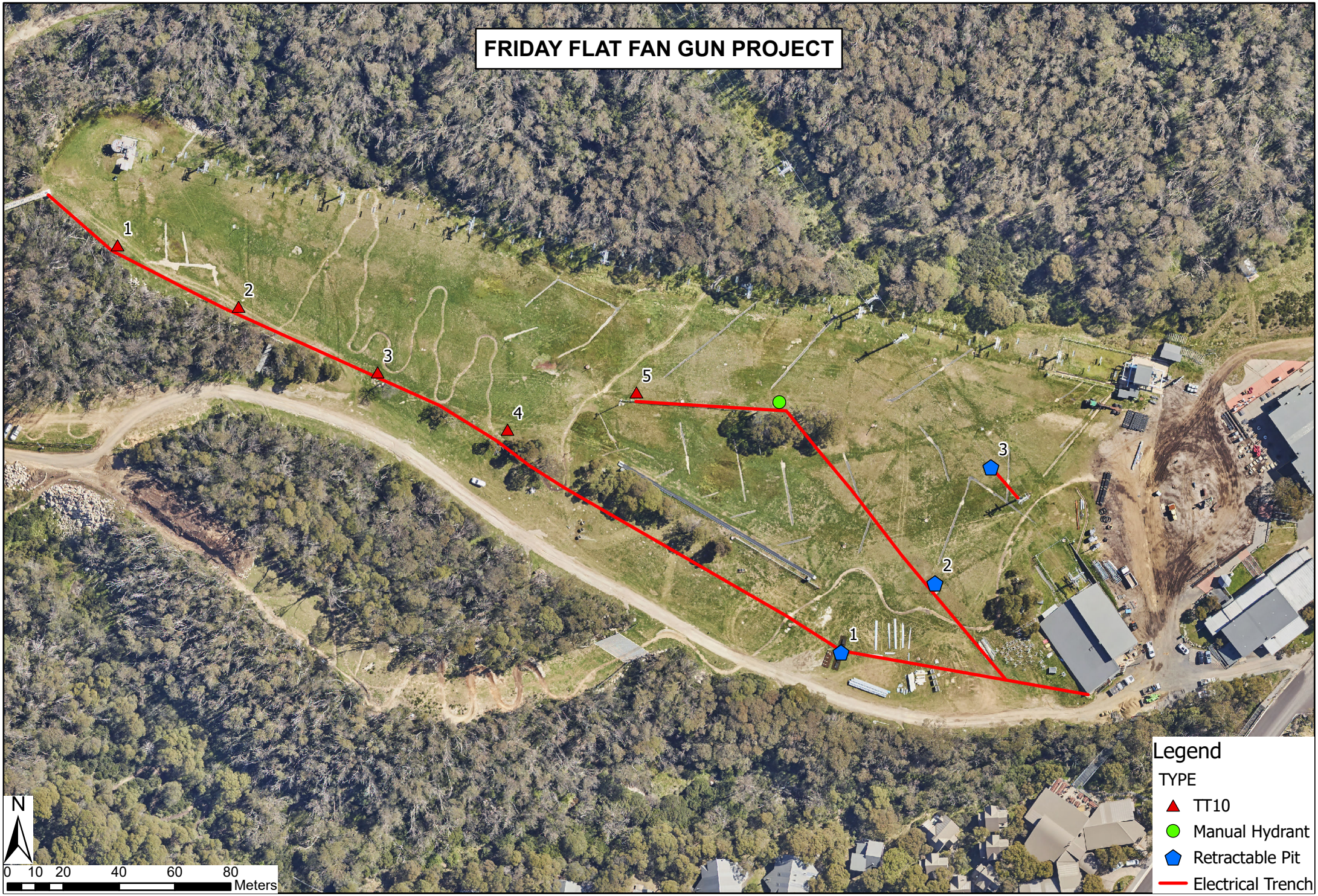
This report may have included geotechnical recommendations for design and construction of temporary works (e.g. temporary batter slopes or temporary shoring of excavations). Such temporary works are expected to perform adequately for a relatively short period only, which could range from a few days (for temporary batter slopes) up to six months (for temporary shoring). This period depends on a range of factors including but not limited to: site geology; groundwater conditions; weather conditions; design criteria; and level of care taken during construction. If there are factors which prevent temporary works from being completed and/or which require temporary works to function for periods longer than originally designed, further advice must be sought from the Geotechnical Engineer.

This report and details for the proposed development should be submitted to relevant regulatory authorities that have an interest in the property (e.g. Department of Planning) or are responsible for services that may be within or adjacent to the site for their review.

Asset accepts no liability where our recommendations are not followed or are only partially followed. The document “Important Information about your Geotechnical Report” in Appendix A provides additional information about the uses and limitations of this report.

Plans

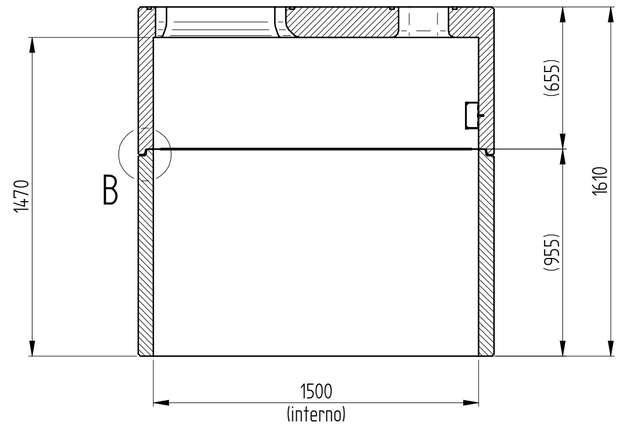
Friday Flat Fan Gun Project
Middle Slopes Fan Gun Project
Concrete Pit Drawing by Techno Alpin

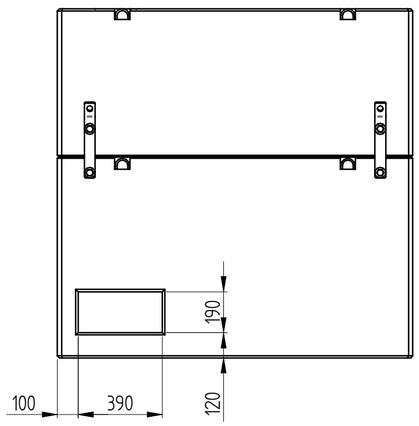


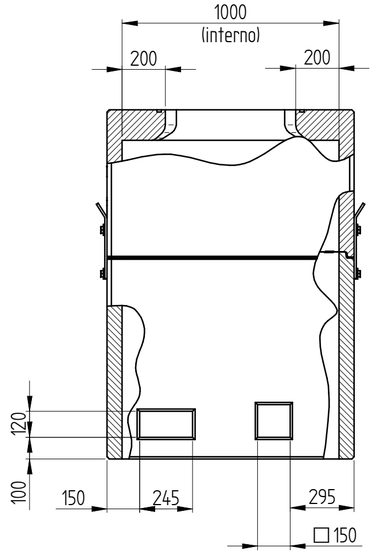
N.B Due to the age of many of the services in the village locations shown represent our best estimation.

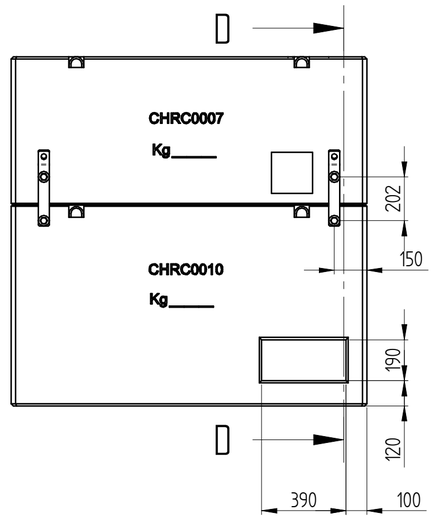

MIDDLE SLOPES FAN GUN PROJECT
1
2
3
4
N
0 5 10 20 30 40
Meters
Legend
Manual Hydrant
Electrical Trench

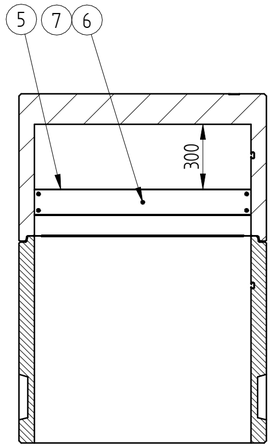
Sez. A-A



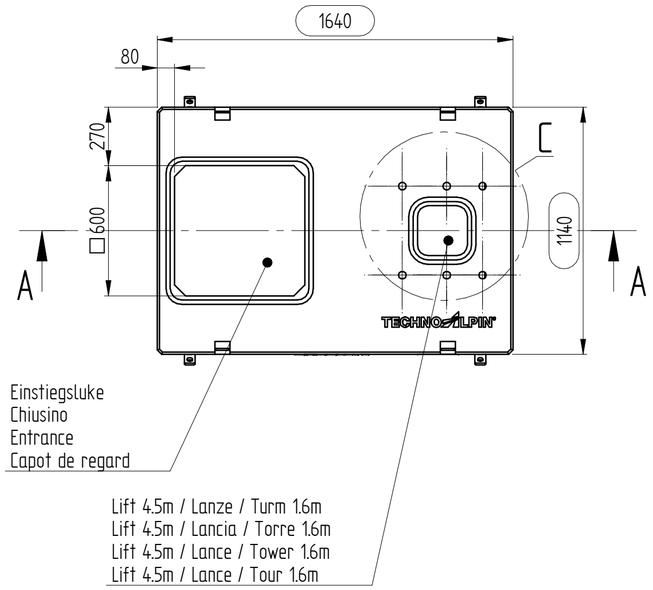








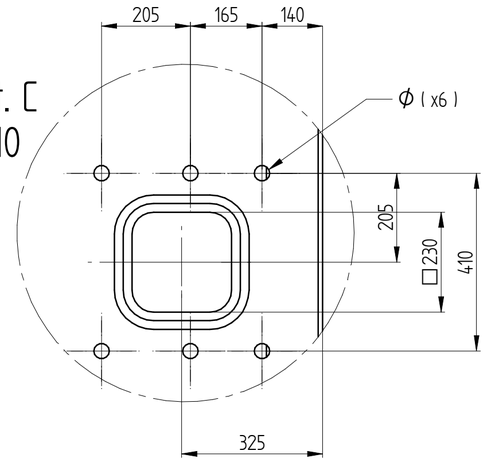
Sez. D-D



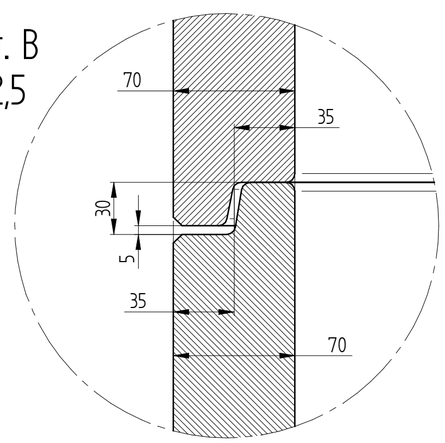
Einstiegsluke
Chiusino
Entrance
Capot de regard

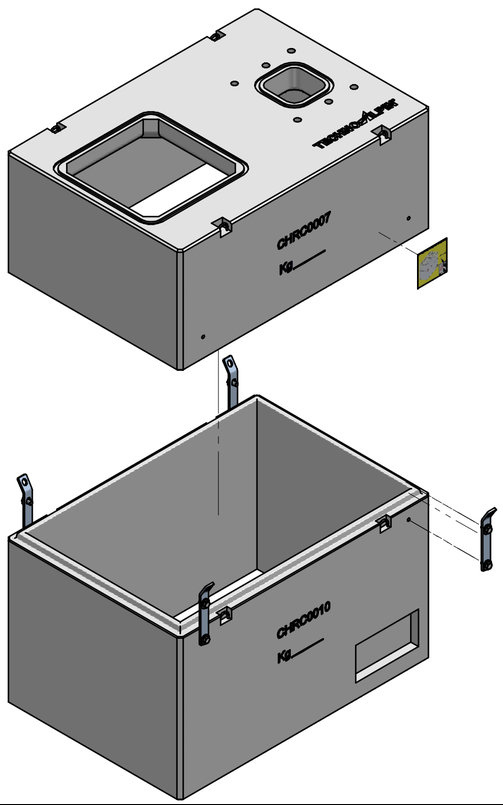
Lift 4.5m / Lanze / Turm 1.6m
Lift 4.5m / Lancia / Torre 1.6m
Lift 4.5m / Lance / Tower 1.6m
Lift 4.5m / Lance / Tour 1.6m

Det. C
1:10



Det. B
1:2,5





smooth surface treatment

Pos.	Item	Rev.	Item description	Qty
7	SRD05040	00	Plug PVC 5mm with screw TGS 5 4,0x30	5
6	BLS05016	00	Washer M5x15 ZN UNI 6593	5
5	SKEE1348	00	Wiring channel T1-N 120x60 grey RAL7030	1.0
4	PQSK0002	01	Sticker Pit indication for mounting	1
3	CHRC0012	00	Kit flange for pit complete	1
2	CHRC0007	01	Pit Lid 2 entrances (reinforced) 600x600 H	1
1	CHRC0010	02	Pit lower part reinforced H	1

Revision	Version	Description of the change	Date	Creator	Approver

Scale 1:1	Status of drawing		Item number CHRC0057	Revision 00 Version A	Weight 1833kg
Dimensioning unit mm	Creator Ambrosini S.	Approver Ambrosini S.			Page size A2
Projection method	Create date 19.03.2021	Approve date 19.03.2021	Description Pit for Lift 4.5m - 2 holes (entrance 600x600) H		Page 1/1
TECHNOALPIN®					IDDOK "dff" 399985

Appendix A

Important Information about your Geotechnical Report

Important Information about your Geotechnical Report

Scope of Services

The geotechnical report ("the report") has been prepared in accordance with the scope of services as set out in the contract, or as otherwise agreed, between the Client and Asset Geotechnical Engineering Pty Ltd ("Asset"), for the specific site investigated. The scope of work may have been limited by a range of factors such as time, budget, access and/or site disturbance constraints.

The report should not be used if there have been changes to the project, without first consulting with Asset to assess if the report's recommendations are still valid. Asset does not accept responsibility for problems that occur due to project changes if they are not consulted.

Reliance on Data

Asset has relied on data provided by the Client and other individuals and organizations, to prepare the report. Such data may include surveys, analyses, designs, maps and plans. Asset has not verified the accuracy or completeness of the data except as stated in the report. To the extent that the statements, opinions, facts, information, conclusions and/or recommendations ("conclusions") are based in whole or part on the data, Asset will not be liable in relation to incorrect conclusions should any data, information or condition be incorrect or have been concealed, withheld, misrepresented or otherwise not fully disclosed to Asset.

Geotechnical Engineering

Geotechnical engineering is based extensively on judgment and opinion. It is far less exact than other engineering disciplines. Geotechnical engineering reports are prepared for a specific client, for a specific project and to meet specific needs, and may not be adequate for other clients or other purposes (e.g. a report prepared for a consulting civil engineer may not be adequate for a construction contractor). The report should not be used for other than its intended purpose without seeking additional geotechnical advice. Also, unless further geotechnical advice is obtained, the report cannot be used where the nature and/or details of the proposed development are changed.

Limitations of Site Investigation

The investigation program undertaken is a professional estimate of the scope of investigation required to provide a general profile of subsurface conditions. The data derived from the site investigation program and subsequent laboratory testing are extrapolated across the site to form an inferred geological model, and an engineering opinion is rendered about overall subsurface conditions and their likely behavior with regard to the proposed development. Despite investigation, the actual conditions at the site might differ from those inferred to exist, since no subsurface exploration program, no matter how comprehensive, can reveal all subsurface details and anomalies.

The engineering logs are the subjective interpretation of subsurface conditions at a particular location and time, made by trained personnel. The actual interface between materials may be more gradual or abrupt than a report indicates.

Therefore, the recommendations in the report can only be regarded as preliminary. Asset should be retained during the project implementation to assess if the report's recommendations are valid and whether or not changes should be considered as the project proceeds.

Subsurface Conditions are Time Dependent

Subsurface conditions can be modified by changing natural forces or man-made influences. The report is based on conditions that existed at the time of subsurface exploration. Construction operations adjacent to the site, and natural events such as floods, or ground water fluctuations, may also affect subsurface conditions, and thus the continuing adequacy of a geotechnical report. Asset should be kept appraised of any such events, and should be consulted to determine if any additional tests are necessary.

Verification of Site Conditions

Where ground conditions encountered at the site differ significantly from those anticipated in the report, either due to natural variability of subsurface conditions or construction activities, it is a condition of the report that Asset be notified of any variations and be provided with an opportunity to review the recommendations of this report. Recognition of change of soil and rock conditions requires experience and it is recommended that a suitably experienced geotechnical engineer be engaged to visit the site with sufficient frequency to detect if conditions have changed significantly.

Reproduction of Reports

This report is the subject of copyright and shall not be reproduced either totally or in part without the express permission of this Company. Where information from the accompanying report is to be included in contract documents or engineering specification for the project, the entire report should be included in order to minimize the likelihood of misinterpretation from logs.

Report for Benefit of Client

The report has been prepared for the benefit of the Client and no other party. Asset assumes no responsibility and will not be liable to any other person or organisation for or in relation to any matter dealt with or conclusions expressed in the report, or for any loss or damage suffered by any other person or organisation arising from matters dealt with or conclusions expressed in the report (including without limitation matters arising from any negligent act or omission of Asset or for any loss or damage suffered by any other party relying upon the matters dealt with or conclusions expressed in the report). Other parties should not rely upon the report or the accuracy or completeness of any conclusions and should make their own inquiries and obtain independent advice in relation to such matters.

Data Must Not Be Separated from The Report

The report as a whole presents the site assessment, and must not be copied in part or altered in any way.

Logs, figures, drawings, test results etc. included in our reports are developed by professionals based on their interpretation of field logs (assembled by field personnel) and laboratory evaluation of field samples. These data should not under any circumstances be redrawn for inclusion in other documents or separated from the report in any way.

Partial Use of Report

Where the recommendations of the report are only partially followed, there may be significant implications for the project and could lead to problems. Consult Asset if you are not intending to follow all of the report recommendations, to assess what the implications could be. Asset does not accept responsibility for problems that develop where the report recommendations have only been partially followed if they have not been consulted.

Other Limitations

Asset will not be liable to update or revise the report to take into account any events or emergent circumstances or fact occurring or becoming apparent after the date of the report.

Appendix B

Site Photos

Photo 1

View of lower part of Friday Flat snowmaking.

Photo 2

Continuation of previous photo in panoramic sequence

Photo 3

Continuation of previous photo in panoramic sequence

Photo 4

Continuation of previous photo in panoramic sequence.

Photo 5

Continuation of previous photo in panoramic sequence

Photo 6

Continuation of previous photo in panoramic sequence. Edge of concrete pit beneath snow making gun in foreground.

Photo 7

Example of snowmaking gun on top of concrete pit

Photo 8

View of ridgeline looking towards buildings – Mid Slopes snowmaking.

Appendix E Desktop Search Results

AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : FF Fan Guns

Client Service ID : 639651

Kosciuszko Thredbo Pty Ltd

Po Box 92

Thredbo New South Wales 2625

Attention: Chloe Chalk

Email: chloe_chalk@evt.com

Date: 18 November 2021

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lat, Long From : -36.5, 148.31 - Lat, Long To : -36.5, 148.31, conducted by Chloe Chalk on 18 November 2021.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.

A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

2	**Aboriginal sites are recorded in or near the above location.**
0	**Aboriginal places have been declared in or near the above location. ***

If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the NSW Government Gazette (https://www.legislation.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Heritage NSW upon request

Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Heritage NSW and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date. Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

Level 6, 10 Valentine Ave, Parramatta 2150
Locked Bag 5020 Parramatta NSW 2124
Tel: (02) 9585 6345

ABN 34 945 244 274
Email: ahims@environment.nsw.gov.au
Web: www.heritage.nsw.gov.au

AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : Middle Slopes

Client Service ID : 639652

Kosciuszko Thredbo Pty Ltd

Po Box 92
Thredbo New South Wales 2625

Attention: Chloe Chalk

Email: chloe_chalk@evt.com

Date: 18 November 2021

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lat, Long From : -36.5, 148.3 - Lat, Long To : -36.5, 148.3, conducted by Chloe Chalk on 18 November 2021.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.

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0	**Aboriginal sites are recorded in or near the above location.**
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- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

Level 6, 10 Valentine Ave, Parramatta 2150
Locked Bag 5020 Parramatta NSW 2124
Tel: (02) 9585 6345

ABN 34 945 244 274
Email: ahims@environment.nsw.gov.au
Web: www.heritage.nsw.gov.au

Australian Government
Department of Agriculture, Water and the Environment

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 08-Nov-2021

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	2
Wetlands of International Importance (Ramsar	1
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	2
Listed Threatened Species:	26
Listed Migratory Species:	11

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at http://www.environment.gov.au/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	16
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	1
Regional Forest Agreements:	1
Nationally Important Wetlands:	None
EPBC Act Referrals:	4
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

National Heritage Places			[Resource Information]
Name	State	Legal Status	Buffer Status
Historic			
Snowy Mountains Scheme	NSW	Listed place	In feature area
Natural			
Australian Alps National Parks and Reserves	ACT	Listed place	In feature area

Wetlands of International Importance (Ramsar Wetlands)		[Resource Information]
Ramsar Site Name	Proximity	Buffer Status
Blue lake	Within 10km of Ramsar site	In feature area

Listed Threatened Ecological Communities			[Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text	Buffer Status
Alpine Sphagnum Bogs and Associated Fens	Endangered	Community known to occur within area	In feature area
Natural Temperate Grassland of the South Eastern Highlands	Critically Endangered	Community may occur within area	In feature area

Listed Threatened Species			[Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Calidris ferruginea			
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Hirundapus caudacutus			
White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Numenius madagascariensis](#) Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
[Rostratula australis](#) Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area	In feature area
FISH			
[Prototroctes maraena](#) Australian Grayling [26179]	Vulnerable	Species or species habitat may occur within area	In feature area
FROG			
[Litoria verreauxii alpina](#) Alpine Tree Frog, Verreaux's Alpine Tree Frog [66669]	Vulnerable	Species or species habitat likely to occur within area	In feature area
MAMMAL			
[Burramys parvus](#) Mountain Pygmy-possum [267]	Endangered	Species or species habitat may occur within area	In feature area
[Dasyurus maculatus maculatus (SE mainland population)](#) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat likely to occur within area	In feature area
[Mastacomys fuscus mordicus](#) Broad-toothed Rat (mainland), Tooarrana [87617]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Petauroides volans](#) Greater Glider [254]	Vulnerable	Species or species habitat may occur within area	In feature area
[Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)](#) Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
[Pseudomys fumeus](#) Smoky Mouse, Konoom [88]	Endangered	Species or species habitat likely to occur within area	In feature area
PLANT			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Argyrotegium nitidulum Shining Cudweed [82043]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Calotis glandulosa Mauve Burr-daisy [7842]	Vulnerable	Species or species habitat may occur within area	In feature area
Colobanthus curtisiae Curtis' Colobanth [23961]	Vulnerable	Species or species habitat may occur within area	In feature area
Glycine latrobeana Clover Glycine, Purple Clover [13910]	Vulnerable	Species or species habitat may occur within area	In feature area
Leucochrysum albicans subsp. tricolor Hoary Sunray, Grassland Paper-daisy [89104]	Endangered	Species or species habitat may occur within area	In feature area
Prasophyllum bagoense Bago Leek-orchid [84276]	Critically Endangered	Species or species habitat may occur within area	In feature area
Prasophyllum petilum Tarengo Leek Orchid [55144]	Endangered	Species or species habitat may occur within area	In feature area
Pterostylis oreophila Blue-tongued Orchid, Kiandra Greenhood [22903]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Ranunculus anemoneus Anemone Buttercup [14889]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Rytidosperma pumilum Feldmark Grass [66716]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Xerochrysum palustre			
Swamp Everlasting, Swamp Paper Daisy [76215]	Vulnerable	Species or species habitat may occur within area	In feature area
REPTILE			
Cyclodomorphus praealtus			
Alpine She-oak Skink [64721]	Endangered	Species or species habitat likely to occur within area	In feature area
Liopholis guthega			
Guthega Skink [83079]	Endangered	Species or species habitat known to occur within area	In feature area

Listed Migratory Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus			
Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			
Hirundapus caudacutus			
White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Motacilla flava			
Yellow Wagtail [644]		Species or species habitat may occur within area	In feature area
Myiagra cyanoleuca			
Satin Flycatcher [612]		Species or species habitat known to occur within area	In feature area
Rhipidura rufifrons			
Rufous Fantail [592]		Species or species habitat known to occur within area	In feature area
Migratory Wetlands Species			
Actitis hypoleucos			
Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Calidris acuminata			
Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris ferruginea			
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Calidris melanotos			
Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
Gallinago hardwickii			
Latham's Snipe, Japanese Snipe [863]		Species or species habitat likely to occur within area	In feature area
Numenius madagascariensis			
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area

Other Matters Protected by the EPBC Act

Listed Marine Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos			
Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Apus pacificus			
Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Bubulcus ibis as Ardea ibis			
Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata			
Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area	In feature area
Calidris ferruginea			
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
[Gallinago hardwickii](#) Latham's Snipe, Japanese Snipe [863]		Species or species habitat likely to occur within area overfly marine area	In feature area
[Haliaeetus leucogaster](#) White-bellied Sea-Eagle [943]		Species or species habitat may occur within area	In feature area
[Hirundapus caudacutus](#) White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
[Merops ornatus](#) Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
[Motacilla flava](#) Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area	In feature area
[Myiagra cyanoleuca](#) Satin Flycatcher [612]		Species or species habitat known to occur within area overfly marine area	In feature area
[Neophema chrysostoma](#) Blue-winged Parrot [726]		Species or species habitat likely to occur within area overfly marine area	In feature area
[Numenius madagascariensis](#) Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
[Rhipidura rufifrons](#) Rufous Fantail [592]		Species or species habitat known to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Rostratula australis as Rostratula benghalensis (sensu lato)			
Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area overfly marine area	In feature area

Extra Information

State and Territory Reserves [Resource Information]

Protected Area Name	Reserve Type	State	Buffer Status
Kosciuszko	National Park	NSW	In feature area

Regional Forest Agreements [Resource Information]

Note that all areas with completed RFAs have been included.

RFA Name	State	Buffer Status
Southern RFA	New South Wales	In feature area

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed	In feature area
Not controlled action (particular manner)				
Aerial baiting for wild dog control	2006/2713	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval	In feature area

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact Us page.

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