Statement of Environmental Effects

Riverside to Athol Services Connection

Thredbo Alpine Resort
Kosciuszko National Park, NSW

Department of Planning and Environment

Issued under the Environmental Planning and Assessment Act 1979

Approved Application No DA 22/5708

Granted on the 12 August 2022

Signed S Butler

Sheet No 1 of 7

Riverside to Athol Services Connection

Statement of Environmental Effects

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Executive Summary

Summary of the Development Application	
Development Proposal	This Statement of Environmental Effects (SEE) has been prepared to support the Development Application (DA) for the Riverside to Athol Services Connection (the Project). The purpose of the Project is to deliver water of a high quality and pressure to service the proposed development on Lot 768/DP1119757 (Lot 768). It also aims to connect the Thredbo Village water supply to improve overall hydraulic operation of the existing water supply network. An electrical conduit will also be installed next to the water main for a low voltage street light cable to service Diggings Terrace. The Project will require the excavation of a section of Diggings Terrace from the Riverside connection outside 3 Diggings Terrace (Lot 768, vacant block) to the Athol Lodge connection, outside 11 Diggings Terrace (Lot 755/DP1119757, Ramshead Hut). The pipeline will run east to west along the southern side of Diggings Terrace. The total length of the main between caps is approximately 155 metres (m). The Project will comprise the following: • excavation/trenching for main services alignment (approx. 155 x 0.8 x 0.8 m); • excavation/trenching for two (2) pipe laterals off main services alignment; • installation of PVC water main pipeline (150 millimetres (mm) diameter) and 32 mm HDPE electrical conduit; • installation of two (2) pipe laterals (100 mm diameter), including two (2) fire hydrants and end caps; • backfilling trench with sand, compacted crushed rock and reinstatement of pavement with asphalt; and • site rehabilitation and stabilisation.
Site Details	**Address:** predominately within road reserve between 3-11 Diggings Terrace, Thredbo NSW 2625 (Lot 843/DP1119757).
	Total disturbance area: approximately 128 m^2.
	Zoning: Kosciuszko National Park (C1: National Parks and Nature Reserves).
Applicant	Kosciuszko Thredbo Pty Ltd.
Key Planning Considerations	The Project is subject to the requirements of the *State Environmental Planning Policy (Precincts – Regional) 2021* (Regional Precincts SEPP). As such, the Department of Planning and Environment (DPE) Minister for Planning 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.
Key Environmental Matters	The Project is located within waterfront land (as defined under the WM Act), however no impacts to the minor watercourse are anticipated as the disturbance area and watercourse is separated by the road. The Project will result in minimal impacts to the existing environment given the highly disturbed nature of the site, no native vegetation clearing is required and the minor disturbance footprint. Significant impacts to threatened 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. Appropriate environmental controls will be implemented during construction to mitigate potential impacts. No impacts on the built environment are anticipated. The socio-economic impacts will be positive in terms of provision of improved infrastructure services to meet the needs of the Village and future development.

1 Introduction

This Statement of Environmental Effects (SEE) has been prepared to support the Development Application (DA) for the Riverside to Athol Services Connection (hereinafter referred to as the Project). The Applicant for the DA is Kosciuszko Thredbo Pty Ltd (KT) (ABN 95 000 139 015).

The purpose of the Project is to deliver water of a high quality and pressure to service the proposed development on Lot 768/ DP1119757 (Lot 768). It also aims to connect the Thredbo Village water supply to improve overall hydraulic operation of the existing water supply network. An electrical conduit will also be installed next to the water main for a low voltage street light cable to service Diggings Terrace.

The Project site is predominately located within the road corridor between 3-11 Diggings Terrace, Thredbo Alpine Resort (Thredbo) within Kosciuszko National Park (KNP), approximately 30 kilometres (km) south-west of Jindabyne, New South Wales (NSW).

Developments in NSW alpine resort areas are governed by the *State Environmental Planning Policy (Precincts – Regional) 2021* (Regional Precincts SEPP). The Department of Planning and Environment (DPE) Minister for Planning is the consent authority for development in the alpine resort areas under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

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 DPE.

2 Site Context

2.1 Regional Context

The Project site is located in Thredbo within the southern part of KNP, approximately 30 km south-west of Jindabyne in the Snowy Mountains region of NSW (refer **Figure 1**). Thredbo is accessible off Friday Drive, via the Alpine Way.

2.2 Local Context

The Project is located in Thredbo Village (the Village), predominately within the road corridor between 3-11 Diggings Terrace, Thredbo NSW 2625 (Lot 843/DP1119757). The Project site commences at the Riverside watermain connection outside 3 Diggings Terrace (Lot 768, vacant block) and ends at the Athol Lodge watermain connection, outside 11 Diggings Terrace (Lot 755/DP1119757, Ramshead Hut) (Lot 755) (refer **Figure 2**).

Figure 1: Regional Site Context

2.3 Site Description

The Project is predominately located within the road corridor (heavily disturbed). A small portion of the works are located within a disturbed/partially grassed areas associated with Lots 755 and 768. Refer to **Appendix A** for site photos.

2.4 Site Suitability

The proposed services infrastructure will tie into the existing Village infrastructure, and is required to support the proposed development on Lot 768 and existing users. A significant amount of existing services infrastructure is located within the Village road corridors, as such the site is considered suitable for the Project.

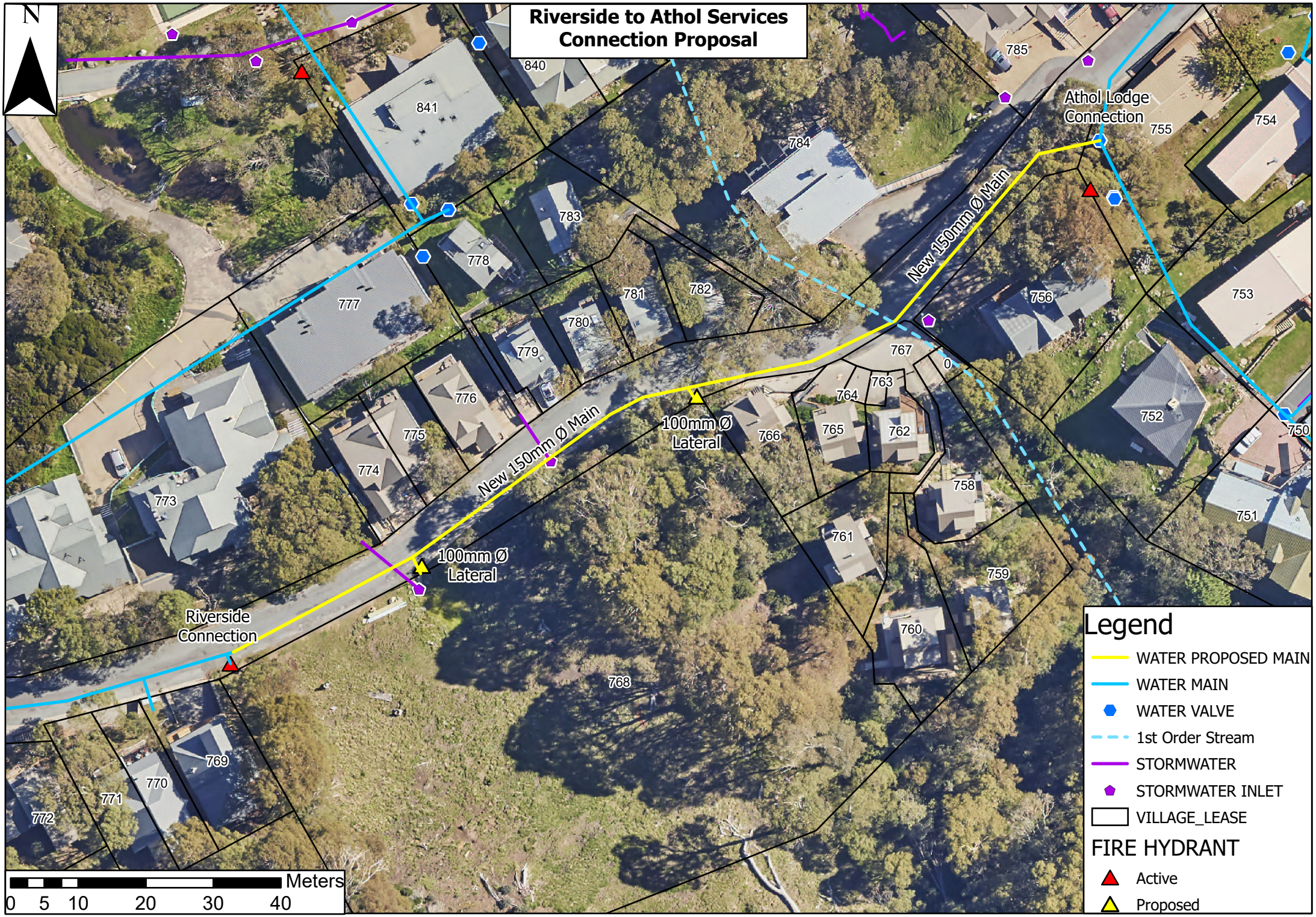

Figure 2: Site Location

3 Development Proposal Overview

3.1 Purpose of the Development

The purpose of the Project is to deliver water of a high quality and pressure to service the proposed development on Lot 768. It also aims to connect the Thredbo Village water supply to improve overall hydraulic operation of the existing water supply network. An electrical conduit will also be installed next to the water main for a low voltage street light cable to service Diggings Terrace.

3.2 Project Description

The Project will require the excavation of a section of Diggings Terrace from the existing Riverside watermain connection (adjacent to Lot 768) to the Athol Lodge watermain connection (within Lot 755). The pipeline will run east to west predominately along the southern side of Diggings Terrace. The total length of pipeline between existing watermains is approximately 155 metres (m).

The Project will comprise the following:

- excavation/trenching for main services alignment (approx. 0.8 m wide x 0.8 m deep);
- excavation/trenching for two (2) pipe laterals off main services alignment (approx. 0.8 m wide x 0.8 m deep);
- installation of PVC water main pipeline (150 millimetres (mm) diameter) and 32 mm HDPE electrical conduit;
- installation of two (2) pipe laterals (100 mm diameter), including two (2) fire hydrants and end caps;
- backfilling trench with sand, compacted crushed rock and reinstatement of pavement with asphalt; and
- site rehabilitation and stabilisation.

A copy of the design drawings is provided in **Appendix B**.

3.3 Disturbance Footprint

The total disturbance footprint for the Project is approximately 128 m^2.

3.4 Site Access

The Project site is located within Diggings Terrace, accessible via Friday Drive (western entrance) and Banjo Drive (eastern entrance) (refer **Figure 3**).

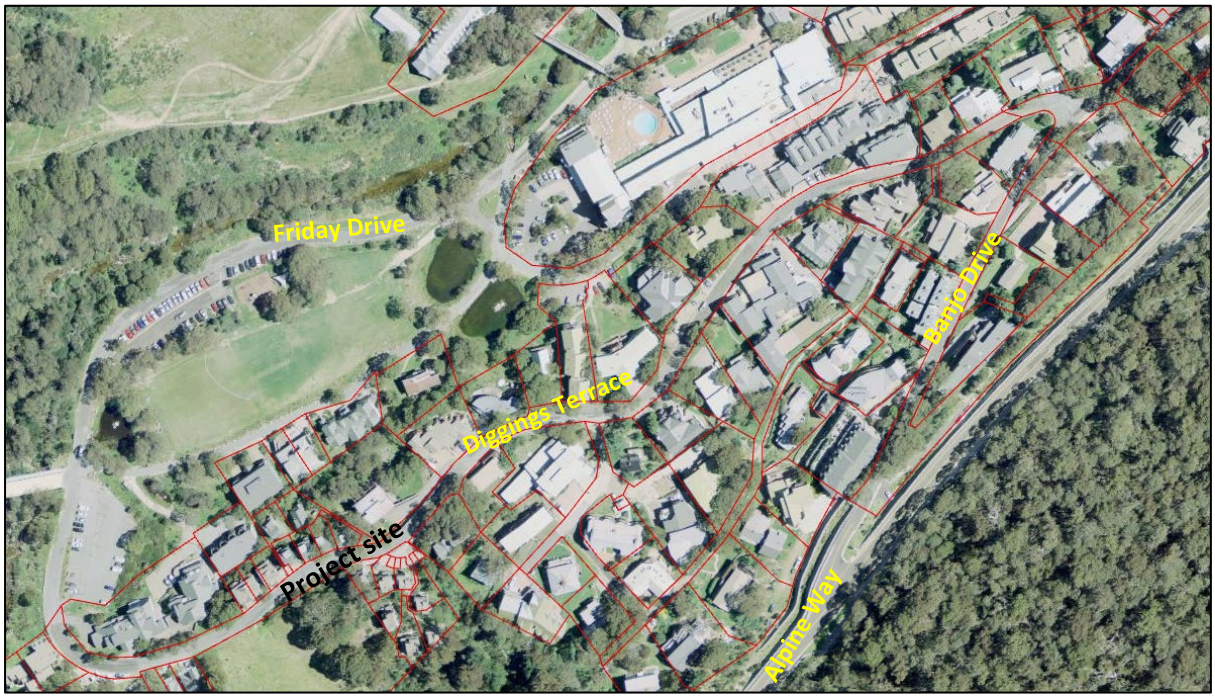

Figure 3: Site Access

3.5 Development Components

3.5.1 Machinery, Plant and Equipment

Construction vehicles and plant will include (but is not limited to):

- 4WD vehicles and utilities;
- 20T Excavator;
- tipper truck; and
- delivery trucks.

3.5.2 Stockpile Sites

No temporary stockpiles will be required in the construction corridor. All excavated materials will be loaded directly onto a truck and placed within Thredbo's main stockpile locations identified in the SEMP (**Appendix C**). Access to these locations will be restricted to KT staff and contractors.

3.5.3 Site Facilities and Temporary Structures

Existing amenities (toilets) will be available for construction staff on the Village Green. There will be no temporary structures erected for these works. First aid equipment will be located within site vehicles.

3.5.4 Project Timing

The anticipated timing for construction commencement is in early October 2022. Construction works are expected to be completed within a two (2) week period. Working hours for the Project will be from 7am to 5pm, Monday to Friday, or as stipulated in the conditions of consent.

3.5.5 Pre-construction Activities

Pre-construction activities will comprise establishment of site signage, traffic controls (i.e. single lane closure) and flagging/fencing of construction corridor.

3.5.6 Construction Activities

The construction program will comprise of the following:

- excavation/trenching for services infrastructure/pipeline (150 x 0.8 x 0.8 m) from Riverside watermain connection to Athol Lodge watermain connection in five (5) 31 m sections;
- excavation/trenching for the two (2) pipe laterals;
- installation of 150 mm PVC water main pipeline and 32 mm HDPE electrical conduit;
- installation of two (2) 100 mm pipe laterals, including two (2) fire hydrants and end caps;
- survey data of the main location, joins and lateral end caps will be taken and saved for Village services records;
- the Village water supply will be turned off for the connection of the main on each end (the downstream Riverside end will be connected first, followed by the upstream Athol Lodge end);
- backfilling and compaction of trench, comprising fill sand and crushed gravel over the new pipeline;
- stabilisation/reinstatement of the road which will include a layer of road base and sealing with asphalt; and
- rehabilitation of excavations for the pipe laterals which will include application of straw, grass seed and pinning of jute mesh across disturbed areas.

3.5.7 Operational Activities

The services will be operational 24 hours a day, in line with existing Village service infrastructure.

4 Legislative Context

A review of key legislation and planning instruments applicable to the Project is provided in **Table 1**.

Table 1: 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. No significant impacts to any MNES are anticipated, refer **Section 0** for detail.
State	
Environmental Planning and Assessment Act 1979 (EP&A Act) *Environmental Planning and Assessment Regulation 2021* (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. DPE assesses development proposals within NSW alpine resort areas where the Minister for Planning 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 the EP&A Regulation.
National Parks and Wildlife Act 1974 (NPW Act) *National Parks and Wildlife Regulation 2019*	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; • 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 7.10**. All development proposals in KNP require authorisation under the NPW Regulation 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 thresholds are not triggered, the test of significance detailed in section 7.3 of the BC Act must be used to determine whether a development is likely to significantly affect threatened species or ecological communities, or their habitats. Refer to **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. DPE Water 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. A controlled activity approval (CAA) is required to carry out certain types of activities on waterfront land, unless an exemption applies. Refer **Sections 5.3** and **7.2.3** for detail.
Environmental Planning Instruments	
State Environmental Planning Policy (Precincts – Regional) 2021 (Regional Precincts SEPP)	The aim and objectives of Chapter 4 (Kosciuszko National Park and alpine resorts) of the Regional Precincts SEPP are: • 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 Regional Precincts SEPP. Key requirements under Chapter 4 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 guidelines is provided in this section.

5.1 Environmental Planning and Assessment Act 1979

Pursuant to Section 4.15 of the EP&A Act, the consent authority is to consider the matters listed in **Table 2** in relation to the Project.

Table 2: Matters for Consideration – General

(1) Matters for consideration – General	Comment
the provisions of—	
(i) any environmental planning instrument	The relevant sections of the Regional Precincts SEPP have been addressed in **Section 5.2**.
(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 applicable development control plans.
(iiia) any planning agreement that has been entered into under section 7.4, or any draft planning	There are no planning agreements applicable to Thredbo under the Regional Precincts SEPP.

agreement that a developer has offered to enter into under section 7.4	
(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.
(a) 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**.
(b) the suitability of the site for the development	The suitability of the site for the Project is described in **Section 2.4**.
(c) any submissions made in accordance with this Act or the regulations	The Development is located within 50 m of tourist accommodation, therefore in accordance with the *Community Participation Plan 2019* (DPIE 2019) the proposal will be placed on public exhibition. Consideration will be given to all public submissions received.
(d) the public interest.	The Development is considered to be within the public interest for the following reasons: • the Development is consistent with the aim and objectives of the Regional Precincts SEPP; • the Development is compatible with the site; • the Development will not have any significant adverse environmental impacts; and • the Development is consistent with the principles of ESD.

5.2 Regional Precincts SEPP

The relevant sections of Chapter 4 (Kosciuszko National Park and alpine resorts) of the Regional Precincts SEPP are addressed in this section.

5.2.1 Section 4.9 – Land Use Table (Thredbo Alpine Resort)

Pursuant to the Land Use Table in Section 4.9 of the Regional Precincts SEPP, "infrastructure facilities" is permissible with consent within the Thredbo Alpine Resort. As such, the water main upgrade is permitted development within consent.

5.2.2 Section 4.12 – Matters to be considered by Consent Authority

Table 3 addresses Section 4.12 (Matters to be considered by consent authority) in relation to the Project.

Table 3: Matters to be Considered by Consent Authority

Matters for Consideration	Comment
(1) In determining a development application that relates to land to which this Chapter 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 Chapter, as set out in section 4.1	The Project is consistent with the objectives of Chapter 4, 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 does not require any measures to mitigate environmental hazards.
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—	The Project will allow for the existing water supply network to be upgraded to support future development.

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 Chapter 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	
d) any statement of environmental effects required to accompany the development application for the development	This SEE addresses this clause.
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 is considered compatible with the existing Village 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	The Project comprises minor earthworks, not involving excavations or fill in excess of one metre vertical height. Refer **Section 5.4.2** for detail.
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 proposed. Refer to SEMP (**Appendix C**) for control measures.
h) if stormwater drainage works are proposed—any measures proposed to mitigate any adverse impacts associated with those works	Not applicable.
i) any visual impact of the proposed development, particularly when viewed from the Main Range	Not applicable.
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	Not applicable.
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	Not applicable.
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 Chapter, 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 Chapter, 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 located within a riparian corridor. Refer to **Section 7.2.2** for detail**.** Appropriate environmental controls will be implemented in accordance with the SEMP (**Appendix C**).
(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,	No adverse impacts are proposed. Appropriate environmental controls will be implemented in accordance with the SEMP (**Appendix C**).
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 section 4.4.	

5.3 Integrated Development

The Project is integrated development in relation to the *Water Management Act 2000* due to works within 40 m of a watercourse.

5.4 Plans, Policies and Guidelines

5.4.1 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 Regional Precincts SEPP, all development applications within KNP are referred to NPWS who are responsible for administering the KNP POM.

This SEE and supporting documentation demonstrates that the Project is consistent with the relevant management objectives and provisions in Section 10 the KNP POM e.g. assessment of capacity of existing facilities/services and contribution to the operation of infrastructure to meet future demand.

5.4.2 Geotechnical Policy Kosciuszko Alpine Resorts 2003

Pursuant to Section 3 of the *Geotechnical Policy Kosciuszko Alpine Resorts 2003* (DIPNR 2003) (Geotechnical Policy), the Project does not require a geotechnical report to be lodged as part of the DA as the works comprise minor earthworks, not involving excavations or fill in excess of one metre in vertical height. The Geotechnical Assessment and *Form 4 – Minimal Impact Certification* is provided in **Appendix E**.

6 Assessment Method

The assessment for the Project consisted of a desktop review of publicly available data sources and information to identify relevant environmental values that potentially occur within the Project area.

Key database and information sources utilised in the desktop assessment are listed below:

- EPBC Act Protected Matters Search Tool (PMST) (DAWE 2022);
- Aboriginal Heritage Information Management System (Heritage NSW 2022);
- ePlanning Spatial Viewer – NSW Planning Portal (DPE 2022a);
- NSW BioNet Database (DPE 2022b); and
- Water Management (General) Regulation 2018 hydroline spatial data 1.0 (NSW Government 2022).

The relevant database search results are provided in **Appendix D.**

The desktop review was followed by a site assessment 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 and determine any constraints associated with the preliminary design.

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

7.1.1 Topography

The site is located between 1378 and 1383 m Australian Height Datum (AHD).

7.1.2 Land Use

The current land use is infrastructure (road). As noted in **Section 5.2.1**, the Project is permitted development with consent as the water main is classified as infrastructure.

The predominant surrounding land use comprises tourist accommodation. No adverse impacts to surrounding land uses are anticipated.

7.1.3 Geotechnical Considerations

The Project requires excavation of no deeper than 0.8 m. AssetGeoEnviro (2022) determined the Project presents minimal geotechnical impact on the site (refer **Appendix E**).

7.2 Water

7.2.1 Drainage

Existing drainage within/adjacent to the construction corridor comprises (**Figure 4**):

- concrete v-drain running parallel to Diggings Terrace;
- two (2) drop inlets; and
- stormwater flume (predominately open corrugated pipe).

No adverse impacts to existing drainage are anticipated from the Project. Appropriate environmental controls will be implemented during construction in accordance with the SEMP (**Appendix C**).

Photo A: V-drain alongside road leading into drop inlet (runs below Diggings Terrace)

Photo B: V-drain leading into stormwater inlet/pipe runs below Diggings Terrace (Lot 768)

Photo C: Drop inlet drain (Lot 768)

Photo D: Stormwater outlet/flume (opposite Lot 768)

Figure 4: Existing Drainage within/adjacent to site

7.2.2 Watercourses / Waterfront Land Assessment

A watercourse line is mapped within the Project site (traversing Lot 768/Diggings Terrace) on the *WM (General) Regulation hydroline spatial data 1.0* map (refer **Figure 5**). Ground-truthing of this mapped watercourse identified the section of the watercourse which traverses Diggings Terrace outside Lot 768 does not exhibit the features of a defined channel with bed and banks, as shown on **Figure 6**. Two (2) stormwater inlets/drainage are located in close proximity of the mapped watercourse line at this location.

Ground-truthing identified the watercourse traverses the site further east which is identified on the Alpine SEPP Thredbo Alpine Resort map (DoP 2006) (**Figure 7**).

Figure 5: WM (General) Regulation hydroline spatial data 1.0 (Source: NSW Government 2022a)

Figure 6: Field Verification of Mapped Watercourse

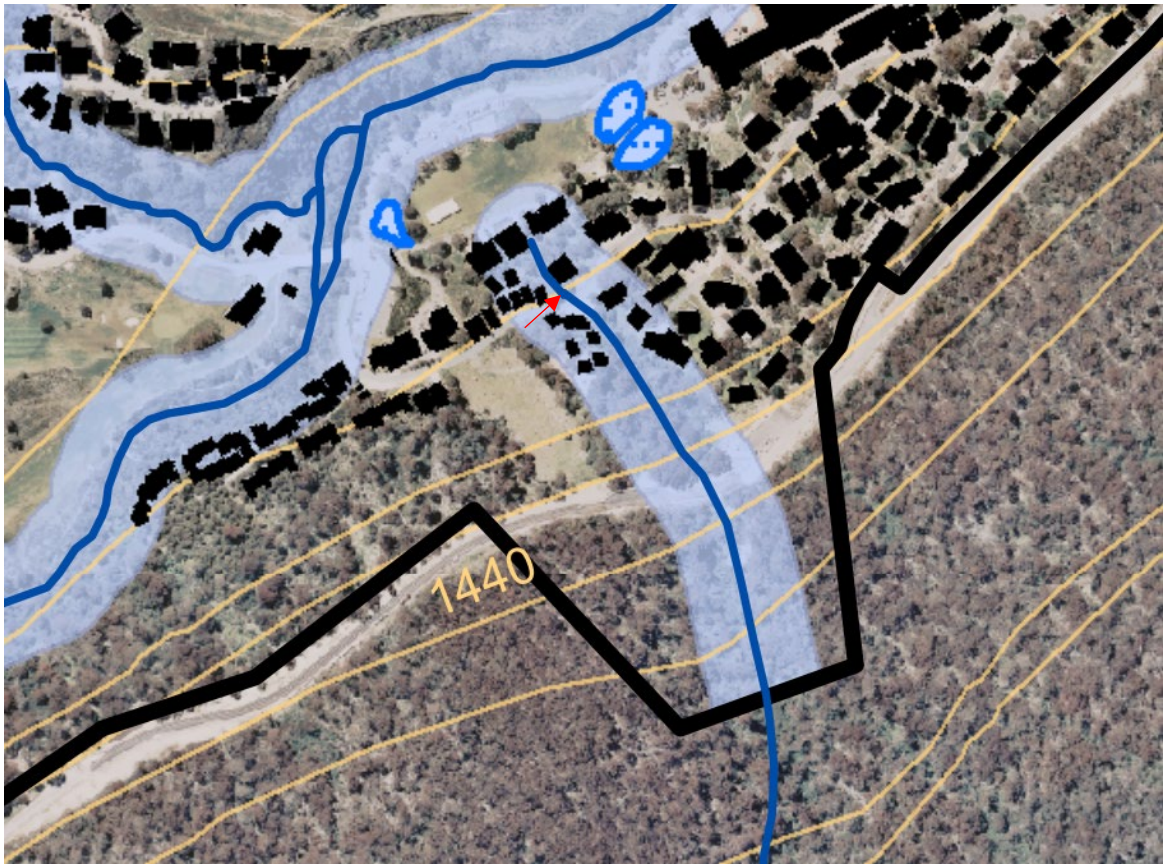

Figure 7: Extract of the Alpine SEPP Thredbo Alpine Resort map (DoP 2006)

This watercourse is a first order stream as defined under the Strahler System (Schedule 2 of the WM (General) Regulation). The minor watercourse runs below Diggings Terrace, via two concrete lined culverts (refer **Figure 8** and **Figure 9**). No impacts to the minor watercourse are anticipated given the following:

- the Project requires minimal ground disturbance in a heavily modified environment;
- the trench excavation will be no greater than 0.8 m deep, and the culverts underneath Diggings Terrace are located 1.7 m below the road deck leaving sufficient room for the excavation to occur (**Figure 9**);
- the existing road acts as a buffer between the works and the watercourse;
- the road corridor comprises grassed areas and existing drainage which aids in the diversion and management of run-off;
- the Project will not impact on habitat connectivity within the riparian corridor;
- the Project is unlikely to impact on the water quality of the minor watercourse;
- appropriate environmental controls will be implemented during construction as detailed in the SEMP (**Appendix C**); and
- all disturbed areas will be rehabilitated and stabilised following completion of works.

Figure 8: Downstream of minor watercourse (first order stream)

Figure 9: Upstream of minor watercourse (first order stream)

7.3 Flora and Fauna

7.3.1 BVM and Area Clearing Threshold Test

A review of the BVM and Threshold Tool was undertaken on 9 March 2022 which identified the Project site does not comprise land mapped on the BVM (**Figure 10**). As such, the Project cannot trigger the BVM threshold.

The majority of the disturbance is located within the road corridor and will not require any native vegetation clearing. A minor section of exotic grass will be removed to install the pipe laterals. The Project will not trigger the area clearing thresholds.

Figure 10: Biodiversity Values Map (Source: NSW Government 2022b)

7.3.2 Test of Significance

An assessment of the Project against the 'test of significance' outlined in Section 7.3 of the BC Act is provided in **Table 4**.

Table 4: Test of Significance

Test of Significance	Comment
(1) The following is to be taken into account for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats—	
(a) in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,	A search of the NSW BioNet database was undertaken on 9 March 2022, which identified no conservation significant species records occur within the site. The site is heavily disturbed (being a road) and provides limited suitable fauna habitat. Significant impacts to threatened 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.
(b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity— (i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or (ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,	Not applicable. There are no endangered ecological communities or critically endangered ecologically communities within the site or immediate surrounds.

(c) in relation to the habitat of a threatened species or ecological community— (i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and (ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and (iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality,	Not applicable. Refer comment against (a).
(d) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly),	Not applicable. The site and immediate surrounds do not comprise any land declared an area of outstanding biodiversity value.
(e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.	Not applicable. The Project is not part of a key threatening process outlined in Schedule 4 of the BC Act, nor is it likely to increase the impact of a key threatening process.

7.4 Socio-economic

The socio-economic impacts of the Project will be positive through the provision of improved services infrastructure within the Village, and generation of short-term construction jobs, however these are anticipated to be nominal given the scale of the Project and timing for construction completion.

7.5 Traffic and Access

A construction corridor will be erected prior to commencement of works. The southern lane of Diggings Terrace will be closed for the duration of the works (i.e. 2-week period). Appropriate traffic management controls will be implemented for the duration of works.

7.6 Landscape Character and Visual Amenity

The Project will not alter the landscape character or impact on the visual amenity within the area.

7.7 Built Environment

No adverse impacts on the built environment are proposed.

7.8 Air Quality

Tourist accommodation is located either side of Diggings Terrace. There is potential for dust emissions to be generated during earthworks, however these impacts will be short-term and negligible with the proposed mitigation measures (refer **Section 8**).

7.9 Noise and Vibration

Given the nature of the construction method, land uses either side of Diggings Terrace may at times be sensitive to noise from construction (e.g. loading/unloading materials, excavation works, movement alarms). However, noise impacts are expected to be minor given the works will be conducted during standard working hours, the duration of works is short-term (i.e. 2 weeks) and appropriate mitigation measures (refer **Section 8**) will be implemented during construction.

7.10 Heritage

There are no records of heritage items or places within the site.

7.11 Aboriginal Cultural Heritage

To establish due diligence for the Development, an assessment against the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* (DECCW 2010) has been provided in **Table 5**.

Table 5: Aboriginal Cultural Heritage Due Diligence Process

Due Diligence Process	Comment
1. Will the activity disturb the ground surface or any culturally modified trees?	The Project will require disturbance of the existing road, which comprises a highly modified environment. 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 b) any other sources of information of which a person is already aware? And/or c) landscape features that are likely to indicate presence of Aboriginal objects?	A search of the Aboriginal Heritage Information Management System (AHIMS) using a 1 km radius around the site was undertaken on 9 March 2022. The results identified the site and surrounds does not contain any objects of Aboriginal Cultural Heritage significance. The results are provided in **Appendix D**. The Project site is within a heavily disturbed environment. There are no landscape features within the site that would indicate presence of Aboriginal objects. There is no requirement to move onto Question 3. The works can proceed with caution.
3. Can harm to Aboriginal objects listed on AHIMS or identified by other sources of information and/or can the carrying out of the activity at the relevant landscape features be avoided?	Not applicable.
4. Does a desktop assessment and visual inspection confirm that there are Aboriginal objects or that they are likely?	Not applicable.

7.12 Matters of National Environmental Significance

A search of the EPBC Act PMST (DAWE 2022) (records within a 1 km radius of the Project site) was undertaken on 15 March 2021 to determine whether any MNES are likely to occur within the Project area. The Protected Matters Report (PMR) (**Appendix D**) identified 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 Impact Summary

MNES Categories	No.[1]	Comment
National Heritage Places	**2**	The Project is unlikely to cause one or more of the National Heritage values of the Australian Alps National Park or Snowy Mountain Scheme to be lost, degraded, damaged or notably altered, modified, obscured or diminished. 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 no impacts to the ecological character of Blue Lake are anticipated. No further assessment is required.

Threatened Ecological Communities (TECs)[2]	**2**	No listed TECs, threatened species or migratory species identified within the site. Significant impacts to threatened flora and fauna, ecological communities or their habitats are unlikely. The Project will not adversely affect habitat connectivity or any other biodiversity value of conservation significance. No further assessment is required.
Threatened Species[2]	**28**	
Migratory Species[2]	**11**	

[1]Number of MNES identified in the PMR (**Appendix D**)

[2]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.

7.13 Waste

The Project will generate the following waste streams:

- general solid waste (putrescible) e.g. waste from litter bins, non-recyclable plastic; and
- general solid waste (non-putrescible) e.g. plastic, paper, carboard, construction waste, asphalt waste.

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; and
- KT's waste transfer facility / stockpile locations at the top carpark (materials to be segregated for re-use, including excavated fill and asphalt).

Any waste that cannot be re-used within the resort will be transported off-site by a licence contractor and disposed of at the Jindabyne Landfill.

Waste minimisation and management strategies that will be implemented for the Project are provided in **Section 8**.

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 7**.

Table 7: 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, 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 and Water	
1	Where required, 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. Erosion and sediment controls to be inspected and maintained.

2	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).
3	All storage of petroleum products, oils or chemicals to be in accordance with Australian Standards.
4	Refuelling procedures to be implemented to minimise spills of fuel products.
5	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)
Flora and Fauna, Biosecurity	
1	Project machinery and vehicles to arrive/depart from KNP and the Project site in a clean condition, free of mud and vegetative propagules. Machinery to be regularly maintained and manoeuvred to prevent the spread of weeds and pathogens.
2	Disposal and storage of putrescible wastes must be undertaken appropriately to ensure feral animals aren't attracted to the site.
3	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.
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.
4	A traffic management plan will be prepared for the works.
Air Quality	
1	Reasonable and practicable measures will be implemented to prevent dirt and dust from affecting the amenity or the surrounding environment during construction.
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	In the event an unexpected item 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, in accordance with the procedure outlined in the SEMP.
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.

9 Conclusion

The Project will deliver water of a high quality and pressure to service the proposed development on Lot 768. It will also connect the existing Village water supply to improve overall hydraulic operation of the existing water supply network. An electrical conduit will also be installed next to the water main for a low voltage street light cable to service Diggings Terrace.

In accordance with the requirements of the EP&A Act, EP&A Regulation and Regional Precincts SEPP, 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 will result in minimal impacts to the existing environment given the highly disturbed nature of the site, no native vegetation clearing is required and the minor disturbance footprint (approx. 128 m^2). No impacts on the built environment are anticipated. Appropriate environmental controls will be implemented during construction to mitigate potential impacts. The socio-economic impacts will be positive in terms of provision of improved infrastructure services to meet the needs of the Village and future development.

The Project is considered to be within the public interest for the following reasons:

- the Project is consistent with the aim and objectives of the Regional Precincts SEPP;
- the Project is compatible with the site;
- the Project will not have any significant adverse environmental impacts; and
- the Development is consistent with the principles of ESD.

In summary, the services upgrades will have positive impacts on the locality as it will support future development as well as improve the existing water supply network.

10 References

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11 Acronyms and Abbreviations

Acronyms	
AHD	Australian Height Datum
BC Act	*Biodiversity Conservation Act 2016*
BVM	Biodiversity Values Map
BC Regulation	*Biodiversity Conservation Regulation 2017*
CAA	Controlled Activity Approval
DA	Development Application
DAWE	Commonwealth Department of Agriculture, Water and the Environment
DECC	Department of Environment and Climate Change
DECCW	Department of Environment, Climate Change and Water
DIPNR	Department of Industry, Planning and Natural Resources
DPE	NSW Department of Planning and Environment
DPE Water	NSW Department of Planning and Environment – Water
DPIE	NSW Department of Planning, Infrastructure and Environment (now DPE)
EP&A Act	*Environmental Planning and Assessment Act 1979*
EP&A Regulation	*Environmental Planning and Assessment Regulation 2021*
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
Geotechnical Policy	*Geotechnical Policy Kosciuszko Alpine Resorts 2003*
KNP	Kosciuszko National Park
KNP POM	Kosciuszko National Park Plan of Management 2006
km	kilometres
OEH	Office of Environment and Heritage (NSW)
m	metres
m^2	metres square
mm	millimetres
NPW Act	*National Parks and Wildlife Act 1974*
NPWS	National Parks and Wildlife Service
NSW	New South Wales
PMR	Protected Matters Report
PMST	Protected Matters Search Tool
Regional Precincts SEPP	*State Environmental Planning Policy (Precincts—Regional) 2021*
SEE	Statement of Environmental Effects
Thredbo	Thredbo Alpine Resort
Village	Thredbo Village

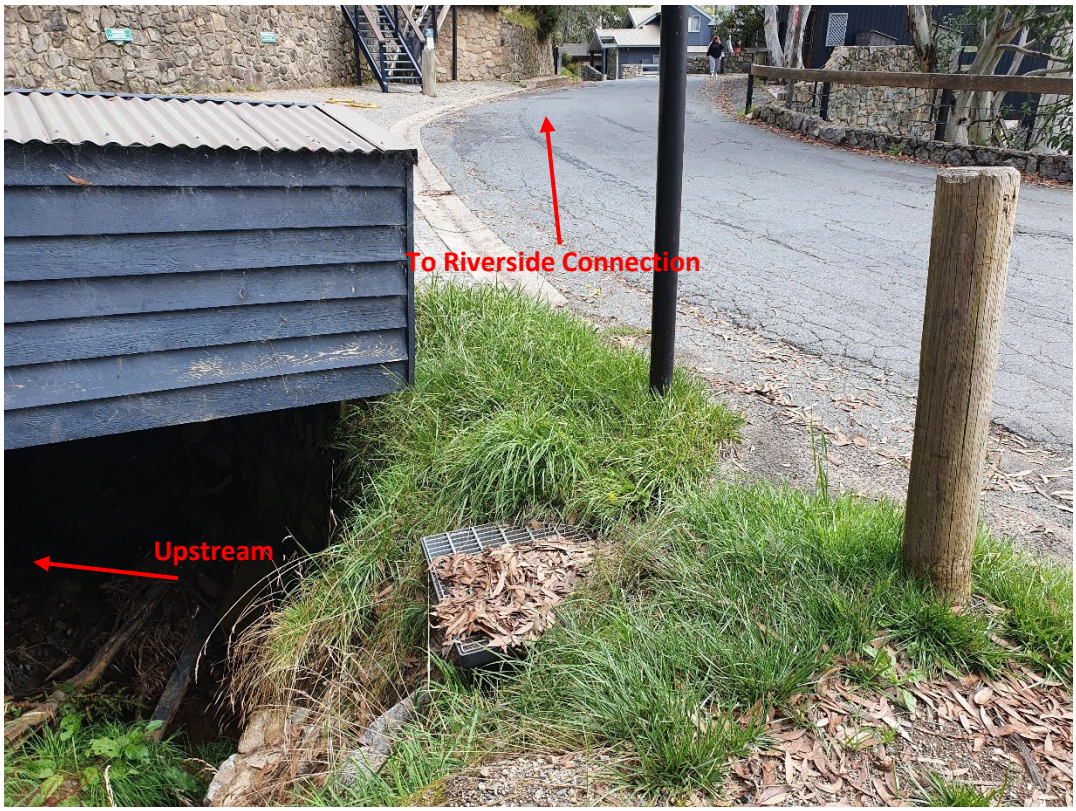
12 Appendices

Appendix A Site Photos

Limit of works – main cap located on Lot 755 (Ramshead Hut)

Looking east/uphill towards limit of works

Carpark below Diggings Terrace (associated with Lot 784/ DP1119757) – looking west towards minor watercourse



Drop inlet into minor watercourse (runs below Diggings Terrace)

Upstream minor watercourse (between Lots 767/DP1119757 and 756/DP1119757)

Downstream minor watercourse – below Diggings Terrace (Lot 784/DP1119757)

Proposed pipe lateral connection outside Lot 766/DP1119757

Existing stormwater inlet and proposed pipe lateral connection within Lot 768/DP1119757

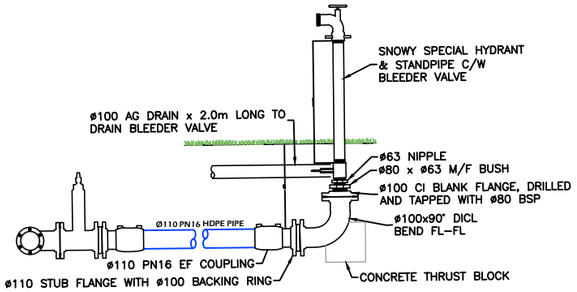
Stormwater outlet/flume below Diggings Terrace (opposite Lot 768/DP1119757)

Limit of works – Riverside watermain connection, looking east towards proposed pipe lateral within 768/DP1119757

Appendix B Design Drawings

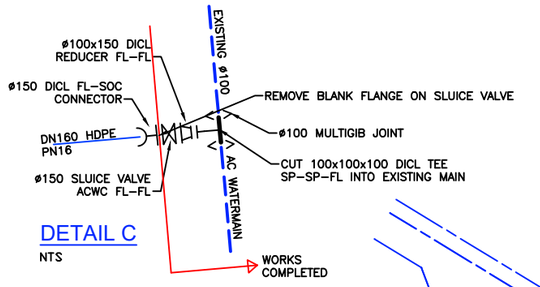
LEGEND

- TITLE BOUNDARY
- CONTOUR
- EDGE OF BITUMEN
- DISH DRAIN
- ARMCO SAFETY BARRIER
- EXISTING GASMAIN
- EXISTING STORMWATER
- EXISTING ELECTRICITY
- EXISTING SEWER
- EXISTING WATERMAIN
- PROPOSED WATERMAIN
- PROPOSED WATER PROPERTY CONNECTION
- PROPOSED FIRE HYDRANT
- EXISTING FIRE HYDRANT
- DIGGINGS TERRACE PAVEMENT
- ø100 SUB-SOIL DRAINAGE PIPE



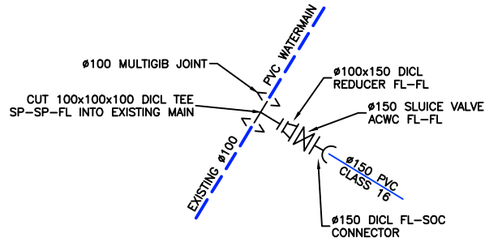
TYPICAL SNOWY SPECIAL HYDRANT DETAIL

NTS



DETAIL C

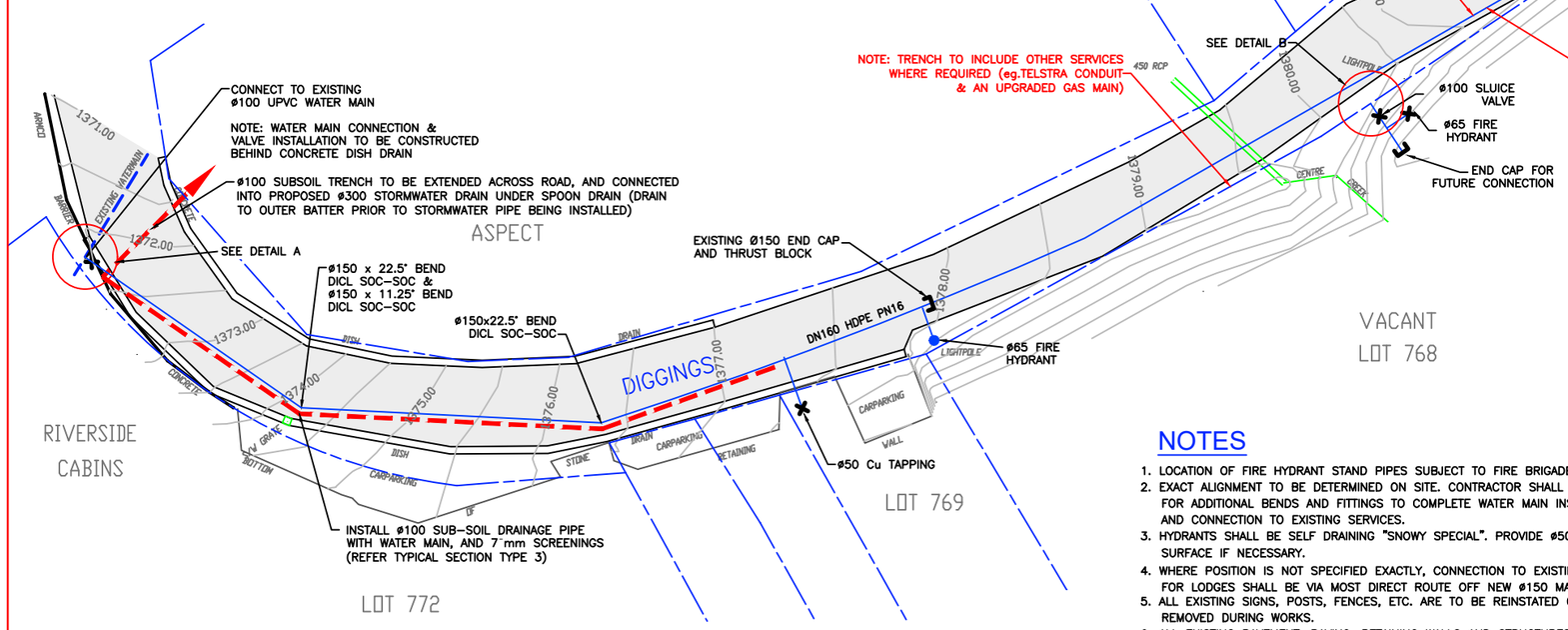
NTS



DETAIL A (Existing)

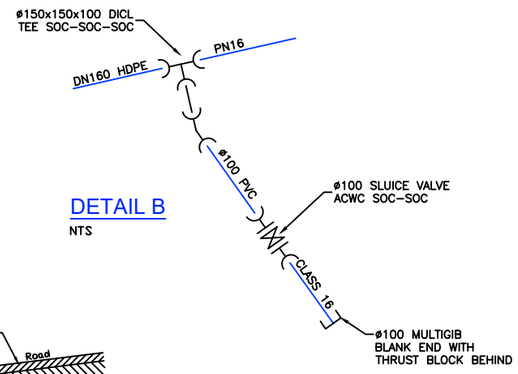
NTS

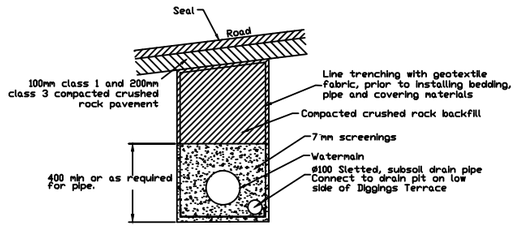
NOTE: TRENCH ALIGNMENT TO GENERALLY FOLLOW THE SOUTHERN SIDE OF THE DIGGINGS TERRACE PAVEMENT, WHERE POSSIBLE. BENDS & JOINT DEFLECTIONS TO BE USED TO ACHIEVE THIS.
NOTE: THERE IS AN EXISTING HV ELECTRICITY CABLE LOCATED IN ROADWAY – DETERMINE EXACT LOCATION PRIOR TO EXCAVATION.



DETAIL B

NTS





TYPE 3

WARNING

EXISTING SERVICES SHOWN ARE INDICATIVE ONLY, AND ARE NOT NECESSARILY COMPLETE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION AND LEVEL OF ALL UNDERGROUND SERVICES PRIOR TO COMMENCEMENT OF CONSTRUCTION.

THE CONTRACTOR SHALL LIAISE WITH THE RELEVANT SERVICE AUTHORITIES PRIOR TO COMMENCING EXCAVATION IN THE VICINITY OF ANY UNDERGROUND SERVICE.

NOTES

1. LOCATION OF FIRE HYDRANT STAND PIPES SUBJECT TO FIRE BRIGADE ACCEPTANCE.
2. EXACT ALIGNMENT TO BE DETERMINED ON SITE. CONTRACTOR SHALL ALLOW FOR ADDITIONAL BENDS AND FITTINGS TO COMPLETE WATER MAIN INSTALLATION AND CONNECTION TO EXISTING SERVICES.
3. HYDRANTS SHALL BE SELF DRAINING "SNOWY SPECIAL". PROVIDE ø50 DRAIN TO SURFACE IF NECESSARY.
4. WHERE POSITION IS NOT SPECIFIED EXACTLY, CONNECTION TO EXISTING SERVICES FOR LODGES SHALL BE VIA MOST DIRECT ROUTE OFF NEW ø150 MAIN.
5. ALL EXISTING SIGNS, POSTS, FENCES, ETC. ARE TO BE REINSTATED OR REPLACED IF REMOVED DURING WORKS.
6. ALL EXISTING PAVEMENT, PAVING, RETAINING WALLS AND STRUCTURES (I.E. GARBAGE ENCLOSURES) SHALL BE REINSTATED TO ORIGINAL OR BETTER CONDITION.
7. THRUST BLOCKS TO BE CONSTRUCTED ON ALL BENDS, TEES, STOP VALVES ETC.
8. TREES ARE ONLY TO BE REMOVED SUBJECT TO PRIOR APPROVAL FROM THE SUPERINTENDENT.
9. ALL PIPES, FITTINGS, BEDDING AND SPECIAL BACKFILLING MATERIALS ARE TO BE SUPPLIED BY THE CONTRACTOR.
10. ALL OPEN TRENCHES SHALL BE SECURELY FENCED AT NIGHT, AND AT ALL TIMES THAT NO WORKS ARE IN PROGRESS.
11. ALL LEVELS ARE TO AUSTRALIAN HEIGHT DATUM. CONTRACTOR TO VERIFY TBM LEVELS PRIOR TO COMMENCING EXCAVATION.
12. THE CONTRACTOR SHOULD NOTE THAT IT MAY REQUIRE MORE FITTINGS OR TO RELOCATE OTHER SERVICES TO COMPLETE CONNECTIONS.
13. ALL FLANGES TO BE TABLE C OR TABLE E

PRELIMINARY DRAWING
NOT TO BE USED FOR CONSTRUCTION PURPOSES

REVISIONS			REVISIONS		
No.	DETAILS	DATE	No.	DETAILS	DATE
1.	ISSUED FOR COMMENT	10/00			
2.	VALVE RELOCATED/BEND AMENDED	11/11			
3.	SUB-SOIL DRAINAGE ADDED	02/12			
4.	MINOR REVISIONS, OUTLET FOR LOT 768	03/22			

J:\Clients\THREDB□\dwg\10541501.dwg

North

SCALE 1:500

GORDON GIBSON NOMINEES
CIVIL ENGINEERS & PROJECT MANAGERS
23 ROWAN STREET WANGARATTA 3677
(03) 5721 6122 email: ggibson@netc.net.au

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A.C.N. 005 199 968

Designed	A.J.G.	10/00
Drawn	J.A.H.	10/00
Checked		/
Approved		
	Date	/

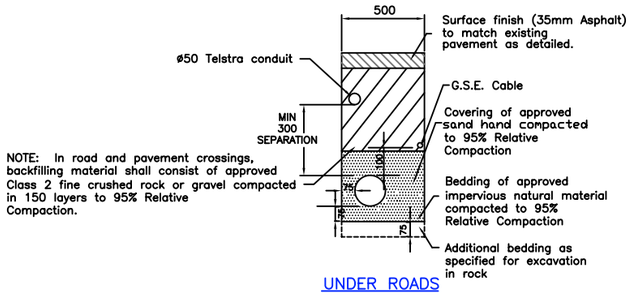
KOSCIUSKO THREDBO PTY LTD

DIGGINGS TERRACE, THREDBO
PROPOSED WATERMAIN
PLAN & DETAILS

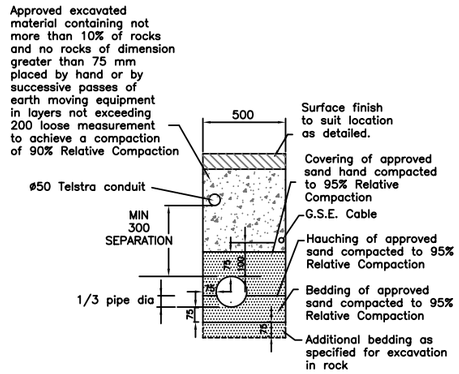
CLIENT No. KOSC01

DRAWING No. 1501 REV. 4

Sheet 1 of 2 A3



UNDER ROADS

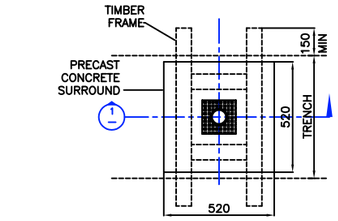


OTHER LOCATIONS

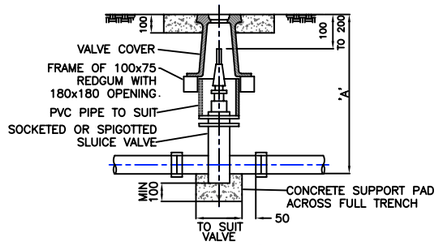
BEDDING AND REFILLING TYPES

(Determination of Relative Compaction shall be in accordance with AS 1289 "TESTING SOILS FOR ENGINEERING PURPOSES")

PIPE BEDDING DETAILS



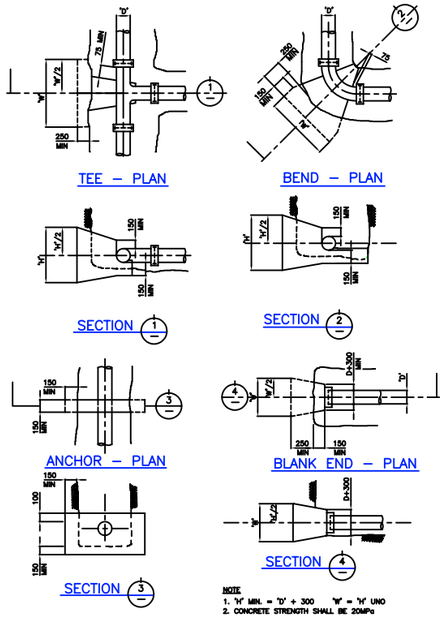
PLAN



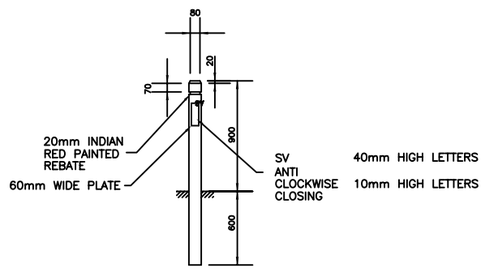
SECTION 1

VALVE SIZE	100	150	225	300
'A' MIN	700	850	1050	1250

SLUICE VALVE DETAIL



CONCRETE THRUST BLOCKS



VALVE

VALVE INDICATORS - GENERAL NOTES

(1) INDICATOR POSTS SHALL CONSIST OF 100 x 100 HARDWOOD, WITH TOP EDGES CHAMFERED. 20mm

(2) POSTS SHALL BE PAINTED AS SHOWN.

(3) ALL LETTERS AND NUMERALS AND THE REBATE SHALL BE PAINTED RED. PAINTING SHALL BE TWO (2) APPLICATIONS OF APPROVED EXTERIOR ENAMEL.

(4) SUPPLY AND INSTALL INDICATOR POSTS AT A CONVENIENT LOCATION, ADJACENT TO EACH STOP VALVE ON MAINS.

INDICATOR POST DETAILS

PRELIMINARY DRAWING
NOT TO BE USED FOR CONSTRUCTION PURPOSES

REVISIONS			REVISIONS		
No.	DETAILS	DATE	No.	DETAILS	DATE
1.	ISSUED FOR COMMENT	10/00			

North

SCALE 1:100

GORDON GIBSON NOMINEES
CIVIL ENGINEERS & PROJECT MANAGERS
23 ROWAN STREET WANGARATTA 3677
(03) 5721 6122 email: ggibson@netc.net.au
© 2000
A.C.N. 005 199 968

Designed A.J.G. 10/00
Drawn J.A.H. 10/00
Checked /
Approved
Date /

KOSCIUSKO THREDBO PTY LTD

DIGGINGS TERRACE, THREDBO
PROPOSED WATERMAIN
DETAILS

CLIENT No. KOSC01
DRAWING No. 1502 REV. 1
Sheet 2 of 2 A1

Appendix C Site Environmental Management Plan

Site Environmental Management Plan (SEMP)

Riverside to Athol Services Connection

Thredbo Alpine Resort
Kosciuszko National Park NSW

Department of Planning and Environment

Issued under the Environmental Planning and Assessment Act 1979

Approved Application No DA 22/5708

Granted on the 12 August 2022

Signed S Butler

Sheet No 3 of 7

Riverside to Athol Services Connection

Site Environmental Management Plan (SEMP)

Kosciuszko Thredbo Pty Ltd
1 Friday Drive
Thredbo New South Wales 2625
www.thredbo.com.au

Document Control

REVISION	DATE	REVISION TYPE	AUTHOR	APPROVED BY
A	18.03.2022	Draft	K.O'Sullivan, C.Chalk	E.Diver
0	24.03.2022	Final	C.Chalk	E.Diver

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2.2 Project Description 1

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1 Introduction

This Site Environmental Management Plan (SEMP) has been prepared for implementation by Kosciuszko Thredbo Pty Ltd (KT) (and its contractors) for the Riverside to Athol Services Connection (the Project).

1.1 Purpose of SEMP

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 Environmental and Social Sustainability Policy

All activities undertaken by KT will be in accordance with the organisations *Environmental and Social Sustainability Policy 2021.*

2 Project Details

2.1 Project Location

The Project is located in Thredbo Village, predominately within the road corridor between 3-11 Diggings Terrace, Thredbo NSW 2625. The proposed location of the water main lies between the existing Riverside watermain connection (adjacent to Lot 768, underneath Diggings Terrace) and the Athol Lodge watermain connection (within Lot 755, Ramshead Hut). The pipeline will run east to west along the southern side of Diggings Terrace. Refer to **Appendix A** for the site plan which details the underground water services within proximity, as well as the proposed services infrastructure.

2.2 Project Description

The Project will comprise the following:

- excavation/trenching for main services alignment (approx. 155 x 0.8 x 0.8 m) between existing Riverside watermain and Athol watermain;
- excavation/trenching for two (2) pipe laterals off main services alignment;
- installation of PVC water main pipeline (150 millimetres (mm) diameter) and 32 mm HDPE electrical conduit;
- installation of two (2) pipe laterals (100 mm diameter), including two (2) fire hydrants and end caps;
- backfilling trench with sand, compacted crushed rock and reinstatement of pavement with asphalt; and
- site rehabilitation and stabilisation.

2.3 Construction Details 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 located within Diggings Terrace, accessible via Friday Drive (western entrance) and Banjo Drive (eastern entrance).
Disturbance footprint	Approximately 128 m^2.
Construction Program and Activities	Pre-construction activities will comprise establishment of site signage, traffic controls (i.e. single lane closure) and flagging/fencing of construction corridor. The construction program will comprise of the following: • excavation/trenching for services infrastructure/pipeline (150 x 0.8 x 0.8 m) from Riverside watermain connection to Athol Lodge watermain connection in five (5) 31 m sections; • excavation/trenching for the two (2) pipe laterals; • installation of 150 mm PVC water main pipeline and 32 mm HDPE electrical conduit; • installation of two (2) 100 mm pipe laterals, including two (2) fire hydrants and end caps; • survey data of the main location, joins and lateral end caps will be taken and saved for village services records; • the village water supply will be turned off for the connection of the main on each end (the downstream Riverside end will be connected first, followed by the upstream Athol Lodge end); • backfilling and compaction of trench, comprising fill sand and crushed gravel over the new pipeline; • stabilisation/reinstatement of the road which will include a layer of road base and sealing with asphalt; and • rehabilitation of excavations for the pipe laterals which will include application of straw, grass seed and pinning of jute mesh across disturbed areas.
Machinery, Plant and Equipment	Construction vehicles and plant will include (but is not limited to): • 4WD vehicles and utilities; • 20T Excavator; • tipper truck; • delivery trucks.
Stockpiles	No temporary stockpiles will be required in the construction corridor. All excavated materials will be loaded directly onto a truck and placed within Thredbo's main stockpile locations identified in **Appendix A**. Access to these locations will be restricted to KT staff and contractors. 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).
Site Facilities and Temporary Structures	Existing amenities (toilets) will be available for construction staff on the Village Green. There will be no temporary structures erected for these works. First aid equipment will be located within site vehicles.
Project Timing	The anticipated timing for construction commencement is in early October 2022. Construction works are expected to be completed within a two (2) week period. Working hours for the Project will be from 7am to 5pm, Monday to Friday, or as stipulated in the conditions of consent.

3 Environmental Management

3.1 Key Contacts and Roles

Key contacts for the Project are provided in **Table 2**. Prior to commencement of works, contact details will be updated for Project personnel.

Table 2: Key Personnel

Contact	Role	Contact
Key Project Personnel		
Euan Diver	KT Environmental Services Manager	-
Kyra O'Sullivan	KT Environmental Engineer (Project Manager)	-
Phillip Hannam	Construction Contractor	-
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		

It will be the responsibility of the Project Manager to ensure that the SEMP is made available, communicated and maintained by all project staff. Environmental protection is the responsibility of all project staff.

3.2 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. 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 3**.

Table 3: Summary of Consultation Activities

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

	In-writing notifications to Government Departments / Agencies and relevant parties (e.g. commencement of construction, notification of non-compliances, details of pollution incidents)	As required
	Notification to surrounding tourist accommodation / lots on both sides of Diggings Terrace.	Prior to commencement of works
	Notification of road closures to greater Thredbo Village and Staff.	Prior to commencement of works

3.3 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;
- threats to property or life;
- criminal activity e.g. you have witnessed a serious crime or accident;
- underground services breaks; 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 4.1**. Contact details for key Project personnel and emergency services are provided in **Table 2**.

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

3.4 Mitigation and Management Measures

To mitigate and manage potential project environmental impacts, the following environmental management activities and controls will be implemented.

3.4.1 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 this SEMP;
- 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.

3.4.2 Soil and Water Quality

Table 4: Soil and Water Quality Management

Soil and Water Quality Management	
Objective	• Minimise potential impacts to receiving waters; and • Reduce the potential for erosion and sediment moving offsite.
Mitigation Measures	**General** • Site access points will be appropriately managed to minimise the risk of sediment being tracked onto sealed, public roadways; • Where required, drainage, erosion and sediment controls to be designed and installed in accordance with *Managing Urban Stormwater: Soils and Construction, Volume 1, 4th Edition* (Landcom 2004); and • All erosion and sediment control measures are to be checked regularly to ensure they remain in good working order at all times (e.g. prior to forecast rain, daily during extended periods of rainfall and after significant rainfall events); • Implement erosion controls such as bunding/straw bales if unexpected project delays delay backfilling; and • Postpone initial excavation works if significant rain is forecast. **Trenching** • Ensure trench depths and widths are the minimum necessary; • Leave excavations open for the minimum practical time; • The maximum length of pipeline to remain open overnight is approximately 75 metres (m); • Divert surface water away from trench openings; • Reduce water flow in the trenches by installing trench breakers; • 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. **Soil and Stockpile Management** • Any excess excavated material will be removed from site and transported to the designated soil stockpiles sites identified in **Appendix A**; and • All stockpiles will be constructed and managed in accordance with Soil Stockpile Guidelines. **Site Stabilisation and Rehabilitation** • Progressive rehabilitation of disturbed areas; • Backfill and reseal the road surface soon as possible following works to prevent the migration of sediment; • Revegetation of the two lateral trenches towards Lot 768 to occur immediately after backfilling to encourage reestablishment of grass;

	• All straw bales used for mulching must be certified as weed free; and • All ESC measures will remain in place until all exposed areas of soil are stabilised.
Performance Criteria	• No significant sediment deposition observed leaving site by runoff or by vehicle tyres.
Corrective Actions	• If sediment is observed leaving site, identify the source and amend or introduce further sediment controls.

3.4.3 Flora and Fauna

No conservation significant flora or fauna species have been identified within the site. The site is heavily disturbed, with very limited suitable habitat.

Lot 768 (adjacent to the main works area) is predominately cleared and disturbed currently supporting a mix of native and exotic species as well as a small grove of Eucalypts to the east. The Lot has been actively maintained as a firebreak for a number of years. The open nature of the lot provides limited suitable breeding habitat, however the short grass can provide foraging habitat for native fauna such as kangaroos and wallabies.

Table 5: Flora and Fauna Management

Flora and Fauna Management	
Objective	• Minimise potential impacts to native flora and fauna; and • Minimise the introduction of invasive species; and • Reduce risk of introducing invasive pest species.
Mitigation Measures	• Construction works will be confined to the construction corridor; • No native vegetation (trees and shrubs) clearing is to occur; • Maintain a clean and tidy work area to ensure animals are not attracted to the site; and • Works must be conducted such that fauna feeding on the nearby Lot 768 are not placed at any risk. **Biosecurity** • 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) 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 restricted to the designated disturbed areas within the construction corridor on the village green; and • Local mulch will be weed-free in accordance with the requirements of the *Rehabilitation Guidelines for the Resort Areas of Kosciuszko National Park* (NPWS 2007).
Performance Criteria	• No death or injury to fauna as a result of on-site activities; • No disturbance outside the immediate construction area; and • No introduction of invasive species as a result of construction activities.
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; and • Review existing biosecurity procedures (e.g. clean down procedure) and implement additional controls if required.

3.4.4 Waste and Hazardous Substances

The following waste streams will be generated during the Project:

- general solid waste (putrescible) e.g. bin litter, food waste from construction staff; and
- general solid waste (non-putrescible) e.g. plastic, paper, carboard, crushed road seal, excavated fill, pip cap fittings, asphalt waste.

The following waste receptacles / stockpile locations 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; and
- KT's waste transfer facility / stockpile locations at the top carpark (materials to be segregated for re-use, including excavated fill and asphalt waste).

Any waste that cannot be re-used within the resort will be transported off-site by a licence contractor and disposed of at the Jindabyne Landfill.

Table 6: Waste and Hazardous Substances Management

Waste and Hazardous Substances 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 e.g. any unused fittings which result from the new pipeline or tee configurations will be kept by KT for reuse on other projects.; • All waste will be separated into waste stream and contained within appropriate receptacles and disposed in accordance with EPA guidelines; • Refuelling procedures to be implemented to minimise spills of fuel products; and • All storage of petroleum products, oils or chemicals to be in accordance with Australian Standards.
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; and • Review on-site waste handling facilities and implement corrective actions.

3.4.5 Noise and Vibration

Table 7: Noise and Vibration Management

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 (7am-5pm, Mon-Fri); • Appropriate noise management strategies (such as no idling) 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; and • 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. change work hours to minimise noise.

3.4.6 Air Quality

Table 8: Air Quality Management

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 area of soil disturbance; and • Plant and equipment to be maintained and operated in an efficient manner to reduce air pollution.
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.

3.4.7 Traffic and Pedestrians

Traffic and pedestrians will need to be actively controlled and managed for the duration of the works. The two-way traffic will need to be diverted to one lane of traffic and actively managed by Thredbo Village Crew. The southern lane will be closed throughout the works.

Table 9: Traffic and Pedestrian Management

Traffic and Pedestrian Management	
Objective	• Minimise potential impacts to the existing road network; • Ensure the safety of workers, pedestrians and road users.
Mitigation Measures	• Traffic and construction vehicle access will be managed as per the project Traffic Management Plan; • Two-way traffic will continue on the northern lane with the use of traffic lights as per the Traffic Management Plan; and • Pedestrian traffic to be rerouted via signage along the northern lane.
Performance Criteria	• No significant impacts to existing road network or users; and • No complaints in relation to traffic or vehicle operators.
Corrective Actions	If complaints are received, traffic management procedures will be reviewed and amended (if necessary).

3.4.8 Cultural Heritage

Table 10: Cultural Heritage Management

Cultural Heritage Management	
Objective	Minimise potential impacts on places and objects of cultural heritage significance
Mitigation Measures	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.

4 Monitoring

The Project Manager will conduct monitoring during all project phases (pre-construction, during construction and post-construction) to ensure compliance with this SEMP. This monitoring will occur during daily site meetings and inspections for each day of the Project.

4.1 Environmental Incidents Reporting

All incidents and near misses will be managed in accordance with KT's *Construction site Incident and Emergency Procedures Thredbo Village 2021/2022*. The document provides procedures for responding to incidents and emergences, reporting and notification requirements and emergency contacts.

The following information should be recorded:

- time and date of the incident / near miss;
- a description of the incident / near miss;
- a sequence of events that led to the incident / near miss occurring;
- person/s involved in the incident / near miss (including witnesses);
- written statements from person/s involved (as applicable); and
- details of corrective actions.

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

4.2 Complaints Reporting

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

5 Appendices

Appendix A Site Plans

Scale: 1:674

5.5 2.750 5.5 11 16.5 22 Meters

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

N

THREDBO

SERVICES CONNECTION LOCATION

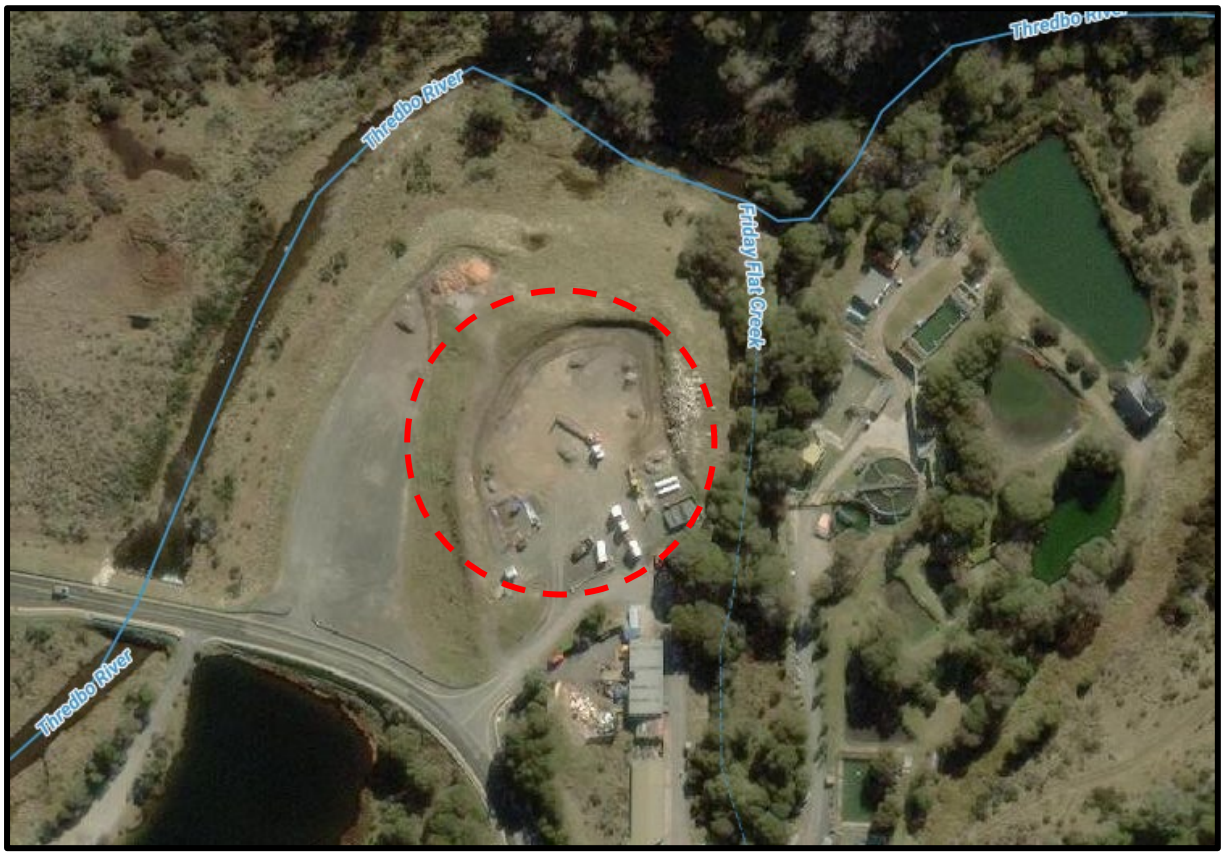
Project: Riverside to Athol Lodge Services Connection

Note: Due to the age of services in the village, locations shown represent our best estimation.

Revision: 4

Date: 23/03/2022

Produced By: KO



Main stockpile location within Thredbo's top carpark

Appendix B Environmental Schedules

Kosciuszko Thredbo Pty Ltd

Environmental Incident Reporting Form

Confidential document after first entry

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

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

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

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

Location of Incident

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

Description of incident

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

Type of incident

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

Environmental Incident Reporting Form

Level of incident

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

Hazardous Material Spilt

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

Type of Spill

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

Immediate Actions

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

Corrective Actions

Detail corrective clean up action taken

……

……

……

……

Disposal

Detail disposal method/plans and location

……

……

……

Recommended follow up and preventative actions

Detail recommendations

……

……

……

Persons present at Incident

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

……

……

Declaration

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

Departmental Supervisors Name	
Departmental Supervisors signature	*Date*

Departmental Managers Name	
Departmental Managers signature	*Date*

Environmental Incident Reporting Form

Diagram: (do not scale)

N

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

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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Appendix D Desktop Search Results

AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : water main upgrade

Client Service ID : 666029

Kosciuszko Thredbo Pty Ltd

Date: 09 March 2022

Po Box 92
Thredbo New South Wales 2625

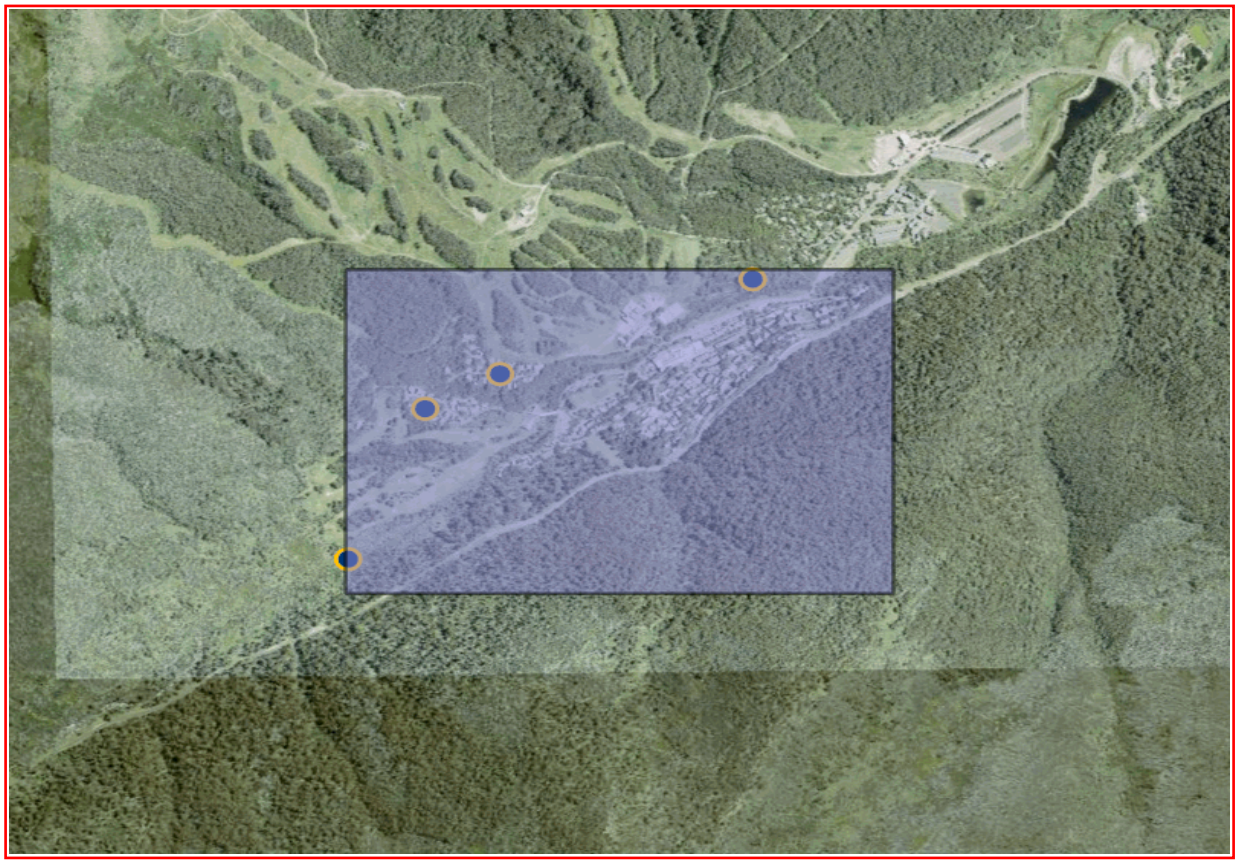
Attention: Chloe Chalk

Email: chloe_chalk@evt.com

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lat, Long From : -36.5109, 148.2955 - Lat, Long To : -36.5023, 148.3109, conducted by Chloe Chalk on 09 March 2022.

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:

4	**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.

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: 15-Mar-2022

- Summary
- Details
  - Matters of NES
  - Other Matters Protected by the EPBC Act
  - Extra Information
- Caveat
- Acknowledgements

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:	28
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
Callocephalon fimbriatum Gang-gang Cockatoo [768]	Endangered	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known 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
Pycnoptilus floccosus Pilotbird [525]	Vulnerable	Species or species habitat known to 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
Petaurus australis australis Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Pseudomys fumeus Smoky Mouse, Konoom [88]	Endangered	Species or species habitat likely to occur within area	In feature area
PLANT			
Argyrotegium nitidulum Shining Cudweed [82043]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
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
Pimelea bracteata [8125]	Critically 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 buffer area only
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 buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thesium australe			
Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat likely to occur within area	In feature area
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

Scientific Name	Threatened Category	Presence Text	Buffer Status
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	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

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area
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

Scientific Name	Threatened Category	Presence Text	Buffer Status
Rhipidura rufifrons			
Rufous Fantail [592]		Species or species habitat known to occur within area overfly marine area	In feature area
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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Department of Agriculture Water and the Environment
GPO Box 858
Canberra City ACT 2601 Australia
+61 2 6274 1111

Appendix E Geotechnical Assessment

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 ☑ Ms ☐ Mrs ☐ Dr ☐ Other ☐

First Name	Family Name
Mark	Bartel

OF

Company/organisation

Asset Geotechnical Engineering Pty Ltd

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

Riverside to Athol Services Connection, Diggings Terrace, Thredbo Village, NSW

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

(List of documentation reviewed)

Gordon Gibson Nominees, Dwg No 1501, Sheets 1 & 2 (dated 4/3/22 & 1/10/20)

Department of Planning and Environment

Issued under the Environmental Planning and Assessment Act 1979

Approved Application No DA 22/5708

Granted on the 12 August 2022

Signed S Butler

Sheet No 4 of 7

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 - Problem site (potential slope instability risks)

- ☑ I have attached design recommendations to be incorporated in the structural design in accordance with this site classification.

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	Chartered professional status
Mark Bartel	CPEng 35641 NER (Civil)
Name	**Date**
Mark Bartel	2 April 2022

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

assetgeoenviro

Suite 2.06 / 56 Delhi Road
North Ryde NSW 2113
02 9878 6005
assetgeoenviro.com.au

Our ref: 6684-G1 Rev 1
2 April 2022

Kosciuszko Thredbo Pty Ltd
PO Box 92
Thredbo NSW 2625

Attention: Mr Euan Diver

Dear Sir,

RIVERSIDE TO ATHOL SERVICES CONNECTION, DIGGINS TERRACE, THREDBO VILLAGE, NSW
GEOTECHNICAL ASSESSMENT

1. Introduction

1.1 General

This report presents the results of a geotechnical assessment for the above project, commissioned by Mr Euan Diver of Kosciuszko Thredbo Pty Ltd (KT) on 1 October 2021.

Documents supplied to us for this assessment comprised:

- Plans by Gordon Gibson Nominees, Drawing No 1501, Sheet 1 (Plan & Details) rev 4 dated March 2022, and Sheet 2 (Details) rev 1 dated October 2000.

This report must be read in conjunction with the attached "Important Information about your Geotechnical Report". Particular attention is drawn to the limitations inherent in site investigations and the importance of verifying the subsurface conditions inferred herein.

1.2 Proposed Development

Based on the supplied documents, we understand the project involves the installation of a new water main along the south-western part of Diggings Terrace between Lots 755 and 768. This will involve:

- excavating trenches not more than 1m deep for the main alignment and laterals
- connecting to existing Athol and Riverside water mains within Lot 755 and the existing road
- laying new water pipes (DN160 HDPE) and 32mm electrical conduit next to the water main
- installation of two fire hydrants on the laterals.

The total length of the pipeline between existing watermains is approximately 155m. The trenches will be approximately 0.8 m wide.

1.3 Scope of Work

The main objectives were to assess the surface conditions and likely subsurface conditions and to provide a geotechnical assessment in accordance with the Department of Infrastructure, Planning and Natural Resources' (DIPNR's) *Geotechnical Policy – Kosciuszko Alpine Resorts (2003)*. The assessment has included:

- Consideration of potential slope instability risk.
- Subgrade preparation.
- Site Classification to AS2870–2011 "Residential Slabs and Footings".
- Suitable footing systems and geotechnical design parameters for the footing systems.

In order to achieve the project objectives, the following scope of work was carried out:

- A review of existing regional maps and reports relevant to the site, held within our files.
- Visual assessment of surface features, from site photos supplied by KT and knowledge of the area gained from numerous site visits.
- Engineering assessment and reporting.

This report must be read in conjunction with the attached "Important Information about your Geotechnical Report" in Appendix A. Attention is drawn to the limitations inherent in site investigations and the importance of verifying the subsurface conditions inferred herein.

2. Site geology & Slope Instability Mapping

The 1:250,000 Tallangatta Geological Map indicates the site is underlain by Silurian aged intrusive granite.

The site lies within the G line as defined in DIPNR's *"Geotechnical Policy – Kosciuszko Alpine Resorts"*, November 2003. Under Section 3.1 (e) of the Geotechnical Policy, a geotechnical report (with respect to slope instability) is not required for minor construction works which present minimal or no geotechnical impact on the site or related land as determined and certified (Form 4) by a geotechnical engineer or engineering geologist as defined by this policy. However, geotechnical design recommendations are to be provided to be incorporated into the structural design in accordance with the Site Classification to AS2870-2011 'Residential Slabs and Footings'.

3. Geotechnical Assessment

The upper slopes of the south-western part of the village closer to Alpine Way are relatively steep ranging from 15º to 45º with some steeper sections, generally milder (typically 15º to 30º) in the mid-section, and milder again (typically less than 20º) in the lower slopes close to Friday Drive. The location of the water main upgrade is within the mid-section. Village development comprises numerous lodges, roads, paths, retaining walls, buried services, and groundwater drainage network.

The proposed trenching will be predominately within the roadway. Trenching for the Athol water main connection and laterals are located on the boundary of adjacent lots.

A specific geotechnical investigation has not been carried out for the proposed development, though an inspection of the route alignment was made by a Senior Principal Geotechnical Engineer from Asset. It is anticipated that the subsurface conditions could include filling associated with the road formation, as well as slope-wash and residual soils, and weathered granite beneath. Groundwater is not expected to be present within the relatively shallow depths of the proposed excavations.

In view of the anticipated variability in the subsurface conditions and ground surface slopes, a site classification of Class P (Problem site) is assessed in accordance with AS 2870. It is noted that this classification is intended for design and construction of residential type structures, which does not apply to the proposed fire hydrant upgrade but is required by DIPNR.

4. Discussions & Recommendations

The excavation for the proposed water main upgrade should be down to a suitable stratum that will provide adequate bearing (vertical for pipework, horizontal for thrust blocks). The excavation depths are expected to be not more than about 1m below ground level. Given the anticipated relatively low loading imposed by the works (i.e. not more than 50kPa), it is expected that the subgrade materials will be suitable. The designer should verify the bearing pressure requirements for pipework, thrust blocks, and anchor blocks, and seek further geotechnical advice if higher bearing pressures are required.

It is recommended that geotechnical inspection of the works be carried out to confirm that the foundation materials have an allowable bearing pressure of not less than 50 kPa. The following may be used as a field guide for suitable soils:

cohesive soils	may be indented by thumb up to about 5 mm with mild effort
granular soils	moderate resistance to shovelling

Further geotechnical advice should be sought if soils with an allowable bearing pressure of less than 50 kPa are encountered in the excavations where the pipework or thrust blocks are located, or a significant proportion (more than about 5% by volume) of organic materials are present within the soil profile. Also, if groundwater is present, excavations should be dewatered, and any softened soils should be removed before pipework and backfill is laid or concrete (for thrust blocks or anchor blocks) is poured.

Possible modifications to the thrust block footing design (in the event where unsuitable foundation materials are encountered) could include:

- deepening the footing excavation to reach suitable foundation materials; or
- widening of the footing excavation (dimensions to be confirmed after assessment of foundation condition).

About slope instability risk considerations, in view of the relatively limited depth of the proposed excavations for the service installation and the location of the works in respect to the site topography, we consider that excavations would not trigger the requirement for a full geotechnical report as required by DPINR's Geotechnical Policy.

5. 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. To confirm the assessed soil properties in this report, further investigation would be required such as invasive investigation or inspections during construction.

This report and details for the proposed development should be submitted to relevant regulatory authorities that have an interest in the property 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.

Please do not hesitate to contact the undersigned if you have any questions regarding this report or if you require further assistance.

For and on behalf of
AssetGeoEnviro

Mark Bartel

Mark Bartel
BE, MEngSc, GMQ, CPEng, RPEQ/NER(Civil), DEP/PRE (NSW)
Managing Director | Senior Principal Geotechnical Engineer

Encl: Site Photos
Important Information about your Geotechnical Report
Explanation Sheets

Document Control

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Site Photos

Photo 1 – view of Diggins Terrace along new water main alignment (north-eastern end, looking south-west).

Photo 2 – view of Diggins Terrace along new water main alignment (approx. mid-way, looking north-east).

Photo 3 – view of Diggins Terrace along new water main alignment (approx. mid-way, looking south-west).

Photo 4 – view of Diggins Terrace along new water main alignment (at south-west end looking north-east).

Important Information about your Geotechnical Report

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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.

Soil and Rock Explanation Sheets (1 of 2)

assetgeoenviro

Log Abbreviations & Notes

METHOD

borehole logs

AS	auger screw *
AD	auger drill *
RR	roller / tricone
W	washbore
CT	cable tool
HA	hand auger
D	diatube
B	blade / blank bit
V	V-bit
T	TC-bit

* bit shown by suffix e.g. ADV

excavation logs

NE	natural excavation
HE	hand excavation
BH	backhoe bucket
EX	excavator bucket
DZ	dozer blade
R	ripper tooth

coring

NMLC, NQ, PQ, HQ

SUPPORT

borehole logs

N	nil
M	mud
C	casing
NQ	NQ rods

excavation logs

N	nil
S	shoring
B	benched

CORE—LIFT

casing installed

barrel withdrawn

NOTES, SAMPLES, TESTS

D	disturbed
B	bulk disturbed
U50	thin-walled sample, 50mm diameter
HP	hand penetrometer (kPa)
SV	shear vane test (kPa)
DCP	dynamic cone penetrometer (blows per 100mm penetration)
SPT	standard penetration test
N*	SPT value (blows per 300mm)
	* denotes sample taken
Nc	SPT with solid cone
R	refusal of DCP or SPT

USCS SYMBOLS

GW	Gravel and gravel-sand mixtures, little or no fines.
GP	Gravel and gravel-sand mixtures, little or no fines, uniform gravels
GM	Gravel-silt mixtures and gravel-sand-silt mixtures.
GC	Gravel-clay mixtures and gravel-sand-clay mixtures.
SW	Sand and gravel-sand mixtures, little or no fines.
SP	Sand and gravel sand mixtures, little or no fines.
SM	Sand-silt mixtures.
SC	Sand-clay mixtures.
ML	Inorganic silt and very fine sand, rock flour, silty or clayey fine sand or silt with low plasticity.
CL, CI	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays.
OL	Organic silts
MH	Inorganic silts
CH	Inorganic clays of high plasticity.
OH	Organic clays of medium to high plasticity, organic silt
PT	Peat, highly organic soils.

MOISTURE CONDITION

D	dry
M	moist
W	wet
Wp	plastic limit
Wl	liquid limit

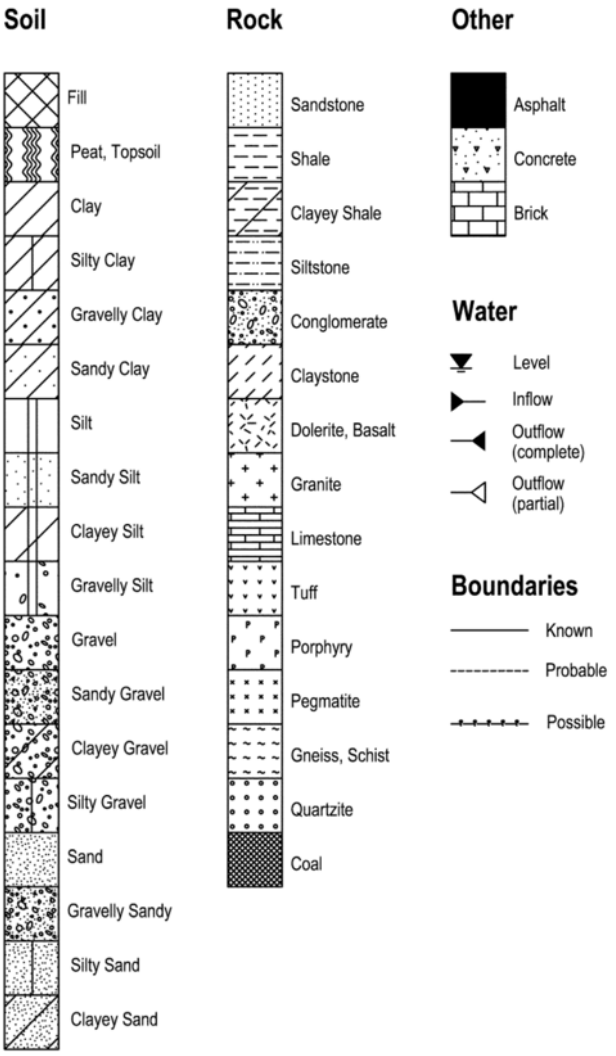
CONSISTENCY

VS	very soft
S	soft
F	firm
St	stiff
VSt	very stiff
H	hard
Fb	friable

DENSITY INDEX

VL	very loose
L	loose
MD	medium dense
D	dense
VD	very dense

Graphic Log



WEATHERING

XW	extremely weathered
HW	highly weathered
MW	moderately weathered
SW	slightly weathered
FR	fresh

STRENGTH

VL	very low
L	low
M	medium
H	high
VH	very high
EH	extremely high

RQD (%)

$$= \frac{\text{sum of intact core pieces > 2 x diameter}}{\text{total length of core run drilled}} \times 100$$

DEFECTS:

type

JT	joint
PT	parting
SZ	shear zone
SM	seam

coating

cl	clean
st	stained
ve	veneer
co	coating

shape

pl	planar
cu	curved
un	undulating
st	stepped
ir	irregular

roughness

po	polished
sl	slickensided
sm	smooth
ro	rough
vr	very rough

inclination

measured above axis and perpendicular to core

Soil and Rock Explanation Sheets (2 of 2)

assetgeoenviro

AS1726-2017

Soils and rock are described in the following terms, which are broadly in accordance with AS1726-2017.

Soil

MOISTURE CONDITION

Term	Description
Dry	Looks and feels dry. Fine grained and cemented soils are hard, friable or powdery. Uncemented coarse grained soils run freely through hand.
Moist	Soil feels cool and darkened in colour. Fine grained soils can be moulded. Coarse soils tend to cohere.
Wet	As for moist, but with free water forming on hand.

Moisture content of cohesive soils may also be described in relation to plastic limit (W_P) or liquid limit (W_L) [>> much greater than, > greater than, < less than, << much less than].

CONSISTENCY OF FINE-GRAINED SOILS

Term	Su (kPa)	Term	Su (kPa)
Very soft	< 12	Very Stiff	>100 – ≤200
Soft	>12 – ≤25	Hard	> 200
Firm	>25 – ≤50	Friable	–
Stiff	>50 – ≤100		

RELATIVE DENSITY OF COARSE-GRAINED SOILS

Term	Density Index (%)	Term	Density Index (%)
Very Loose	< 15	Dense	65 – 85
Loose	15 – 35	Very Dense	>85
Medium Dense	35 – 65		

PARTICLE SIZE

Name	Subdivision	Size (mm)
Boulders		> 200
Cobbles		63 – 200
Gravel	coarse	19 – 63
	medium	6.7 – 19
	fine	2.36 – 6.7
Sand	coarse	0.6 – 2.36
	medium	0.21 – 0.6
	fine	0.075 – 0.21
Silt & Clay		< 0.075

MINOR COMPONENTS

Term	Proportion by Mass: *coarse grained*	*fine grained*
Trace	≤ 15%	≤ 5%
With	>15% – ≤30%	>5% – ≤12%

SOIL ZONING

Layers	Continuous across exposures or sample.
Lenses	Discontinuous, lenticular shaped zones.
Pockets	Irregular shape zones of different material.

SOIL CEMENTING

Weakly	Easily broken up by hand pressure in water or air.
Moderately	Effort is required to break up by hand in water or in air.

USCS SYMBOLS

Symbol	Description
GW	Gravel and gravel-sand mixtures, little or no fines.
GP	Gravel and gravel-sand mixtures, little or no fines, uniform gravels.
GM	Gravel-silt mixtures and gravel-sand-silt mixtures.
GC	Gravel-clay mixtures and gravel-sand-clay mixtures.
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CL, CI	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays.
OL	Organic silts
MH	Inorganic silts
CH	Inorganic clays of high plasticity.
OH	Organic clays of medium to high plasticity, organic silt
PT	Peat, highly organic soils.

Rock

SEDIMENTARY ROCK TYPE DEFINITIONS

Rock Type	Definition (more than 50% of rock consists of …..)
Conglomerate	... gravel sized (>2mm) fragments.
Sandstone	... sand sized (0.06 to 2mm) grains.
Siltstone	... silt sized (<0.06mm) particles, rock is not laminated.
Claystone	... clay, rock is not laminated.
Shale	... silt or clay sized particles, rock is laminated.

LAYERING

Term	Description
Massive	No layering apparent.
Poorly Developed	Layering just visible. Little effect on properties.
Well Developed	Layering distinct. Rock breaks more easily parallel to layering.

STRUCTURE

Term	Spacing (mm)	Term	Spacing
Thinly laminated	<6	Medium bedded	200 – 600
Laminated	6 – 20	Thickly bedded	600 – 2,000
Very thinly bedded	20 – 60	Very thickly bedded	> 2,000
Thinly bedded	60 – 200		

STRENGTH (NOTE: Is50 = Point Load Strength Index)

Term	Is50 (MPa)	Term	Is50 (MPa)
Extremely Low	<0.03	High	1.0 – 3.0
Very low	0.03 – 0.1	Very High	3.0 – 10.0
Low	0.1 – 0.3	Extremely High	>10.0
Medium	0.3 – 1.0		

WEATHERING

Term	Description
Residual Soil	Material is weathered to an extent that it has soil properties. Rock structures are no longer visible, but the soil has not been significantly transported.
Extremely …..	Material is weathered to the extent that it has soil properties. Mass structures, material texture & fabric of original rock is still visible.
Highly …..	Rock strength is significantly changed by weathering; rock is discolored, usually by iron staining or bleaching. Some primary minerals have weathered to clay minerals.
Moderately …..	Rock strength shows little or no change of strength from fresh rock; rock may be discolored.
Slightly …..	Rock is partially discolored but shows little or no change of strength from fresh rock.
Fresh	Rock shows no signs of decomposition or staining.

DEFECT DESCRIPTION

Type	
Joint	A surface or crack across which the rock has little or no tensile strength. May be open or closed.
Parting	A surface or crack across which the rock has little or no tensile strength. Parallel or sub-parallel to layering/bedding. May be open or closed.
Sheared Zone	Zone of rock substance with roughly parallel, near planar, curved or undulating boundaries cut by closely spaced joints, sheared surfaces or other defects.
Seam	Seam with deposited soil (infill), extremely weathered insitu rock (XW), or disoriented usually angular fragments of the host rock (crushed).
Shape	
Planar	Consistent orientation.
Curved	Gradual change in orientation.
Undulating	Wavy surface.
Stepped	One or more well defined steps.
Irregular	Many sharp changes in orientation.
Roughness	
Polished	Shiny smooth surface.
Slickensided	Grooved or striated surface, usually polished.
Smooth	Smooth to touch. Few or no surface irregularities.
Rough	Many small surface irregularities (amplitude generally <1mm). Feels like fine to coarse sandpaper.
Very Rough	Many large surface irregularities, amplitude generally >1mm. Feels like very coarse sandpaper.
Coating	
Clean	No visible coating or discolouring.
Stained	No visible coating but surfaces are discolored.
Veneer	A visible coating of soil or mineral, too thin to measure; may be patchy
Coating	Visible coating =1mm thick. Thicker soil material described as seam.