



APPENDIX **R**

**SOCIAL  
ASSESSMENT**







# Social assessment

Exploratory Works for Snowy 2.0

Prepared for Snowy Hydro Limited  
July 2017





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## Social Assessment

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Prepared for Snowy Hydro Limited | 13 July 2018

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## Social Assessment

Final

Report J17188RP1 | Prepared for Snowy Hydro Limited | 13 July 2018

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Date	13 July 2018	13 July 2018	Date	13 July 2018

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# 1 Introduction

## 1.1 The project

Snowy Hydro Limited (Snowy Hydro) proposes to develop Snowy 2.0, a large scale pumped hydro-electric storage and generation project which would increase hydro-electric capacity within the existing Snowy Mountains Hydro-electric Scheme (Snowy Scheme). This would be achieved by establishing a new underground hydro-electric power station that would increase the generation capacity of the Snowy Scheme by almost 50%, providing an additional 2,000 megawatts (MW) generating capacity, and providing approximately 350,000 megawatt hours (MWh) of storage available to the National Electricity Market (NEM) at any one time, which is critical to ensuring system security as Australia transitions to a decarbonised NEM. Snowy 2.0 will link the existing Tantangara and Talbingo reservoirs within the Snowy Scheme through a series of underground tunnels and hydro-electric power station.

Snowy 2.0 has been declared to be State significant infrastructure and critical State significant infrastructure (CSSI) by the NSW Minister for Planning under the provisions of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) and is defined in Clause 9 of Schedule 5 of the *State Environmental Planning Policy (State and Regional Development) 2011* (SRD SEPP). Separate applications and environmental impact statements (EIS) for different phases of Snowy 2.0 are being submitted under Part 5, Division 5.2 of the EP&A Act. This technical assessment has been prepared to support an EIS for Exploratory Works to undertake investigative works to gather important technical and environmental information for the main Snowy 2.0 project. The main project will be subject of a separate application and EIS next year.

The purpose of Exploratory Works for Snowy 2.0 is primarily to gain a greater understanding of the conditions at the proposed location of the power station, approximately 850 metres (m) below ground level. Understanding factors such as rock conditions (such as stress conditions) and ground temperature is essential to inform decisions about the precise location of the power station cavern and confirm the cavern construction methods.

Exploratory Works comprises:

- an exploratory tunnel to the site of the underground power station for Snowy 2.0;
- horizontal and other test drilling, investigations and analysis in situ at the proposed cavern location and associated areas, and around the portal construction pad, access roads and excavated rock management areas all within the disturbance footprint;
- a portal construction pad for the exploratory tunnel;
- an accommodation camp for the Exploratory Works construction workforce;
- road works and upgrades providing access and haulage routes during Exploratory Works;
- barge access infrastructure, to enable access and transport by barge on Talbingo reservoir;
- excavated rock management, including subaqueous placement within Talbingo Reservoir;
- services infrastructure such as diesel-generated power, water and communications; and
- post-construction revegetation and rehabilitation, management and monitoring.



## 1.2 Purpose of this report

This social assessment (SA) supports the EIS for the Exploratory Works. It documents the assessment methods and results, the initiatives built into the project design to avoid and minimise associated impacts, to the local community, and the mitigation and management measures proposed to address any residual impacts not able to be avoided.

## 1.3 Location of Exploratory Works

Snowy 2.0 and Exploratory Works are within the Australian Alps, in southern NSW. The regional location of Exploratory Works is shown on Figure 1.1. Snowy 2.0 is within both the Snowy Valleys and Snowy Monaro Regional local government areas (LGAs), however Exploratory Works is entirely within the Snowy Valleys LGA. The majority of Snowy 2.0 and Exploratory Works are within Kosciuszko National Park (KNP). The area in which Exploratory Works will be undertaken is referred to herein as the project area, and includes all of the surface and subsurface elements further discussed in Section 2.1.

Exploratory Works is predominantly in the Ravine region of the KNP. This region is between Talbingo Reservoir to the north-west and the Snowy Mountains Highway to the east, which connects Adaminaby and Cooma in the south-east to Talbingo and Tumut to the north-west of the KNP. Talbingo Reservoir is an existing reservoir that forms part of the Snowy Scheme. The reservoir, approximately 50 kilometres (km) north-west of Adaminaby and approximately 30 km east-north-east of Tumbarumba, is popular for recreational activities such as boating, fishing, water skiing and canoeing.

The nearest large towns to Exploratory Works are Cooma and Tumut. Cooma is approximately one hour and forty five minutes drive (95 km) south-east of Lobs Hole. Tumut is approximately half an hour (45 km) north of Talbingo. There are several communities and townships near the project area including Talbingo, Tumbarumba, Batlow, Cabramurra and Adaminaby. Talbingo and Cabramurra were built for the original Snowy Scheme workers and their families. Adaminaby was relocated to alongside the Snowy Mountains Highway from its original location (now known as Old Adaminaby) in 1957 due to the construction of Lake Eucumbene. Talbingo and Adaminaby provide a base for users of the Selwyn Snow Resort in winter. Cabramurra was modernised and rebuilt in the early 1970s and is owned and operated by Snowy Hydro. It is still used to accommodate Snowy Scheme employees and contractors. Properties within Talbingo are now predominantly privately owned. Snowy Hydro now only owns 21 properties within the town.

Other attractions and places of interest in the vicinity of the project area include Selwyn Snow Resort, the Yarrangobilly Caves complex and Kiandra. Kiandra has special significance as the first place in Australia where recreational skiing was undertaken and is also an old gold rush town.

The project area is shown on Figure 1.2 and comprises:

- **Lobs Hole:** Lobs Hole will accommodate the excavated rock emplacement areas, an accommodation camp as well as associated infrastructure, roads and laydown areas close to the portal of the exploratory tunnel and portal construction pad at a site east of the Yarrangobilly River;
- **Talbingo Reservoir:** installation of barge access infrastructure near the existing Talbingo Spillway, at the northern end of the Talbingo Reservoir, and also at Middle Bay, at the southern end of the reservoir, near the Lobs Hole facilities, and installation of a submarine cable from the Tumut 3 power station to Middle Bay, providing communications to the portal construction pad and accommodation camp. A program of subaqueous rock placement is also proposed;

- **Mine Trail Road** will be upgraded and extended to allow the transport of excavated rock from the exploratory tunnel to sites at Lobs Hole that will be used to manage excavated material, as well as for the transport of machinery and construction equipment and for the use of general construction traffic; and
- several sections of **Lobs Hole Ravine Road** will be upgraded in a manner that protects the identified environmental constraints present near the current alignment.

The project is described in more detail in Chapter 2.

## 1.4 Proponent

Snowy Hydro is the proponent for Exploratory Works. Snowy Hydro is an integrated energy business – generating energy, providing price risk management products for wholesale customers and delivering energy to homes and businesses. Snowy Hydro is the fourth largest energy retailer in the NEM and is Australia’s leading provider of peak, renewable energy.

## 1.5 Assessment guidelines and requirements

This SA has been prepared in accordance with the Secretary’s Environmental Assessment Requirements (SEARs) for Exploratory Works, issued first on 17 May 2018 and revised on 20 June 2018, as well as relevant governmental assessment requirements, guidelines and policies, and in consultation with the relevant government agencies.

The SEARs must be addressed in the EIS.

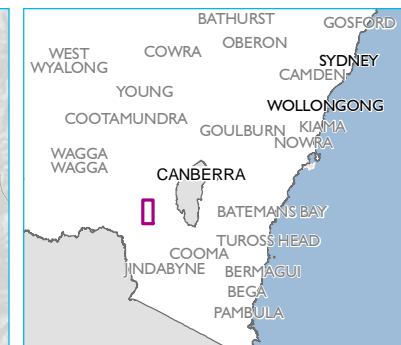
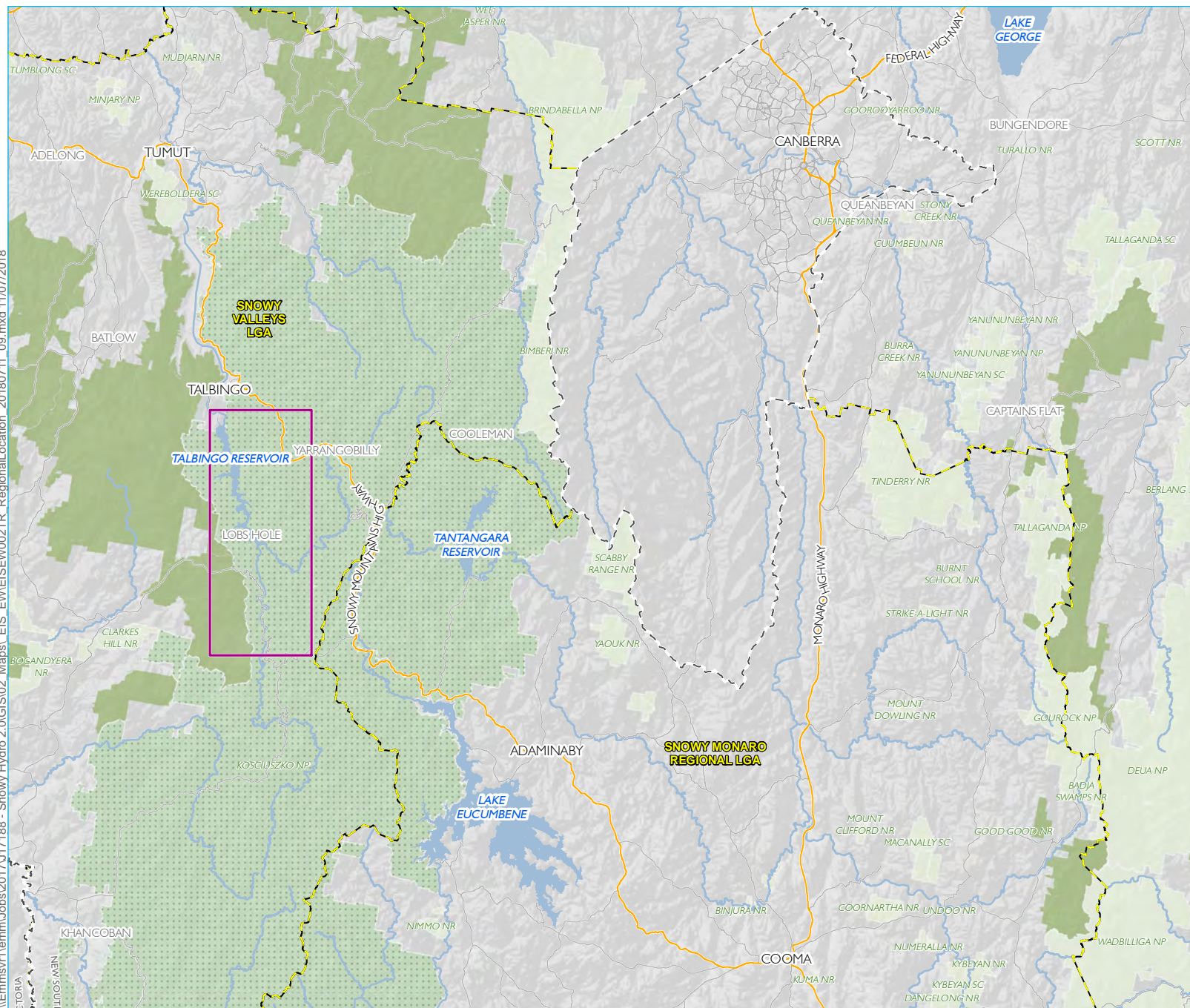
In terms of social impacts, the SEARs state:

**Social & Economic** – including an assessment of the social and economic impacts and benefits of the project for the region and the State as a whole, including consideration of any increase in demand for community infrastructure and services.

This SA addresses the social impacts and benefits of Exploratory Works to the local region, and to the State. It considers whether Exploratory Works increases the demand for community infrastructure and services.

To inform preparation of the SEARs, the Department of Planning and Environment (DPE) invited relevant government agencies to advise on matters to be addressed in the EIS. These matters were taken into account by the Secretary for DPE when preparing the SEARs.

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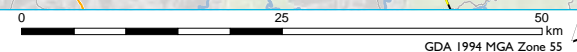


- KEY**
- Exploratory Works project area
  - Main road
  - Local road
  - Watercourse
  - Waterbodies
  - Kosciuszko National Park
  - NPWS reserve
  - State forest
  - Local government area boundary
  - State boundary

Regional location of Snowy 2.0 and Exploratory Works

Snowy 2.0  
Social Assessment  
Exploratory Works  
Figure 1.1

Source: EMM (2018); Snowy Hydro (2018); DFSI (2017); LPMA (2011)







Source: EMM (2018); Snowy Hydro (2018); SMEC (2018); Robert Bird (2018); DFSI (2017); LPMA (2011)

#### KEY

- |  |   |
|--|---|
| <span style="color: orange;">—</span> Exploratory tunnel     | <span style="color: brown;">■</span> On land rock management            |
| <span style="color: red;">- -</span> Access road upgrade     | <span style="color: blue;">■</span> Subaqueous excavated rock placement |
| <span style="color: green;">- -</span> Access road extension | <span style="color: purple;">■</span> Disturbance footprint             |
| <span style="color: yellow;">—</span> Communications cable   | <span style="color: yellow;">■</span> Avoidance footprint               |
| <span style="color: black;">—</span> Main road               |   |
| <span style="color: grey;">—</span> Local road               |   |
| <span style="color: blue;">—</span> Major watercourse        |   |

Exploratory Works project area

Snowy 2.0  
Social Assessment  
Exploratory Works  
Figure 1.2



T:\Jobs\2017\17188 - Snowy Hydro 2.0\GIS\02\_Maps\LEIS\_EW\ISEW033\_ExploratoryWorksProjectArea\_20180703\_05.mxd 11/07/2018





## 2 Project description

### 2.1 Overview

Exploratory Works comprises construction associated with geotechnical exploration for the underground power station for Snowy 2.0. The Exploratory Works elements are shown on Figure 2.1 and involve:

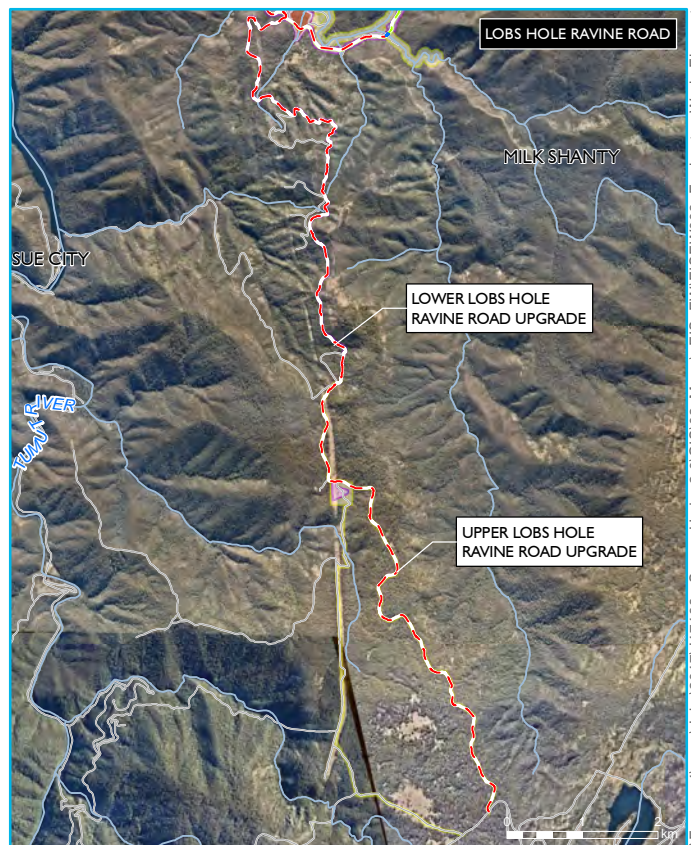
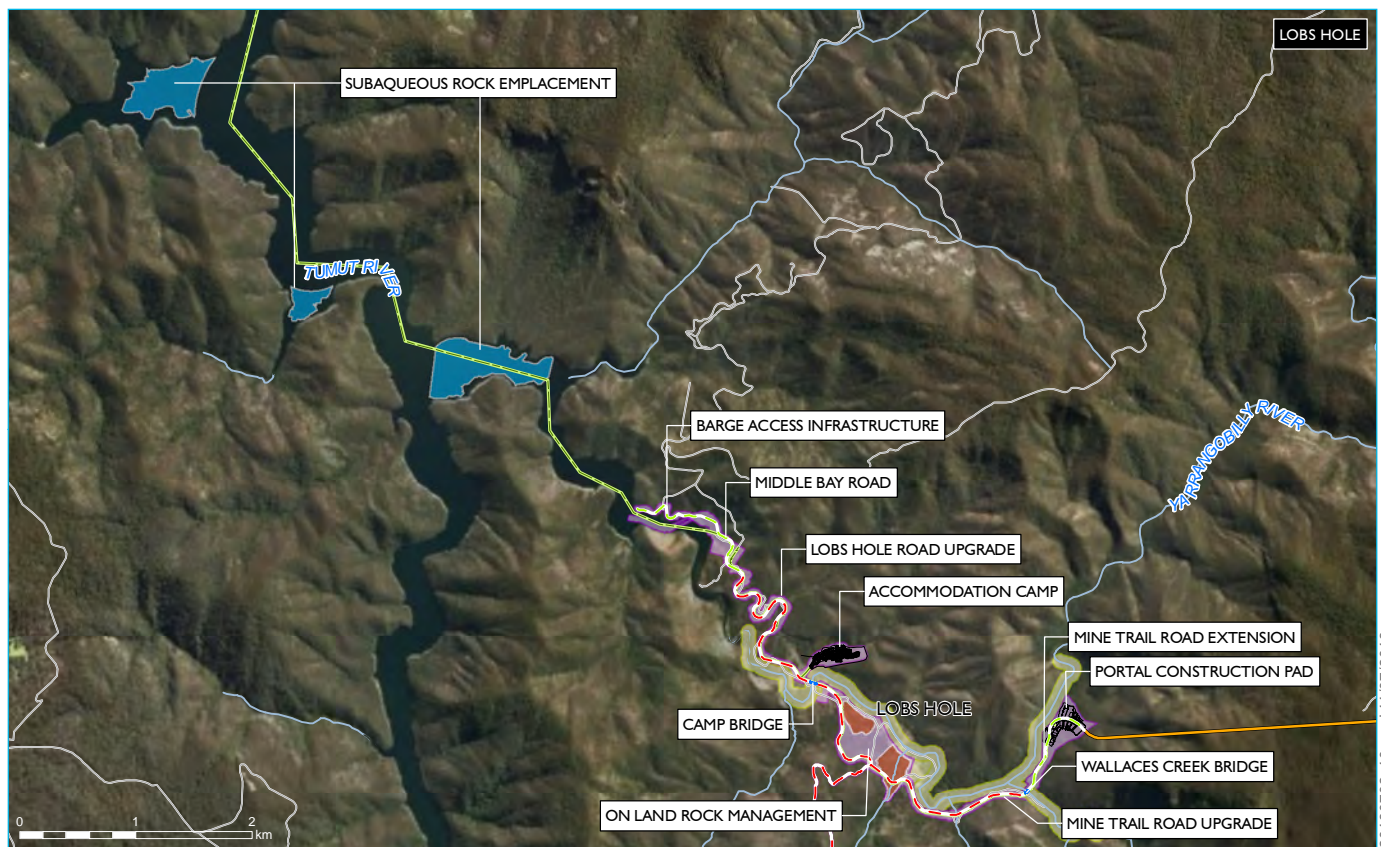
- establishment of an exploratory tunnel to the site of the underground power station for Snowy 2.0;
- horizontal and other test drilling, investigations and analysis in situ at the proposed cavern location and associated areas, and around the portal construction pad, access roads and excavated rock management areas all within the disturbance footprint;
- establishment of a portal construction pad for the exploratory tunnel;
- establishment of an accommodation camp for the Exploratory Works construction workforce;
- road works and upgrades providing access and haulage routes during Exploratory Works;
- establishment of barge access infrastructure, to enable access and transport by barge on Talbingo reservoir;
- excavated rock management, including subaqueous placement within Talbingo Reservoir;
- establishment of services infrastructure such as diesel-generated power, water and communications; and
- post-construction revegetation and rehabilitation, management and monitoring.

### 2.2 Exploratory tunnel

An exploratory tunnel of approximately 3.1 km is proposed to provide early access to the location of the largest cavern (the cavern for the Machine Hall) for the underground hydro-electric power station. This will enable exploratory drilling and help optimise the location of the cavern which, in turn, will optimise the design of Snowy 2.0.

The exploratory tunnel is proposed in the north east section of Lobs Hole and will extend in an east-west direction with the portal construction pad to be outside the western end of the tunnel at a site east of the Yarrangobilly River, as shown on Figure 2.2.

The location of the proposed exploratory tunnel and portal construction pad is indicative and may vary based on the results of further geotechnical investigations, but will be within the envelope shown in Figure 2.2. The exploratory tunnel will be excavated by drill and blast methods and have an 8 x 8 m D-Shaped cross section, as shown on Figure 2.3.



Source: EMM (2018); Snowy Hydro (2018); NearMap (2018); SMEC (2018); Robert Bird (2018); DFSI (2017); LPMA (2011)

GDA 1994 MGA Zone 55

## KEY

- |  |                                    |
|--|------------------------------------|
| — Exploratory tunnel   | — Local road or track              |
| - - Access road upgrade  | — Watercourse                      |
| - - Access road extension  | ■ On land rock management          |
| — Permanent bridge   | ■ Subaqueous rock emplacement area |
| — Portal construction pad and accommodation camp conceptual layout | ■ Disturbance footprint            |
| — Communications cable   | ■ Avoidance footprint              |

## Exploratory Works elements

Snowy 2.0  
Social Assessment  
Exploratory Works  
Figure 2.1





The drill and blast excavation process will be repeated cyclically throughout the tunnelling works, involving:

- marking up and drilling blast holes in a predetermined pattern in the working face of the tunnel;
- loading the blast holes with explosives, attaching detonators and connecting the holes into a blast sequence, and detonating the blast;
- ventilating the tunnel to remove blast fumes and dust;
- removing blasted rock;
- scaling and wash down of the tunnel roof and walls to remove loosened pieces of rock;
- geological mapping of the exposed rock faces and classification of the conditions to determine suitable ground support systems for installation;
- installing ground support; and
- advancing construction ventilation ducting and other utilities including power, water, compressed air and communications.

The exploratory tunnel will be shotcrete-lined with permanent anchor support, and incorporate a groundwater management system. The cross section shape and dimensions are designed to allow two-lane traffic for the removal of excavated material, along with additional space for ventilation and drainage of groundwater inflows. Groundwater intersected during tunnelling will be contained and transferred to the portal for treatment and management. Areas identified during forward probing with the potential for high groundwater flows may require management through a detailed grouting program or similar.

The tunnel portal will be established at the western end of the exploratory tunnel and provide access and utilities to the exploratory tunnel during construction. The portal will house power, communications, ventilation and water infrastructure. The portal will also provide a safe and stable entrance to the exploratory tunnel.

It is anticipated that the exploratory tunnel will be adapted for multiple functions during construction of the subsequent stages of the Snowy 2.0 project. The exploratory tunnel will also eventually be utilized to form the main access tunnel (MAT) to the underground power station during the operational phase of Snowy 2.0, should it proceed.



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- KEY**
- Access road upgrade
  - Access road extension
  - Portal construction pad conceptual layout
  - Exploratory tunnel
  - Permanent bridge
  - Communications cable
  - Watercourse
  - Contour (10m)
  - Contour (100m)
  - Disturbance footprint
  - Avoidance footprint

Exploratory tunnel location

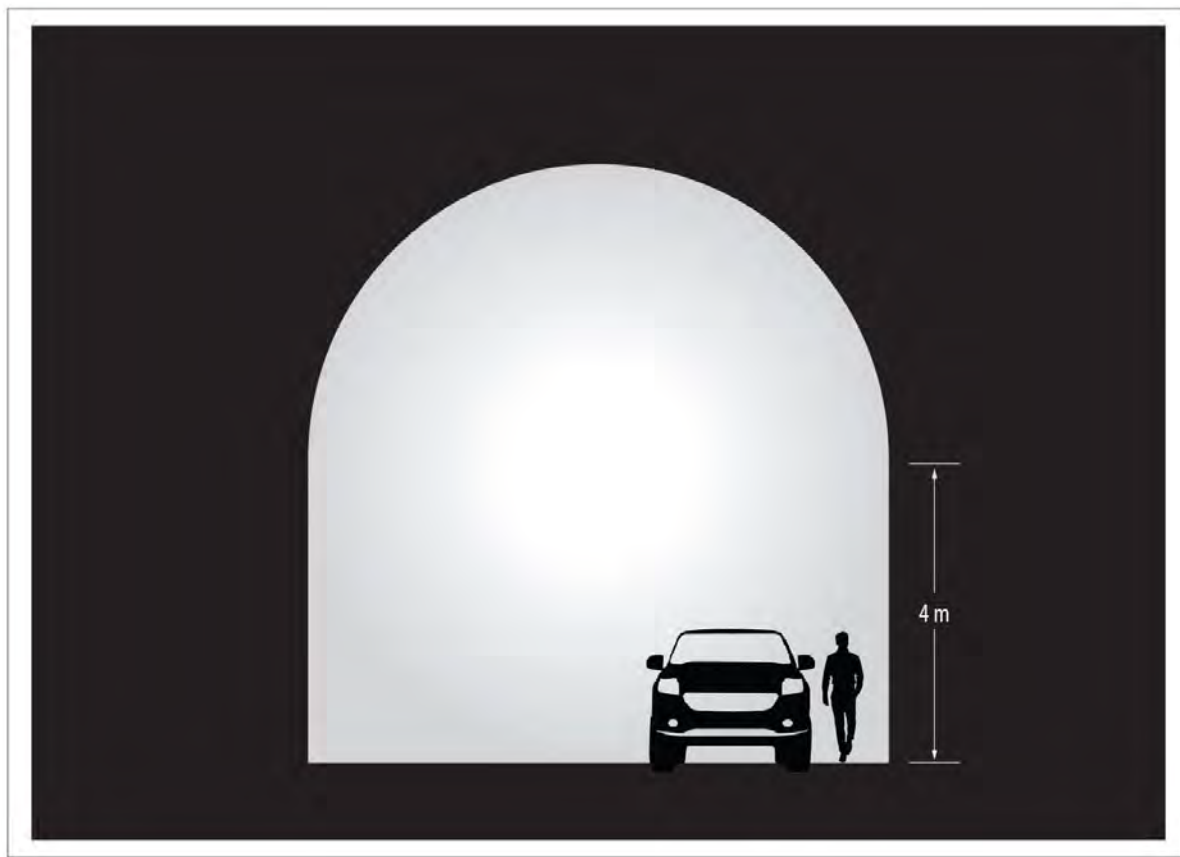
Snowy 2.0  
Social Assessment  
Exploratory Works  
Figure 2.2

Source: EMM (2018); Snowy Hydro (2018); NearMap (2018); Robert Bird (2018); SMEC (2018); DFSI (2017)

0 0.5 1 km  
GDA 1994 MGA Zone 55







**Figure 2.3** Exploratory tunnel cross section

## 2.3 Portal construction pad

A portal construction pad for the exploratory tunnel will provide a secure area for construction activities. Infrastructure at the portal construction pad, shown in Figure 2.4, will primarily support tunnelling activities and include a concrete batching plant and associated stockpiles, site offices, maintenance workshops, construction support infrastructure, car parking, equipment laydown areas. Stockpile areas will allow for around two to three months supply of concrete aggregate and sand for the concrete batching plant to ensure that the construction schedule for the proposed access road works do not interfere with the exploratory tunnel excavation schedule. A temporary excavated rock stockpile area is also required to stockpile material excavated during tunnel construction prior to its transfer to the larger excavated material emplacement areas.

The portal construction pad will be at the western end of the exploratory tunnel. The portal construction pad will be excavated to provide a level construction area with a near vertical face for the construction of the portal and tunnelling. The area required for the portal construction pad is approximately 100,000 m<sup>2</sup>.

## 2.4 Excavated rock management

It is estimated that up to 750,000 m<sup>3</sup> of bulked materials will be excavated, mostly from the exploratory tunnel and portal construction pad with additional quantities from road upgrade works. Subject to geochemical testing of the rock material, excavated rock will be placed either on land or subaqueously within Talbingo Reservoir.



### 2.4.1 On land placement

Excavated materials will be placed in one of two rock emplacement areas at Lobs Hole as shown on Figure 2.5.

The strategy for excavated rock management is for excavated material to be emplaced at two areas with the final placement of excavated material to be determined at a later date.

Consultation with NPWS throughout the design process has identified an opportunity for the eastern emplacement area to form a permanent landform that enables greater recreational use of Lobs Hole following the completion of Snowy 2.0's construction. It is envisaged that the excavated rock emplacement area will provide, in the long-term, a relatively flat final landform suitable for camping and basic recreational facilities to be confirmed in consultation with NPWS.

The eastern emplacement area has a capacity of up to 600,000 m<sup>3</sup> of material. It will be approximately 25 m maximum depth and will be benched down to the northern edge of the emplacement which is setback 50 m from the Yarrangobilly River.

The western emplacement area will be used to store excavated material should it not be able to be placed within the eastern emplacement area. It is envisaged this emplacement area will be used to store excavated materials suitable for re-use within the construction of Exploratory Works or for use by NPWS in KNP maintenance activities. All remaining material placed in this emplacement area will be removed following the completion of Exploratory Works.

The guiding principles for the design, construction method and management of emplacement areas undertaken for Exploratory Works have been as follows:

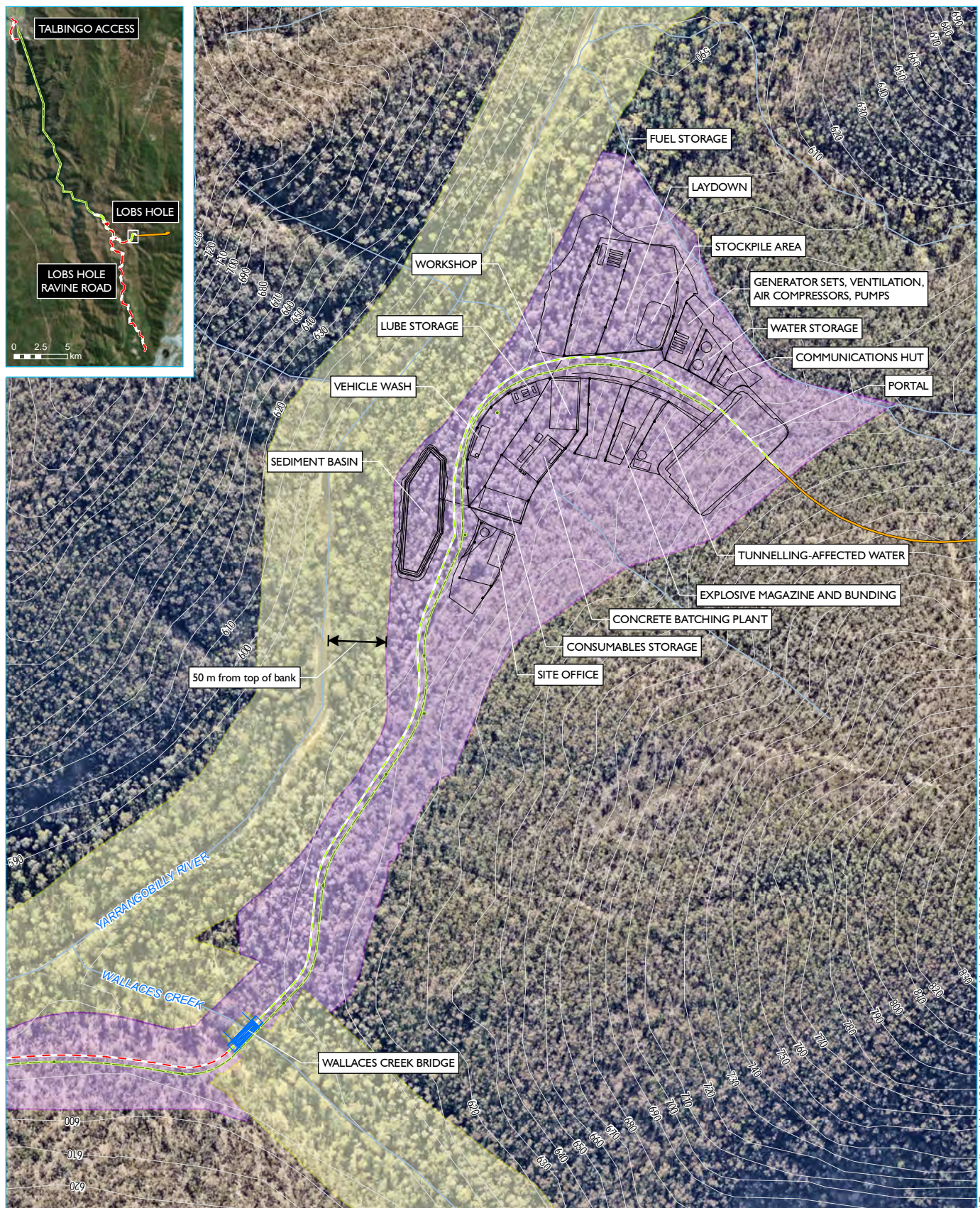
- reducing potential for acid rock drainage from the excavated rock emplacement area entering the Yarrangobilly River or forming groundwater recharge;
- avoid known environmental constraints; and
- manage existing surface water flows from Lick Hole Gully.

The design and management of the emplacement areas have not yet been finalised due to the need for further investigations to determine the likely geochemical characteristics of the excavated material. Following further investigation and prior to construction of Exploratory Works a management plan will be prepared and implemented.

### 2.4.2 Subaqueous placement

An initial program for the placement of excavated rock within Talbingo Reservoir also forms part of Exploratory Works. The program will be implemented in an appropriate section of Talbingo Reservoir in accordance with a detailed management plan based on an engineering method informed through the materials' geochemistry and reservoir's characteristics. The purpose of the program is to confirm the suitability of the emplacement method for future excavated rock material from the construction of Snowy 2.0, should it proceed.





Source: EMM (2018); Snowy Hydro (2018); NearMap (2018); SMEC (2018); Robert Bird (2018); DFSI (2017)

#### KEY

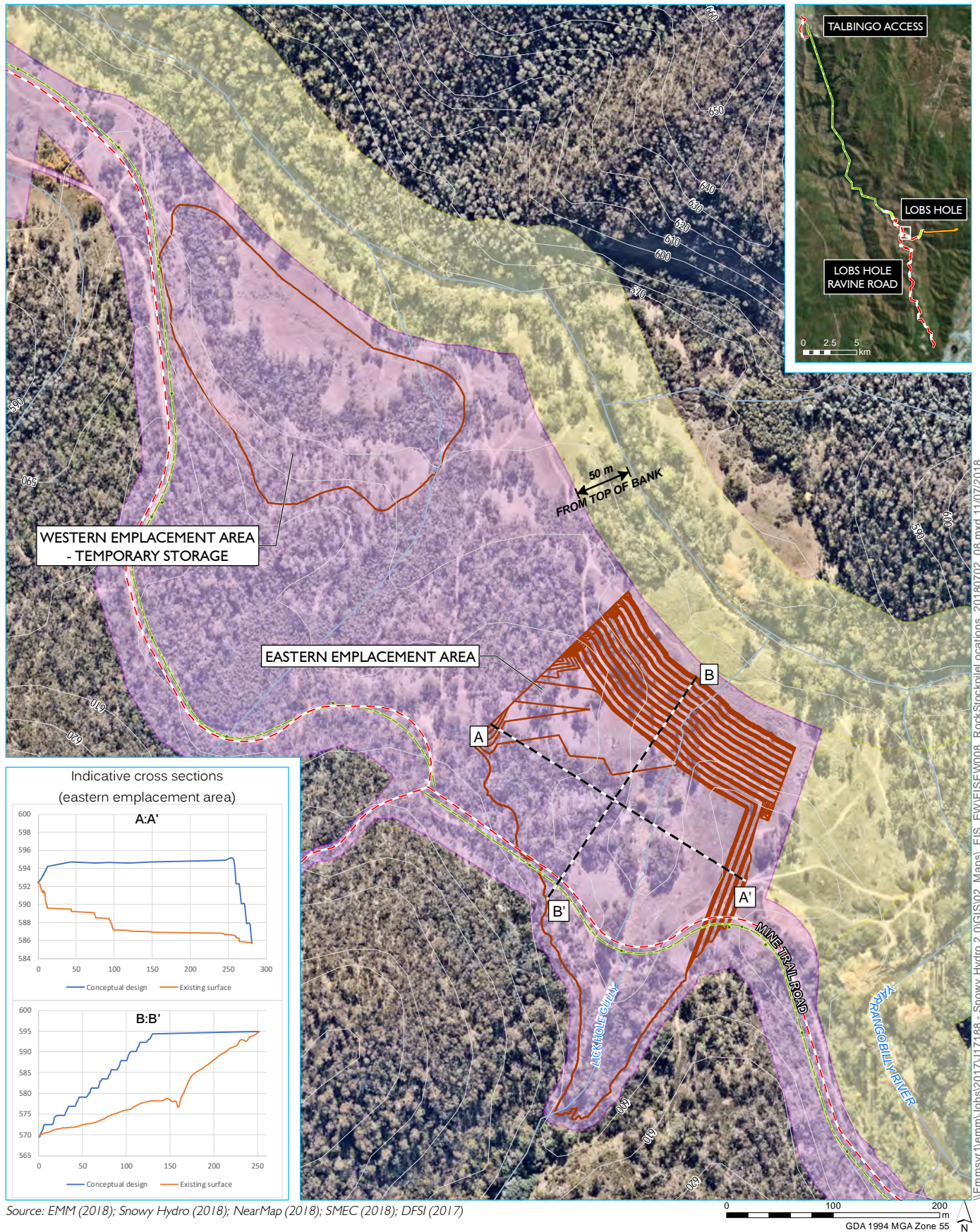
- Access road upgrade
- Access road extension
- Permanent bridge
- Portal construction pad conceptual layout
- Exploratory tunnel
- Communications cable
- Watercourse
- Contour (10m)
- Disturbance footprint
- Avoidance footprint

Conceptual layout – portal construction pad

Snowy 2.0  
Social Assessment  
Exploratory Works  
Figure 2.4







#### KEY

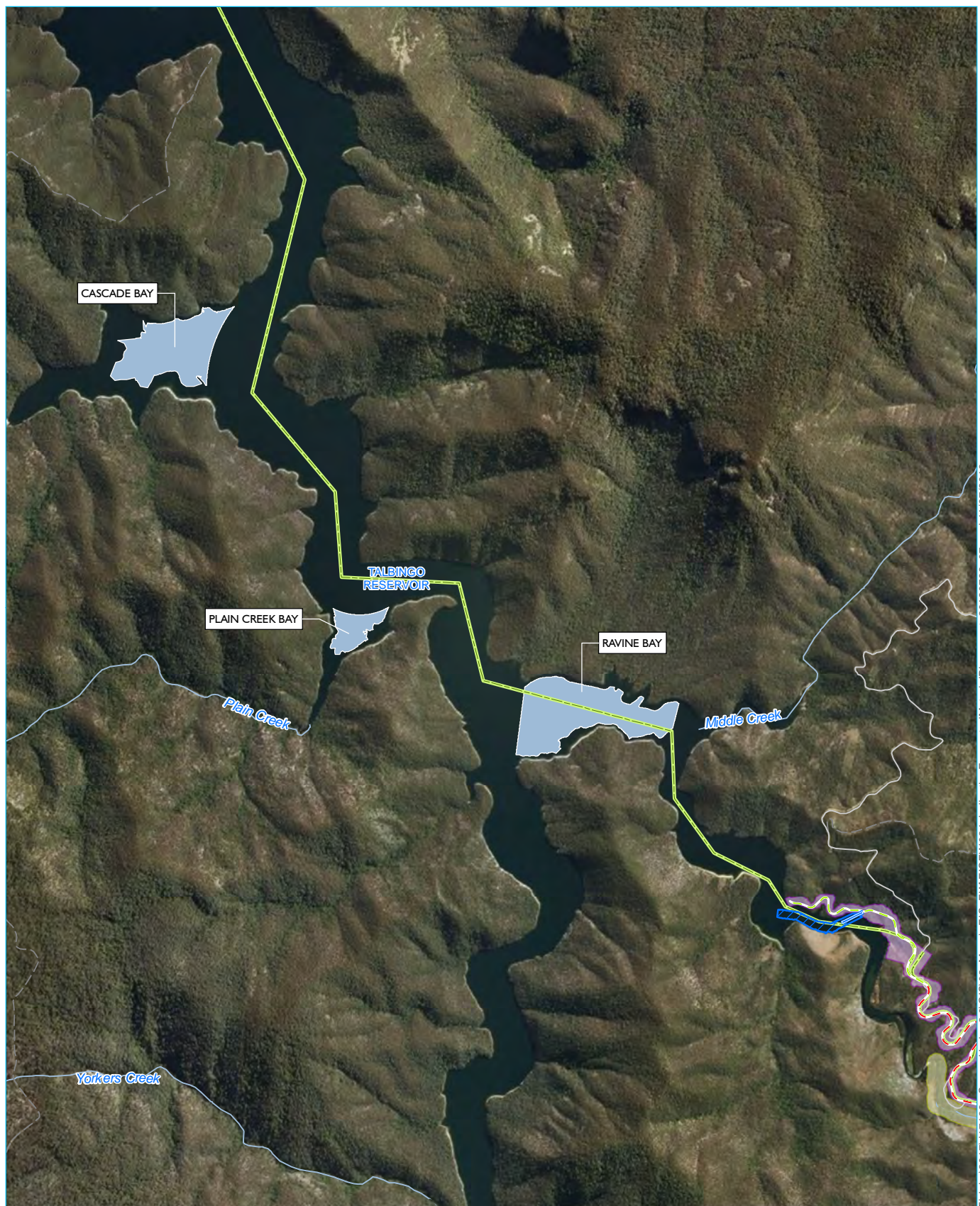
- Cross-section
- Exploratory tunnel
- Access road upgrade
- Access road extension
- Communications cable
- On land rock management
- Watercourse
- Contour (10m)
- Disturbance footprint
- Avoidance footprint

Conceptual layout – excavated material emplacement areas

Snowy 2.0  
Social Assessment  
Exploratory Works  
Figure 2.5







Source: EMM (2018); Snowy Hydro (2018); ESRI (2018); SMEC (2018); DFSI (2018); GA (2017); LPMA (2011)

#### KEY

- - Access road upgrade
- - Access road extension
- - Communications cable
- - Subaqueous rock emplacement
- - Major watercourse
- - Local road
- - Track
- Middle Bay barge access
- ▨ Disturbance area - barge infrastructure
- Disturbance footprint
- Avoidance footprint

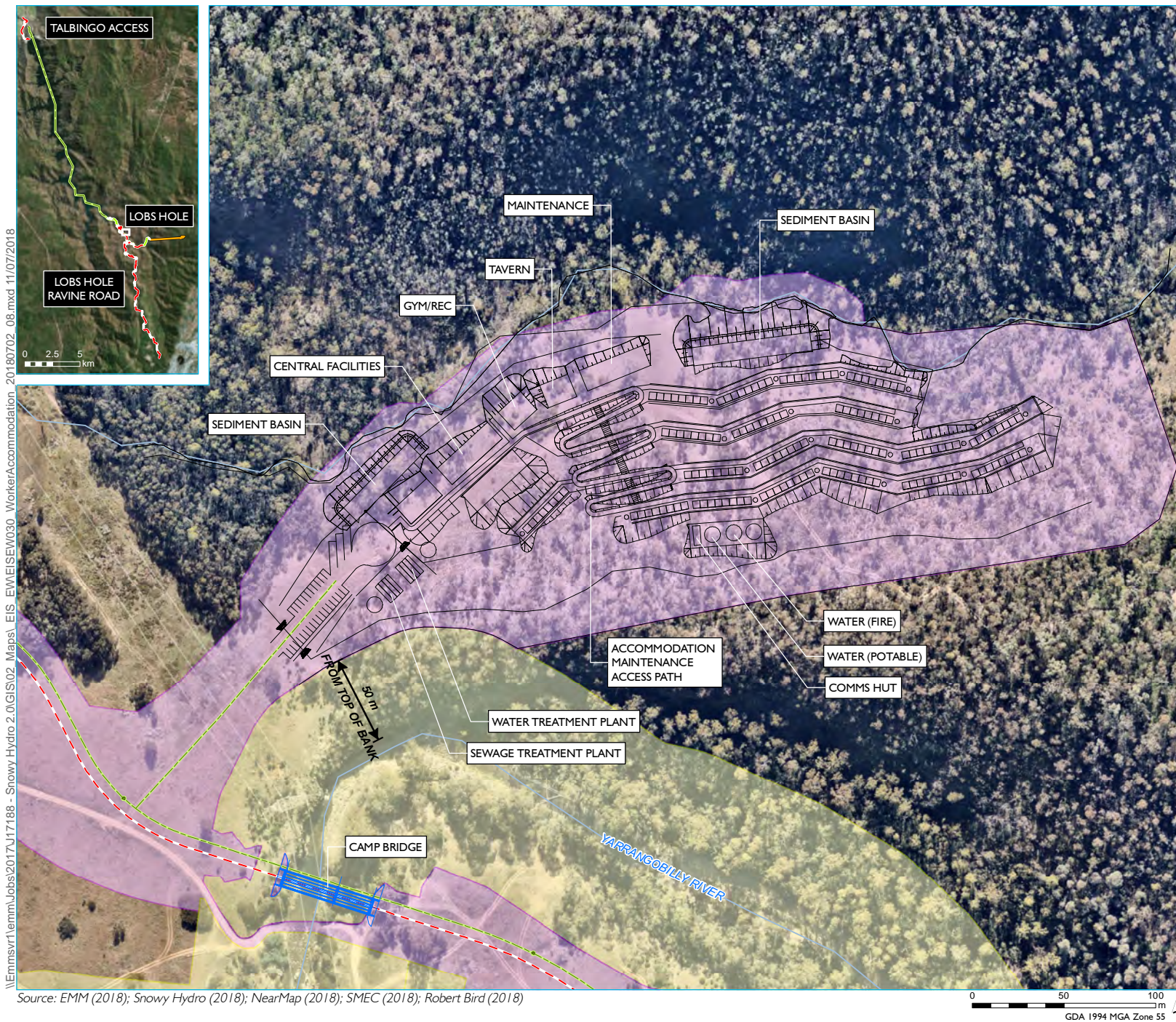
Subaqueous excavated rock placement

Snowy 2.0  
Social Assessment  
Exploratory Works  
Figure 2.6



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- KEY
- Exploratory tunnel
  - Access road upgrade
  - Access road extension
  - Permanent bridge
  - Accommodation camp conceptual layout
  - Communications cable
  - Watercourse
  - Disturbance footprint
  - Avoidance footprint

Conceptual layout –  
accommodation camp

Snowy 2.0  
Social Assessment  
Exploratory Works  
Figure 2.7



The rock for subaqueous placement will be taken from the excavated rock emplacement areas as described above. Testing of the rock would be conducted during excavation to assess geochemical properties. Any rock assessed as unsuitable for subaqueous placement based on the prior geochemical and leachability testing would be separately stockpiled and not used in the program. Suitable (ie non-reactive material) would be transported and loaded to barge, for placement at the deposition area. Suitable placement locations have been identified for Exploratory Works and are shown indicatively on Figure 2.6.

All placement within the reservoir would occur within silt curtains and would be subject to a detailed monitoring regime including survey monitoring of pre-placement and post-placement bathymetry, local and remote background water quality monitoring during placement with a structured management response to monitoring results in the event of an exceedance of established triggers. The management, mitigation and monitoring measures would be refined following the ongoing investigations.

## 2.5 Accommodation camp

An accommodation camp is proposed to provide accommodation and supporting services for workers in close proximity to the exploratory tunnel. The accommodation camp layout is shown on Figure 2.7 and includes ensuite rooms surrounding central facilities including a kitchen, tavern, gym, admin office, laundry, maintenance building, sewage and water treatment plants and parking that will service the Exploratory Works workforce. The accommodation camp access road will connect to the north side of Lobs Hole Road at Lobs Hole. The conceptual layout of the accommodation camp is shown on Figure 2.7.

## 2.6 Road and access provisions

Existing road and access will need to be upgraded to a suitable standard to:

- provide for the transport of excavated rock material between the exploratory tunnel and the excavated rock emplacement areas;
- accommodate the transport of oversized loads as required; and
- facilitate the safe movement of plant, equipment, materials and construction staff to the portal construction pad.

Given the topographic constraints of the area, the standard of the existing roads and the environmental values associated with KNP, the option of barging larger and oversized loads to the site is being considered. This is discussed further at Section 2.7.

### 2.6.1 Access road works

The proposed access road upgrades will be designed based on access for a truck and dog trailer. The proposed road works are shown in Figure 2.8 and described in Table 2.1. It is expected that the majority of materials and equipment will travel along the Snowy Mountains Highway, Link Road and Lobs Hole Ravine Road, with some required to travel on Murray Jackson Drive via Talbingo to Talbingo Dam Wall and be transferred via a barge to site. The primary haul routes for construction material on site are provided in Figure 2.9.

**Table 2.1** Access road works summary

Roadwork area	Overview
Upper Lobs Hole Ravine Road upgrade	Minor upgrades to 7.5 km section of existing road. Only single lane access will be provided. No cut and fill earthworks or vegetation clearing will be undertaken.
Lower Lobs Hole Ravine Road upgrade	Upgrades to 6 km section of existing road involving cut and fill earthworks in some sections. Only single lane access will be provided.
Lobs Hole Road upgrade	Upgrade to 7.3 km section of existing road providing two-way access.
Mine Trail Road upgrade	Upgrade to 2.2 km section of existing track to two-way access.
Mine Trail Road extension	Establishment of a new two-way road providing access to the exploratory tunnel portal.
Middle Bay Road	Establishment of a new two-way road to the proposed Middle Bay barge ramp.
Spillway Road	Upgrade of a 3 km section of existing road to provide two-way access to the proposed Spillway barge ramp.

While no cut and fill earthworks or vegetation clearing is proposed along Upper Lobs Hole Ravine Road, a laydown area is proposed within and adjacent to the existing transmission line easement. This area will be used to store relevant materials required for the road works to the lower section of Lobs Hole Ravine Road.

### 2.6.2 Watercourse crossings

Bridge construction will be required at two locations for the Exploratory Works as described in Table 2.2. The locations of proposed bridge works are shown in Figure 2.9.

**Table 2.2** Watercourse crossing summary

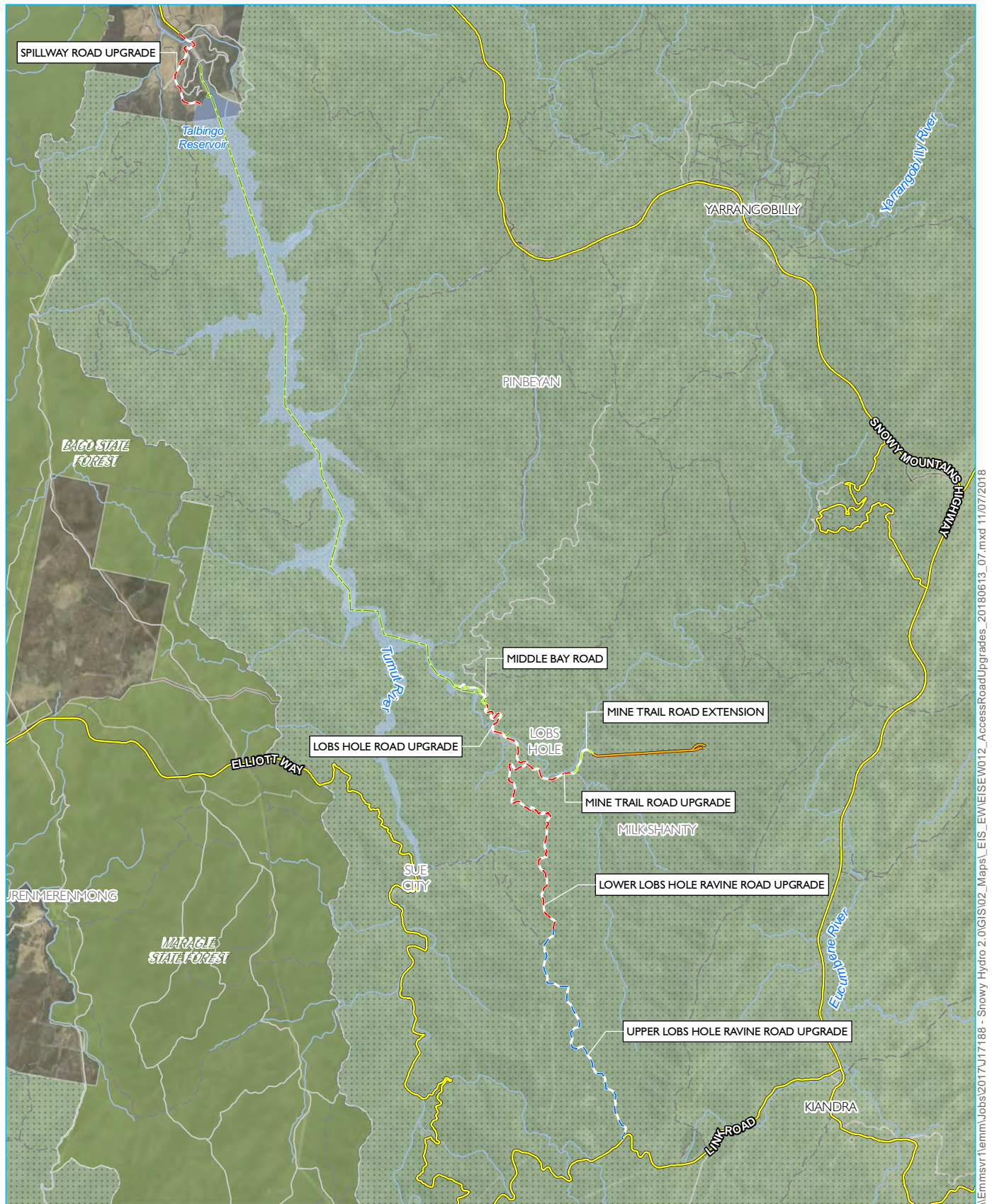
Bridge works area	Overview
Camp bridge	An existing crossing on Yarrangobilly River will be used as a temporary crossing while a new permanent bridge is built as part of Lobs Hole Road upgrade. The existing crossing will require the crossing level to be raised with rocks to facilitate vehicle passage. The rocks used to raise the crossing level will be removed and the crossing no longer used once the permanent bridge has been constructed. The new bridge (Camp Bridge) will be a permanent crossing and used for both Exploratory Works and Snowy 2.0 main works, should it proceed.
Wallaces Creek bridge	Establishment of a new permanent bridge at Wallaces Creek as part of the Mine Trail Road extension. Establishment of this bridge will require an initial temporary pre-fabricated 'Bailey bridge' to be constructed, which will be removed before the end of Exploratory Works.

The design for permanent bridges at both crossings will consist of steel girders with a composite deck. This is the most common type of permanent bridge constructed in and around the existing Snowy Scheme. Lightweight steel girders are easy to transport and will therefore allow for efficiencies in the construction schedule permit the use of smaller-scale lifting equipment at the construction site.

## 2.7 Barge access infrastructure

To provide an alternative to road access, a barge option is proposed, not only for bulky and heavy equipments but also in case of emergency. During Exploratory Works, barges will be loaded at the northern barge ramp (Talbingo barge ramp), travel about 18 km along Talbingo Reservoir and be unloaded at the southern barge ramp (Middle Bay barge ramp) before returning to the north. Some loads may also be transported in the reverse direction.





Source: EMM (2018); Snowy Hydro (2018); SMEC (2018); DFSI (2017); GA (2015); LPGA (2011)

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GDA 1994 MGA Zone 55

## KEY

- |  |                            |
|--|----------------------------|
| — Access road upgrade - without widening | — Local road               |
| — Access road upgrade - with widening    | — Vehicular track          |
| — Access road extension                  | — Perennial watercourse    |
| — Exploratory tunnel                     | — Scheme storage           |
| — Communications cable                   | — Kosciuszko National Park |
| — Main road                              | — State forest             |

## Access road upgrades and establishment

Snowy 2.0  
Social Assessment  
Exploratory Works  
Figure 2.8



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- KEY**
- - Access road upgrade
  - - Access road extension
  - Permanent bridge
  - Exploratory tunnel
  - Portal construction pad and accommodation camp conceptual layout
  - Communications cable
  - ▶ Excavated rock haul route
  - Watercourse
  - On land rock management
  - Middle Bay barge access
  - Disturbance footprint
  - Avoidance footprint

Excavated material haul route

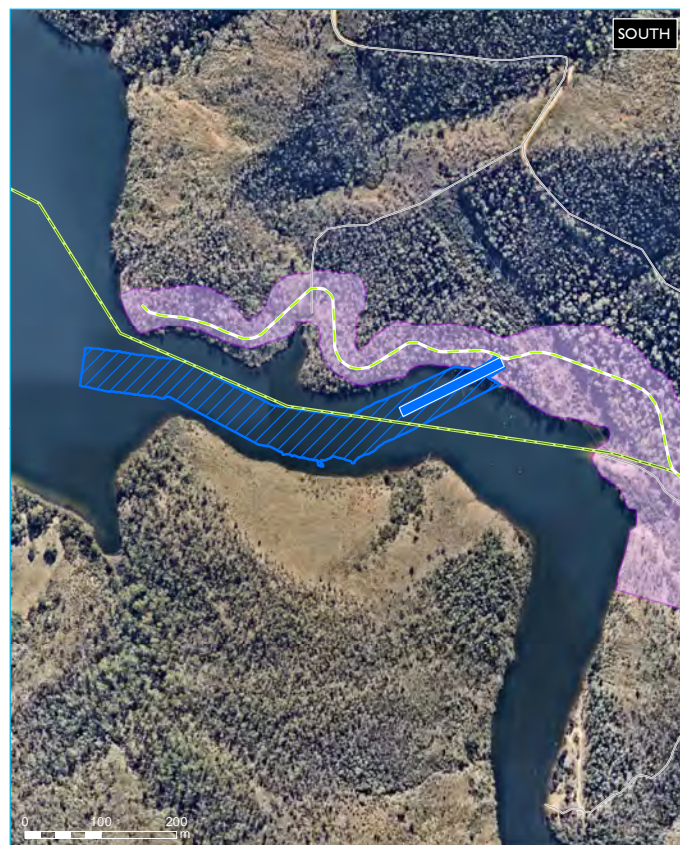
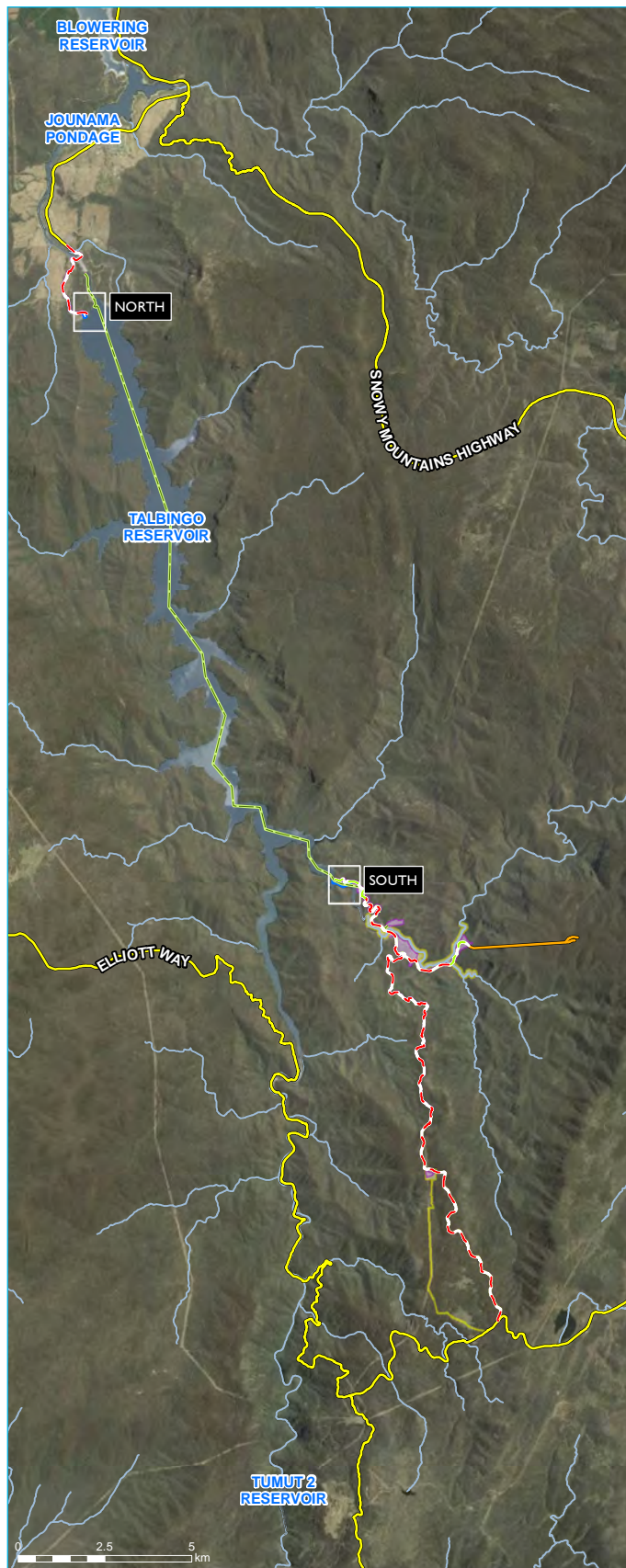
Snowy 2.0  
Social Assessment  
Exploratory Works  
Figure 2.9

Source: EMM (2018); Snowy Hydro (2018); NearMap (2018); SMEC (2018); Robert Bird (2018); DFSI (2017)

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m  
GDA 1994 MGA Zone 55







Source: EMM (2018); Snowy Hydro (2018); NearMap (2018); SMEC (2018); DFSI (2017); LPMA (2011)

GDA 1994 MGA Zone 55

## KEY

- |  |   |
|--|---|
| <span style="color: brown;">—</span> Exploratory tunnel    | <span style="color: blue;">—</span> Perennial watercourse   |
| <span style="color: red;">- -</span> Access road upgrade   | <span style="background-color: blue; color: white;">■</span> Middle Bay barge access                            |
| <span style="color: green;">—</span> Access road extension | <span style="background-color: blue; border: 1px solid black;">▨</span> Disturbance area - barge infrastructure |
| <span style="color: green;">—</span> Communications cable  | <span style="background-color: purple;">■</span> Disturbance footprint  |
| <span style="color: yellow;">—</span> Main road            | <span style="background-color: yellow;">■</span> Avoidance footprint  |
| <span style="color: grey;">—</span> Local road or track    |   |

Barge access locations

Snowy 2.0  
Social Assessment  
Exploratory Works  
Figure 2.10





Barge access infrastructure will comprise two dedicated barge ramps at Middle Bay and Talbingo Spillway, with a slope of approximately 1 vertical to 10 horizontal (1V: 10H) at each location. A navigation channel is also required adjacent to the Middle Bay barge ramp. Construction will involve:

- geophysical and geotechnical investigation of the barge access area to inform detailed design;
- site establishment and excavation of barge access area;
- installation of precast concrete panels at the ramp location;
- installation of bollards for mooring lines;
- removal of trees and debris to establish a navigation channel allowing barge access; and
- minor dredging to allow barge access at the reservoir minimum operating level.

To facilitate construction, laydown areas are proposed adjacent to the Middle Bay barge ramp and adjacent to the water inlet pipeline. Laydown will also be used within the footprint of the Talbingo barge ramp.

Dredged material will be placed as part of the subaqueous placement program or within one of the designated rock emplacement areas. The infrastructure proposed for the Talbingo Spillway barge ramp and Middle Bay barge ramp is provided in Figure 2.10.

## 2.8 Services and infrastructure

Exploratory Works will require additional power and communication infrastructure. Water services are also needed and include a water services pipeline and water and waste water (sewage) treatment facilities. A summary of services required is provided at Table 2.3.

**Table 2.3** Summary of services and infrastructure

Services infrastructure	Description
Power	Power will be provided at the portal construction pad and accommodation camp by diesel generators, with fuel storage provided at the portal construction pad.
Communication	Communication will be provided via fibre optic link. The fibre optic service has been designed to incorporate a submarine cable from Tumut 3 power station across Talbingo Reservoir to Middle Bay, and then via a buried conduit within the access roads to the accommodation camp and the portal construction pad.
Water and waste water (sewage)	<p>A water services pipeline is proposed for the supply and discharge of water for Exploratory Works which will pump water between Talbingo Reservoir and the exploratory tunnel portal, portal construction pad and accommodation camp.</p> <p>A package water treatment plant is proposed at the accommodation camp to provide potable water to the accommodation camp and portal construction pad facilities and will be treated to a standard that complies with the Australian Drinking Water Guidelines. The accommodation camp water supply will be pumped via the water pipeline from Talbingo Reservoir at Middle Bay.</p> <p>A package waste water (sewage) treatment plant (STP) is proposed at the accommodation camp for Exploratory Works waste water. The STP will produce effluent quality comparable to standard for inland treatment facilities in the region (eg Cabramurra). Following treatment waste water will be discharged to Talbingo reservoir via the water services pipeline connecting the accommodation camp to Talbingo Reservoir.</p> <p>Waste water from the exploratory tunnel and concrete batching plant will be either re-used on site or sent to the waste water treatment plant for treatment prior to discharge.</p>

## 2.9 Construction and schedule

### 2.9.1 Geotechnical investigation

To assist the design development for the portal construction pad, accommodation camp, Middle Bay Road, Spillway Road, and Lobs Hole Ravine Road, further survey of ground conditions is proposed. A program of geotechnical investigations including geophysical survey, construction of test pits, and borehole drilling within the disturbance footprint, will be undertaken as part of construction activities for Exploratory Works. Excavation of test pits is proposed in areas where information on relatively shallow subsurface profiles is required, or where bulk sampling is required for laboratory testing. Borehole drilling is required to facilitate the detailed design of cuttings, bridge foundations, retaining wall foundations, and drainage structures.

### 2.9.2 Construction activities

A disturbance footprint has been identified for Exploratory Works. The extent of the disturbance footprint is shown on Figure 2.1 and shows the area required for construction of Exploratory Works, including the buildings and structures, portal construction pad, road widenings and bridges, laydown areas, and rock emplacement areas. Typical construction activities that will occur within the footprint are summarised in Table 2.4.

**Table 2.4 Construction activities**

Activity	Typical method
Geophysical and geotechnical investigation	<p>Geophysical surveys will generally involve:</p> <ul style="list-style-type: none"><li>• laying a geophone cable at the required location and establishing seismic holes;</li><li>• blasting of explosives within seismic holes; and</li><li>• in-reservoir geophysics surveys will use an air gun as the seismic source.</li></ul> <p>Geotechnical surveys will generally involve:</p> <ul style="list-style-type: none"><li>• establishing a drill pad including clearing and setup of environmental controls where required;</li><li>• drilling a borehole to required depth using a tracked or truck mounted drill rig; and</li><li>• installing piezometers where required for future monitoring program.</li></ul> <p>Geophysical and geotechnical investigation within Talbingo Reservoir will be carried out using barges and subject to environmental controls.</p>
Site establishment for portal construction pad, accommodation camp, rock placement areas and laydown areas	<p>Site establishment will generally involve:</p> <ul style="list-style-type: none"><li>• identifying and flagging areas that are to be avoided during the Exploratory Works period;</li><li>• clearing of vegetation within the disturbance footprint, typically using chainsaws, bulldozers and excavators;</li><li>• civil earthworks to create a stable and level area suitable for establishment. This will involve a cut and fill approach where required to minimise the requirement for imported material;</li><li>• installing site drainage, soil erosion and other permanent environmental controls where required;</li><li>• surface finishing, compacting only existing material where possible, or importing additional material. Where suitable, this material will be sourced locally (eg from upgrade works to Lobs Hole Ravine Road); and</li><li>• set up and commissioning of supporting infrastructure, including survey marks.</li></ul>

**Table 2.4 Construction activities**

Activity	Typical method
Road works	<p>Upgrades of existing tracks (no widening) will generally involve:</p> <ul style="list-style-type: none"> <li>identifying and flagging areas that are to be avoided during the Exploratory Works period; and</li> <li>removing high points, infilling scours, levelling of rutting, and compacting surfaces.</li> </ul> <p>Extension or widening of existing tracks will generally involve:</p> <ul style="list-style-type: none"> <li>identifying and flagging areas that are to be avoided during the Exploratory Works period;</li> <li>installing site drainage, soil erosion and other permanent environmental controls where required;</li> <li>clearing and earthworks within the disturbance footprint; and</li> <li>placing road pavement material on the roadway.</li> </ul>
Bridge works	<p>Establishment of permanent bridges will generally involve:</p> <ul style="list-style-type: none"> <li>installing erosion and sedimentation controls around watercourses and installing scour protection as required;</li> <li>establishing temporary diversions within the watercourse where required, including work to maintain fish passage;</li> <li>establishing temporary bridges to facilitate permanent bridge construction;</li> <li>constructing permanent bridges including piling, establishment of abutments and piers; and</li> <li>removal and rehabilitation of temporary bridges and diversions.</li> </ul>
Barge access works	<p>Establishment of barge access infrastructure will generally involve:</p> <ul style="list-style-type: none"> <li>installing sediment controls;</li> <li>excavating and dredging of barge ramp area and navigation channel;</li> <li>installing precast concrete planks and bollards; and</li> <li>set up and commissioning of supporting infrastructure.</li> </ul>
Exploratory tunnel construction	<p>The drill and blast excavation process will be repeated cyclically throughout the tunnelling works, involving:</p> <ul style="list-style-type: none"> <li>marking up and drilling blast holes in a predetermined pattern in the working face of the tunnel;</li> <li>loading the blast holes with explosives, attaching detonators and connecting the holes into a blast sequence, and detonating the blast;</li> <li>ventilating the tunnel to remove blast fumes and dust;</li> <li>removing blasted rock;</li> <li>scaling and wash down of the tunnel roof and walls to remove loosened pieces of rock;</li> <li>geological mapping of the exposed rock faces and classification of the conditions to determine suitable ground support systems for installation;</li> <li>installing ground support; and</li> <li>advancing construction ventilation ducting and other utilities including power, water, compressed air and communications.</li> </ul>

### 2.9.3 Ancillary construction areas

Ancillary facilities and laydown areas have been identified within the conceptual layout for the portal construction pad and accommodation camp. A number of other indicative construction and laydown areas have also been identified to support Exploratory Works. A summary of these sites are:

- Upper Lobs Hole Ravine Road laydown area;
- rock emplacement area laydown, storage and ancillary uses;
- barge access infrastructure laydown areas at Talbingo and Middle Bay; and
- other minor laydown areas as needed during site establishment of watercourse crossings.



All laydown areas are within the disturbance footprint identified for Exploratory Works.

In addition, an area near Camp Bridge has been identified to be used for a plant nursery and organic stockpile area.

## 2.9.4 Construction workforce requirements

### i Staffing levels

It is currently expected that workforce for Exploratory Works will be approximately 200 people in total at peak construction. Workers are anticipated to work a 'swing' shift, for example two weeks on and one week off. These workers will be accommodated within the accommodation camp at Lobs Hole when rostered on.

The majority of the workforce will work on a fly-in fly-out and drive-in drive-out basis. It is expected that the majority of workers will fly in and out of either Cooma Airport or Canberra Airport and then travel to site via bus.

During construction of the accommodation camp, workers will be accommodated at Cabramurra. Some workers may also be accommodated at Snowy Hydro existing accommodation units at Talbingo during construction of the Talbingo barge ramp. No accommodation will be required outside of Cabramurra, the construction accommodation camp or Talbingo for the Exploratory Works workforce.

### ii Hours of operation

It is expected that construction of the exploratory tunnel and haulage of rock material between the tunnel and excavated rock stockpile locations at Lobs Hole will be 24 hours a day, seven days a week for the duration of the tunnel drilling and blasting operation. Other construction activities, including the establishment works, road and infrastructure works, will normally work a 12 hour day, seven days a week. The transport of materials along the haul route from Snowy Mountains Highway, Link Road and Upper Lobs Hole Ravine Road will only occur during day time hours (except during emergency), to avoid impacts to threatened species (Smoky Mouse). Transport by barge will be 24 hours a day, seven days a week.

## 2.9.5 Timing and staging

Exploratory Works are expected to take about 34 months, with the exploratory tunnel expected to be completed by late 2021. It is expected that the construction works will be completed largely in parallel. However, road and access works are expected to be completed within the first six months from commencement. The proposed staging of construction activities are highlighted in Figure 2.11.



**Figure 2.11** Indicative timing of Exploratory Works elements

## 2.10 Site rehabilitation

All Exploratory Works align with components of the main works for Snowy 2.0. However, should Snowy 2.0 not be approved or not progress, the Exploratory Works project area will need to be rehabilitated. Anticipated rehabilitation activities are summarised in Table 2.5.

**Table 2.5**      **Planned Exploratory Works rehabilitation activities**

<b>Exploratory Works element</b>	<b>Indicative rehabilitation activities</b>
Exploratory tunnel	Tunnel to remain open, and allowed to flood in lower portion provided groundwater impacts are negated.
Exploratory tunnel portal area	Permanent portal facade to be constructed, portal to be sealed from entry.
Portal construction pad and associated infrastructure	To be demobilised and all infrastructure removed. Site to be revegetated and returned to "original state".
Excavated rock emplacement areas	Emplaced excavated rock in the western emplacement area to be removed offsite and area to be revegetated and returned to "original state". The eastern emplacement area could remain in-situ and the landform rehabilitated as agreed with NPWS.
Accommodation camp	To be demobilised and all infrastructure removed. Site to be revegetated and returned to "original state".
Road access works	No remediation required as works are to be designed to be permanent.
Barge access infrastructure	No remediation works required as wharf and loading ramps are designed as permanent. Wharf can be removed if desired.
Services and infrastructure	To be demobilised and all infrastructure removed. Site to be revegetated and returned to "original state".

## 2.11 Decommissioning

Should Snowy 2.0 not proceed following the commencement or completion of Exploratory Works, elements constructed are able to be decommissioned and areas rehabilitated. Given works are within KNP, Snow Hydro will liaise closely with NPWS to determine the extent of decommissioning and types of rehabilitation to be undertaken. This approach will be taken to ensure that decommissioning allows for integration with future planned recreational use of these areas and to maintain the values of KNP.

## 2.12 Key aspects relevant to SA

Key aspects of Exploratory Works include the potential impact of the project on:

- community services and infrastructure as a result of the influx of workers into the local area; and
- recreational users of the areas where Exploratory Works will take place - in KNP and Talbingo Reservoir.

These are key focus areas of this SA.

## 3 Approach and methodology

### 3.1 Overview

This section outlines the approach and methodology used for the SA. This includes an overview of SA and its key objectives, the specific methods used to collect and analyse social assessment data/information, and the stakeholders involved in the assessment.

Note that the SEARs relate only to the Exploratory Works and not to the subsequent and more substantive work associated with Snowy 2.0.

### 3.2 What is SA?

The *International Principles of Social Impact Assessment* defines SA as being ‘the processes of analysing, monitoring and managing the intended and unintended social consequences, both positive and negative, of planned interventions (policies, programs, plans, projects) and any social change processed invoked by those interventions’ (Vanclay, 2015).

SA is an approach of assessing and predicting the likely consequences of a proposed action, or project, in social terms. While economic assessment emphasises the monetary effects of an action or project, SA is concerned with assessing benefits and costs in non-monetary terms. This involves understanding impacts from the perspectives of those involved in a personal, community, social or cultural sense. Social assessment processes work together to provide a complete picture of potential impacts and their context and meaning.

SA is used to predict the effects of a particular proposal on people—their way of life (how they live, work and interact with each other); their culture (norms and traditions); and their community (institutions and structures) (Armour 1990). Vanclay (2008), building on Armour’s categorisation, has identified social impacts as changes to one or more of the following:

- people’s way of life (how they live, work, play and interact with one another on a day-to-day basis);
- their culture (shared beliefs, customs, values and language or dialect);
- their community (its cohesion, stability, character, services and facilities);
- their political systems (the extent to which people are able to participate in decisions that affect their lives, the level of democratisation that is taking place, and the resources provided for this purpose);
- their environment (the quality of the air and water people use; the availability and quality of the food they eat; the level of hazard or risk; dust and noise they are exposed to; the adequacy of sanitation, their physical safety, and their access to and control over resources);
- their health and wellbeing (physical, mental, social and spiritual wellbeing and not merely the absence of disease or infirmity);
- their personal and property rights (whether people are economically affected, or experience personal disadvantage which may include a violation of their civil liberties); and



- their fears and aspirations (their perceptions about their safety, their fears about the future of their community, and their aspirations for their future and the future of their children).

To identify any social impacts and opportunities across the above categories, the SA involved several phases of assessment as outlined below.

As is the case with any type of change, some individuals or groups within the community may benefit, while others may experience negative impacts. If negative impacts are predicted, it is the role of the SA to determine how such impacts may be managed effectively to reduce the degree of social disruption to those affected (see Chapter 7 for mitigation and management measures).

### 3.3 Objectives

The key objectives of this SA are to:

- understand how and where Exploratory Works will be undertaken;
- understand the demographic profile of areas potentially impacted by the Exploratory Works;
- engage with stakeholders to identify community values, opportunities, issues and concerns associated with the Exploratory Works;
- predict and analyse the potential impacts of the Exploratory Works including impacts on access to, and demand for, local services and infrastructure;
- consider the outcomes and key findings of technical investigations for noise, air quality, surface water and traffic to identify potential amenity impacts; and
- develop appropriate mitigation and enhancement strategies.

### 3.4 SA process

The International Association for Impact Assessment (IAIA) released a *Social Impact Assessment: Guidance for assessing and managing the social impacts of projects*, published in 2015. The guideline documents 26 tasks that comprise an SA which can be categorised into four phases (see Figure 3.1), as follows:

- **Phase 1 - understand the issues:**
  - gain a good understanding of the proposed project;
  - establish what national laws and/or international guidelines and standards are to be observed;
  - identify the preliminary 'social area of influence' of the project;
  - gain a good understanding of the communities likely to be affected by the project;
  - fully inform community members about the project and how they can be involved in the SA;
  - develop an engagement program to help community members understand how they will be impacted, the likely impacts and proposed benefits, and how they can contribute to mitigation and monitoring plans;

- identify the social and human rights issues that have potential to be of concern; and
- collate relevant baseline data for key social issues.
- **Phase 2 - predict, analyse and assess the likely impacts:**
  - determine the social changes and impacts from the project;
  - consider the indirect impacts;
  - consider how the project will contribute to the cumulative impacts being experienced by the community;
  - determine how the affected groups and communities will likely respond;
  - prioritise predicted changes by their level of significance; and
  - contribute to the design and evaluation of project alternatives.
- **Phase 3 - develop and implement strategies:**
  - identify ways of addressing potential negative impacts;
  - develop and implement ways of enhancing benefits and project-related opportunities;
  - develop strategies to support communities in coping with change;
  - develop and implement appropriate feedback mechanisms;
  - facilitate an agreement-making process between the communities and the proponent;
  - assist the proponent in preparing a Social Impact Management Plan (SIMP);
  - put processes in place to enable implementation of the SIMP; and
  - assist the proponent in the ongoing implementation of the SIMP.
- **Phase 4 - design and implement monitoring programs:**
  - develop indicators to monitor change over time;
  - develop a monitoring plan;
  - consider how adaptive management will be implemented; and
  - undertake evaluation and periodic reviews/audits.

The application of each of these stages of SA for Exploratory Works is provided below in sections 3.4.1 to 3.4.4 and Table 3.1 to Table 3.4.



## Phase 4

### Design and implement monitoring programs:

- develop indicators to monitor change over time
- develop a monitoring plan
- consider how adaptive management will be implemented; and
- undertake evaluation and periodic review/audit

## Phase 3

### Develop and implement strategies:

- identify ways of addressing potential negative impacts
- develop and implement ways of enhancing benefits and project-related opportunities
  - develop strategies to support communities in coping with change
  - development and implement appropriate feedback mechanism
- facilitate an agreement-making process between the communities and the proponent
  - assist the proponent in preparing a Social Impact Management Plan (SIMP)
  - put processes in place to enable implementation of the SIMP; and
    - briefings and engagement with industry groups
  - assist the proponent in the ongoing implementation of the SIMP

## Phase 1

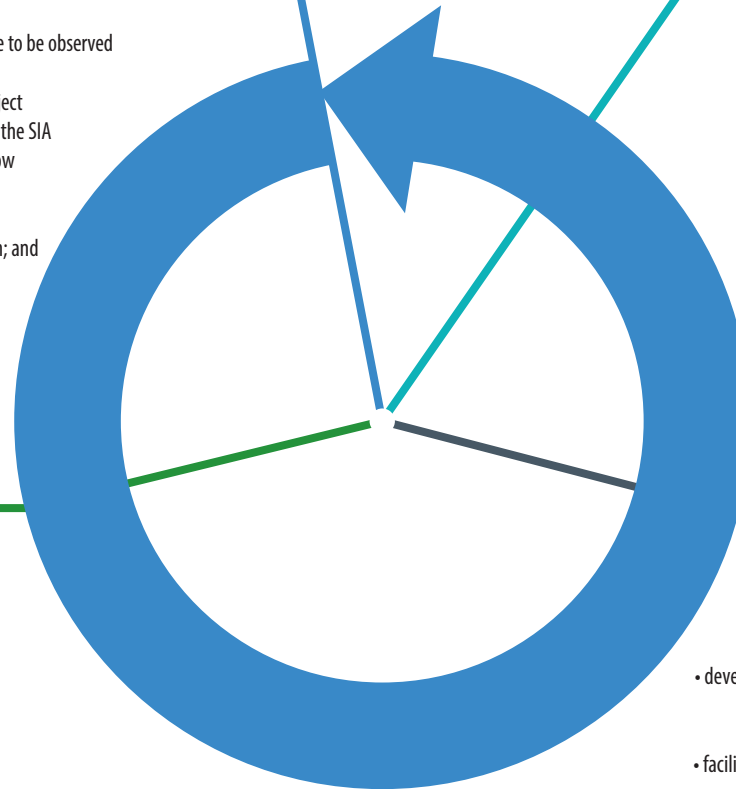
### Understand the issues:

- gain a good understanding of the proposed project
- establish what national laws and/or international guidelines and standards are to be observed
- identify the preliminary 'social area of influence' of the project
- gain a good understanding of the communities likely to be affected by the project
- fully inform community members about the project and how to be involved in the SIA
- develop engagement program to help community members understanding how they will be impacted, likely impacts and proposed benefits, and contribute to mitigation and monitoring plans
- identify the social and human rights issues that have potential to be of concern; and
- collate relevant baseline data for key social issues.

## Phase 2

### Predict, analyse and assess the likely impacts:

- determine the social changes and impacts from the project
- consider the indirect impacts
- consider how the project will contribute to the cumulative impacts being experienced by the community
- determine how the affected groups and communities will likely to respond
- prioritise predicted changes by their level of significance; and
- contribute to the design and evaluation of project alternatives



In examining potential social impacts and in engaging with stakeholders, it is impractical to fully 'carve out' the potential social impacts solely attributable to the Exploratory Works for Snowy 2.0 from the potential social impacts attributable to Snowy 2.0 itself. The scale of Snowy 2.0 as an activity is several times that of the Exploratory Works, in terms of physical extent, construction timeframe and workforce numbers.

Our methodology has therefore been to, where possible, analyse the potential social impacts solely attributable to Exploratory Works but to generally allow consideration of Snowy 2.0 in surveys and dialog with stakeholders and to then adjust the findings proportionally to reflect the location and characteristics of the Exploratory Works.

One of the main reasons for this approach is that stakeholders were already aware of Snowy 2.0 prior to engagement on Exploratory Works, and it is difficult to quarantine discussion or feedback about the Exploratory Works without considering the main works and operation of Snowy 2.0.

The SA is therefore scoped and structured to be applicable to Snowy 2.0 and therefore issues identified in the SA may or may not represent issues specifically relevant to Exploratory Works. However, this SA only considers those impacts in relation to the scope of the Exploratory Works.

#### 3.4.1 Phase 1 - understand the issues

It has been estimated that Exploratory Works will have a total workforce of up to 201 people, comprising 181 employed for actual Exploratory Works and 20 employed in the accommodation camp. The entire workforce will work on shift. It has been estimated that at any one point in time there will be up to 164 people working on Exploratory Works on-swing, with the remaining 37 people off-swing.

It is expected that the majority of the workforce will fly-in/fly-out (FIFO) of either Canberra or Cooma airports (the actual location has yet to be determined) and then drive-in/drive-out (DIDO) to the site of Exploratory Works by bus. It is also expected that the workforce sourced from the local area and region will be driven to and from the site of Exploratory Works by bus from a designated pick-up and drop-off area.

While on-swing, it is expected that the workforce will be accommodated initially at Cabramurra (a Snowy Hydro owned town) until the accommodation camp has been constructed at the site of Exploratory Works. Some workers may stay within Snowy Hydro owned accommodation at Talbingo during construction of the Talbingo barge ramp. The estimated time to complete construction of the accommodation camp is 10 months. Accordingly, it is unlikely that accommodation will be required in surrounding towns for Exploratory Works.

Given the scope and duration of Exploratory Works (ie a construction phase of 34 months), it is possible that a small proportion of the workforce may choose to relocate with their families to the local area and region. As such, some issues may arise from the direct and indirect impacts of population influx.

As the Exploratory Works are predominantly within the KNP and given the multitude of recreation opportunities that the park and surrounding area provides, it is expected that some of the workforce may choose to stay within the local area between swings. Accommodation will not be available between swings at Cabramurra, Talbingo and the accommodation camp for the workforce, and as such there may be some demand placed on short-term accommodation in the local area.



Exploratory Works will necessitate the temporary closure of some recreational areas and activities within the local area, including the temporary closure of the Ravine Campground within KNP and the Talbingo spillway. Access to Lobs Hole will also be temporarily restricted through the closure of Lobs Hole Ravine Road during Exploratory Works.

Recreational users of the KNP and Talbingo Reservoir may also experience amenity impacts as a result Exploratory Works. These may include impacts associated with construction traffic, noise generated by construction machinery and visual impacts associated with construction activities.

The 'social area of influence' for Exploratory Works, or the area likely to experience social implications from the project can be broken into two distinct areas; firstly the immediate area of Exploratory Works where there will be direct impacts and potentially indirect impacts to recreational areas and activities; and secondly the local area which includes the Snowy Monaro Regional and Snowy Valleys LGAs as well as near the major traffic corridor where most transportation activities will occur.

The groups or organisations likely to be affected by Exploratory Works are:

- Snowy Monaro Regional and Snowy Valleys councils;
- residents of Snowy Monaro Regional and Snowy Valleys LGA;
- service level providers (SLPs) within Snowy Monaro Regional and Snowy Valleys LGAs; and
- recreational users of KNP and Talbingo Reservoir.

The requirements of Phase 1 are summarised in Table 3.1.

**Table 3.1**      **Phase 1 - understand the issues**

<b>Issue</b>	<b>Consideration</b>
<ul style="list-style-type: none"> <li>• gain a good understanding of the proposed project;</li> </ul>	A detailed description of Exploratory Works is provided in Chapter 2.
<ul style="list-style-type: none"> <li>• establish what national laws and/or international guidelines and standards are to be observed;</li> </ul>	This SA has been guided by the requirements of the SEARs which are discussed in Chapter 1.
<ul style="list-style-type: none"> <li>• identify the preliminary 'social area of influence' of the project;</li> </ul>	The preliminary 'social area of influence' of Exploratory Works is considered to be the Snowy Monaro Regional and Snowy Valleys LGAs. This is further discussed in Chapter 4.
<ul style="list-style-type: none"> <li>• gain a good understanding of the communities likely to be affected by the project;</li> </ul>	<p>There are two communities likely to be affected by Exploratory Works; firstly those communities residing within the Snowy Monaro Regional and Snowy Valleys LGAs; and secondly recreational users of KNP.</p> <p>Details of the communities likely to be affected by Exploratory Works are provided in Chapter 4.</p>
<ul style="list-style-type: none"> <li>• fully inform community members about the project and how to be involved in the SA;</li> </ul>	Snowy Hydro has undertaken a comprehensive community engagement program to inform the community about Exploratory Works. In addition to this, interviews and surveys were undertaken with service providers in the local region as well as recreational users of KNP to both inform them on the Exploratory Works and to ascertain service levels within the local region and for recreational users of KNP (see Chapter 5)

**Table 3.1 Phase 1 - understand the issues**

Issue	Consideration
<ul style="list-style-type: none"> <li>develop an engagement program to help community members understand how they will be impacted, the likely impacts and proposed benefits, and how they can contribute to mitigation and monitoring plans;</li> </ul>	Snowy Hydro will continue to engage with the community on Exploratory Works to inform them of the results of the EIS and this SA and how they can contribute towards the recommended management and mitigation measures (see Chapter 7).
<ul style="list-style-type: none"> <li>identify the social and human rights issues that have potential to be of concern; and</li> </ul>	The issues of concern for Exploratory Works relates to potential impacts on community services and infrastructure and recreation use of the KNP and Talbingo Reservoir. These matters are discussed in chapters 5 and 6.
<ul style="list-style-type: none"> <li>collate relevant baseline data for key social issues.</li> </ul>	Relevant baseline data for the above issues of concern is provided in Chapter 4.

### 3.4.2 Phase 2 - predict, analyse and assess the likely impact

Exploratory Works will directly impact on recreational users of KNP and Talbingo Reservoir and indirectly impact nearby towns. The local and regional economic benefits of the construction may create a short-term population influx with subsequent increases in demand for local goods, services and infrastructure.

Recreational users of KNP and Talbingo have been consulted to ascertain their usage of these recreational areas. The local community, including service level providers (SLP) in nearby towns have been consulted to understand the service capacity, if any, to absorb any increased demands.

The results of this engagement have been used to predict, analyse and assess the likely direct and indirect impacts of the Exploratory Works on local communities and recreational users.

The requirements of Phase 2 are summarised in Table 3.2.

**Table 3.2 Phase 2 - predict, analyse and assess the likely impact**

Issue	Consideration
<ul style="list-style-type: none"> <li>determine the social changes and impacts from the project;</li> </ul>	Potential social impacts, both direct and indirect, are addressed in Chapter 6. Potential direct impacts include impacts to recreational users of Ravine Campground in KNP and the Talbingo Reservoir. Potential indirect impacts include impacts on nearby towns and communities as a result of increased demand for local goods, services and infrastructure.
<ul style="list-style-type: none"> <li>consider the indirect impacts;</li> </ul>	See above.
<ul style="list-style-type: none"> <li>consider how the project will contribute to the cumulative impacts being experienced by the community;</li> </ul>	<p>There are no other major developments or projects underway or being planned in the local region. As such, Exploratory Works is unlikely to contribute to any cumulative impacts being experienced by the local community.</p> <p>As previously stated, this SA is for Exploratory Works. A separate SA will be prepared for Snowy 2.0.</p>
<ul style="list-style-type: none"> <li>determine how the affected groups and communities will likely to respond;</li> </ul>	The results of stakeholder engagement provide an indication of how they are likely to respond to Exploratory Works (see Chapter 5).
<ul style="list-style-type: none"> <li>prioritise predicted changes by their level of significance; and</li> </ul>	Predicted social impacts have been prioritised by the level of significance of the impact (see Section 7.4).
<ul style="list-style-type: none"> <li>contribute to the design and evaluation of project alternatives.</li> </ul>	Based on the results of this SA, no changes to the design or implementation of Exploratory Works were required.



### 3.4.3 Phase 3 - develop and implement strategies

The impacts, albeit minor, identified in Phase 2 are coupled with mitigation and management measures to achieve the following:

- address potential and perceived negative impacts; and
- enhance benefits and project-related opportunities.

The requirements of Phase 3 are summarised in Table 3.3.

**Table 3.3 Phase 3 - develop and implement strategies**

Issue	Consideration
<ul style="list-style-type: none"><li>• identify ways of addressing potential negative impacts;</li></ul>	Management and mitigation measures to address potential negative social impacts of Exploratory Works are provided in Chapter 7.
<ul style="list-style-type: none"><li>• develop and implement ways of enhancing benefits and project-related opportunities;</li></ul>	Measures designed to enhance benefits and opportunities for Exploratory Works are discussed in Chapter 7.
<ul style="list-style-type: none"><li>• develop strategies to support communities in coping with change;</li></ul>	Given the level of potential negative impacts of Exploratory Works and the management and mitigation measures proposed to address these potential impacts, strategies to support communities are not considered warranted.
<ul style="list-style-type: none"><li>• develop and implement appropriate feedback mechanisms;</li></ul>	Snowy Hydro has provided a number of mechanisms and ways that the community can provide feedback on Exploratory Works and Snowy 2.0. These mechanisms and ways are discussed in Section 5.3.4.
<ul style="list-style-type: none"><li>• facilitate an agreement-making process between the communities and the proponent;</li></ul>	<p>Given the level of potential negative impacts of Exploratory Works and the management and mitigation measures proposed to address these potential impacts, an agreement-making process between the local community and Snowy Hydro is not considered warranted.</p> <p>Notwithstanding the above, Snowy Hydro and NPWS have agreed on a process for mitigating and offsetting impacts to recreation users in the KNP (see Section 7.3.1).</p>
<ul style="list-style-type: none"><li>• assist the proponent in preparing a Social Impact Management Plan (SIMP);</li></ul>	A SIMP is not considered to be warranted for Exploratory Works.
<ul style="list-style-type: none"><li>• put processes in place to enable implementation of the SIMP; and</li></ul>	See above.
<ul style="list-style-type: none"><li>• assist the proponent in the ongoing implementation of the SIMP.</li></ul>	See above.

### 3.4.4 Phase 4 - design and implement monitoring programs

Only one monitoring program in relation to housing demand is considered warranted for Exploratory Works. This program relates more to perceived stakeholder impacts than to actual impacts. The program will be implemented throughout the life of Exploratory Works and used as a basis for monitoring housing demand ahead of the main works of Snowy 2.0 commencing.

The requirements of Phase 4 are summarised in Table 3.4.

**Table 3.4**      **Phase 4 - design and implement monitoring programs**

Issue	Consideration
<ul style="list-style-type: none"><li>• develop indicators to monitor change over time;</li></ul>	<p>An appropriate monitoring program will be designed and implemented for housing throughout the life of the Exploratory Works and beyond into Snowy 2.0.</p> <p>The monitoring program will be prepared before construction starts and will be reviewed periodically to capture any relevant changes in the project and in the community.</p>
<ul style="list-style-type: none"><li>• develop a monitoring plan;</li></ul>	See above.
<ul style="list-style-type: none"><li>• consider how adaptive management will be implemented; and</li></ul>	See above.
<ul style="list-style-type: none"><li>• undertake evaluation and periodic reviews/audits.</li></ul>	See above.

### 3.5 Methodology

Based on the above process, the following methodology has been used in the preparation of the SA:

- stakeholder profiling and mapping;
- socio-economic analysis of local area population;
- stakeholder engagement:
  - engage with the local community;
  - interview local services around baseline capacity;
  - survey recreational users around park usage;
- predict and analyse social impacts of the Exploratory Works; and
- identify mitigation and management strategies.





## 4 Community profile

### 4.1 Overview

The social area of influence identified for Exploratory Works includes the KNP and the surrounding towns and communities that have the potential to experience change during Exploratory Works.

The nearest local towns are Cooma and Tumut. Cooma is approximately 65 km south-east of Tantangara Reservoir, and Tumut is approximately 45 km north of Talbingo Reservoir. Apart from these local towns, there are several smaller communities which may be affected during Exploratory Works, including Talbingo, Cabramurra, Adaminaby, Providence Portal, Tumbarumba and Batlow.

Talbingo and Cabramurra were built for the original Snowy Scheme workers and their families. Talbingo has since developed into a popular place for holiday makers. Cabramurra was modernised and rebuilt in the early 1970s and accommodates many Snowy Scheme employees and contractors. Adaminaby was relocated from its original location (now known as Old Adaminaby) in 1957 due to the construction of Lake Eucumbene. Tumbarumba's population had a dramatic increase in the 1960s due to the original Snowy Mountains Scheme.

For the purposes of this SA, the local area is defined as the Snowy Monaro Regional and Snowy Valleys LGAs, and the local region is defined as the LGAs surrounding the Snowy Monaro Regional and Snowy Valleys LGAs - refer to Figure 4.1.

### 4.2 Socio-economic profile

To understand what changes have occurred to the profile of any region, the volume and movement of the population must be analysed. An indication of the health of an economy can be gained from population changes. This theory of regional economic growth suggests that places that are able to attract population immigration create increased demand for goods and services and thus more jobs. This growth leads to increasing local multiplier effects, scale economies and an increase in the rate of innovation and capital availability (Sorensen, 1990). Conversely, population losses can contribute to a 'vicious cycle' of decline whereby reduced populations results in closure of services, which in turn makes it difficult to attract new populations (Sorensen 1990).

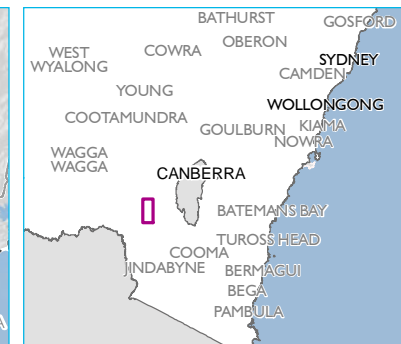
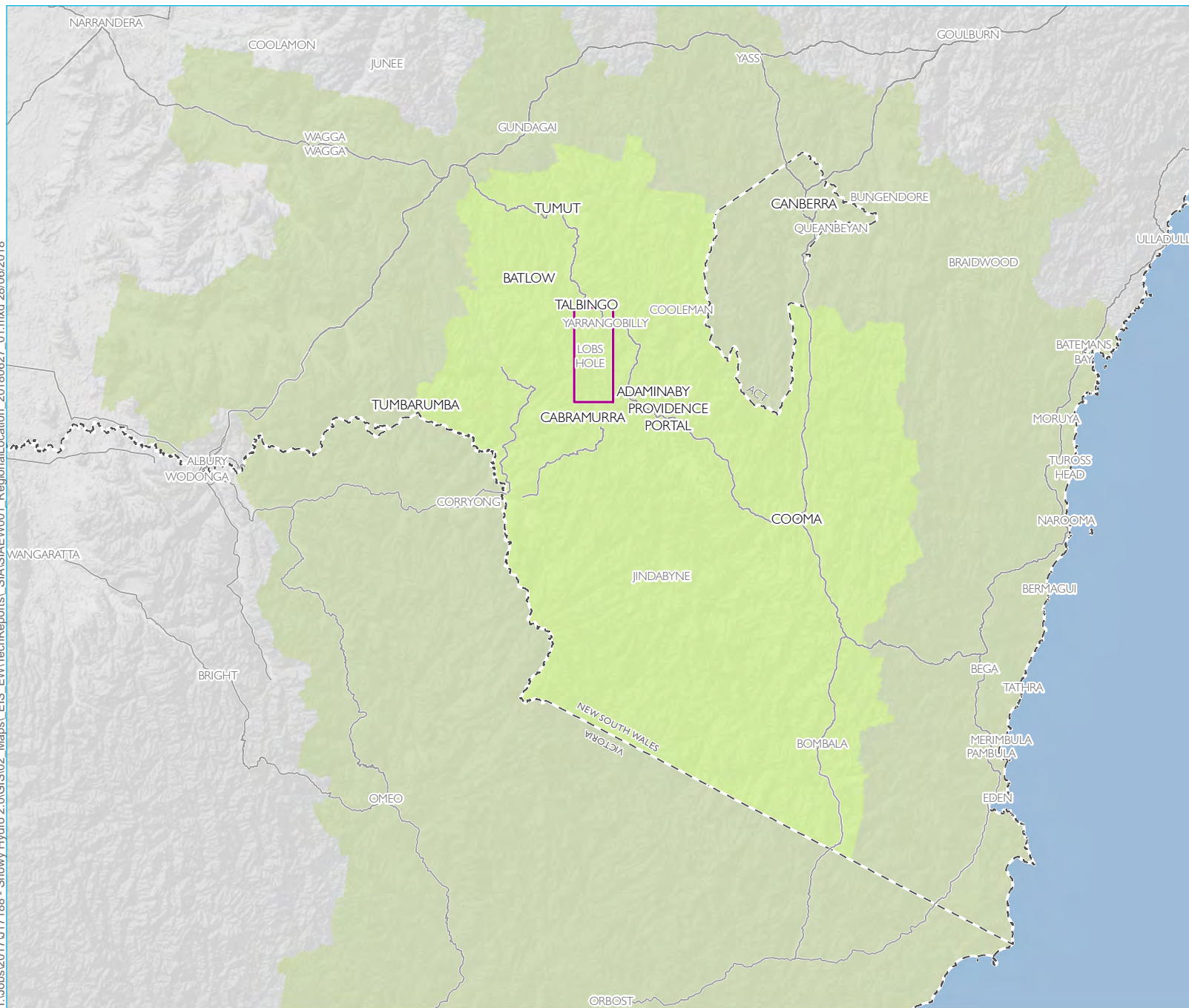
As demonstrated in this chapter, the population profile of the local area has changed very little over the last 10 years.

To determine the socio-economic profile of the local area, data was extracted from the Australian Bureau of Statistics (ABS) databases, including the Urban Centre and Localities (UCL) and State Suburbs (SSC) databases.

The following definitions of UCL and SSC are provided by the ABS:

*Urban Centres and Localities (UCL)* is a geographical unit that statistically describes Australian population centres with populations exceeding 200 persons. They are designed for the release of data from the Census of Population and Housing and are derived from analysis of the data within Statistical Areas Level 1 (SA1) from the 2011 Census. UCL is created from the aggregate of SA1s. Centres with a core urban population of 1,000 persons or more are considered to be Urban Centres, whilst smaller centres with populations of 200 persons or more and a core urban population below 1,000 persons are considered to be localities.

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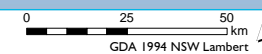
- KEY**
- Exploratory Works project area
  - Main road
  - Local area
  - Local region
  - State boundary

## Regional location of Exploratory Works

Snowy 2.0  
Social Assessment  
Exploratory Works  
Figure 4.1



Source: EMM (2018); Snowy Hydro (2018); DFSI (2017); LPMA (2011)



*State Suburbs (SSC)* are an ABS approximation of localities gazetted by the Geographical Place Name authority in each State and Territory. Gazetted Localities are the officially recognised boundaries of suburbs (in cities and larger towns) and localities (outside cities and larger towns). Gazetted localities cover most of Australia.

The advantage of using UCL is that it allows for a quick statistical data review across all towns and localities for the purpose of consistency. Further, it allows smaller towns and localities to be captured with population numbers greater than 200 and less than 1,000 people. The SSC data is beneficial as it captures the localities having a population of less than 200 and that were not captured in the UCL data, such the town of Cabramurra. The following sections provide a brief summary of the demographic profile in the local area.

A schematic showing the key socio-economic profile of the local area can be seen in Figure 4.2.

#### 4.2.1 Snowy Monaro Regional LGA

Snowy Monaro Regional Council was established in May 2016 following the merger of Bombala, Cooma-Monaro Shire and Snowy River Shire councils.

The Snowy Monaro Regional Council LGA is located in south-eastern NSW, 100 km south of Canberra CBD. It has a land area of approximately 15,160 km<sup>2</sup>. The Snowy Monaro Regional LGA is bounded by the Australian Capital Territory (ACT) and the Queanbeyan-Palerang Regional LGA in the north, Eurobodalla and Bega Valley LGAs in the east, the Victorian border in the south, and the Snowy Valleys Council LGA in the west.

The 2016 resident population for Snowy Monaro Regional LGA was 20,617, with a population density of 0.01 persons per hectare. The largest town in the Snowy Monaro Regional LGA is Cooma with a population of 6,588 in 2016.

Demographic profiles of Cooma, Adaminaby and Providence Portal are provided below.

##### i Cooma

As previously stated, Cooma is located approximately Cooma is approximately one hour and forty five minutes drive (95 km) south-east of Lobs Hole. It is the largest town in the local area in terms of its population size and range of community services. The major access road into Cooma is via B72 Snowy Mountains Highway when travelling from Tumut, or B23 Monaro Highway when travelling from Canberra. Snowy Mountains Airport is located 16 km south west of Cooma on the Kosciuszko Road. The airport provides return services from Cooma to Sydney and is serviced by Regional Express (Rex).

In the 2016 Census, Cooma UCL had a total population of 6,379 people, the male to female ratio being fairly equal at 50.15% and 49.85% respectively.

Over the 10 year period from the 2006 Census to 2016 Census, the population slightly decreased from 6,588 to 6,379 people, approximately a 3% drop.

The median age in Cooma is 45, slightly higher than 43 in the Snowy Monaro Regional LGA and non-metropolitan NSW (also 43), and 39 in NSW.

The unemployment rate in Cooma is 4.89%, higher than the Snowy Monaro Regional LGA at 3.33%, but lower than non-metropolitan NSW at 6.63% and NSW at 6.25%. Approximately 56% of the labour force in Cooma are in full-time employment and 34% are part-time.



The major employment sector is retail trade, followed by health care and social assistance. Accommodation and food services are the third largest sector for employment.

There is a wide range of services available in Cooma, such as: tourist accommodation, medical centres, hospital, child care centres, primary and high schools, cafes and restaurants, major fast food chains, petrol service stations, real estate agencies, police station, rural fire station, ambulance service, shops and major retail supermarkets.

The Cooma Chamber of Commerce has over 95 members and is growing. The Chamber Executive Members liaise with and support several organisations such as the Snowy Monaro Regional Council, the Cooma Visitors Centre, Snowy Hydro, and the NSW Business Chamber.

## ii Adaminaby

Adaminaby is located approximately 42 km south-east of Lobs Hole. The major access road into Adaminaby is via B72 Snowy Mountains Highway. The nearest major town is Cooma, which is approximately 40 minutes driving distance.

In the 2016 Census, Adaminaby UCL had a total population of 210 people, the male and female ratio being approximately 53% and 44% respectively<sup>1</sup>.

Over the 10 year period between the 2006 Census and 2016 Census, the population declined by more than 10%, from 235 people to 210 people. The biggest reduction in age group was between 0 to 4 years by 60%. At the time of the 2016 Census, more than 50% of the population in Adaminaby were aged 55 years and above, with the largest proportion being 65 years and over, representing more than 30% of the total population. The proportion of this age group in Adaminaby is significantly higher than the LGA and State average.

The median age in Adaminaby is 56, which is significantly higher than 43 in the Snowy Monaro Regional Council LGA.

The unemployment rate in Adaminaby is relatively high at 5.77% compared to the Snowy Monaro Regional LGA at 3.33%. However, it is still lower than the NSW average of 6.25% and non-metropolitan NSW of 6.63%.

Almost 70% of the labour force in Adaminaby is full time and less than 20% is part-time. The major employment industry is accommodation and food services, followed by retail trade.

There is a range of local services in Adaminaby, such as tourist accommodation, general store, post office, petrol station, churches, public school and eateries. There is also a Snowy Scheme Museum in Adaminaby, situated on the Snowy Mountains Highway.

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<sup>1</sup> Note the male and female proportion did not add up to 100%. This is an accurate reflection of ABS Census data as Census data also did not add up to 100%.

**Table 4.1 Snowy Monaro Regional Council LGA – population and demographic data**

	Cooma UCL	Adaminaby UCL	Snowy Monaro Regional LGA	Non-metropolitan NSW	NSW
<b>Population 2006 – 2016</b> (count of persons and % change 2006 – 2016)					
2006	6,588	235	19,450	2,419,769	6,549,174
2011	6,301	226	19,691	2,512,952	6,917,656
2016	6,379	210	20,218	2,643,536	7,480,228
% change 2006 – 2011	↓ -4.36%	↓ -3.83%	↑ 1.24%	↑ 3.85%	↑ 5.63%
% change 2011 – 2016	↑ 1.24%	↓ -7.08%	↑ 2.68%	↑ 5.19%	↑ 8.13%
<b>Demographic 2016</b> (% of total population)					
Male	50.15%	52.86%	51.74%	49.24%	49.28%
Female	49.85%	43.81%	48.25%	50.76%	50.72%
Indigenous	3.20%	-	2.22%	5.49%	2.89%
<b>Age groups 2016</b> (% of total population)					
0-4 years	4.83%	1.90%	4.74%	5.85%	6.22%
5-14 years	10.68%	8.10%	12.40%	12.51%	12.32%
15-19 years	5.96%	4.76%	5.81%	6.03%	5.99%
20-24 years	5.38%	5.71%	5.33%	5.58%	6.55%
25-34 years	11.60%	5.71%	11.06%	10.98%	14.27%
35-44 years	11.00%	5.71%	12.17%	11.53%	13.41%
45-54 years	13.76%	12.38%	15.03%	13.19%	13.07%
55-64 years	13.40%	21.43%	14.32%	13.77%	11.89%
65 years and over	23.36%	30.48%	19.18%	20.55%	16.28%
<b>Median age of persons 2016</b>					
Age	45	56	43	43	38

- Notes:
1. This data table does not display 'inadequately described and 'not stated' categories of Census data. Therefore, the sum of total percentage may not add up to 100%. (Source: ABS)
  2. The population data for Snowy Monaro Regional LGA for 2006 and 2011 is a combination of Bombala, Cooma-Monaro Shire and Snowy River Shire Councils' individual data. (Source: ABS)

**Table 4.2 Snowy Monaro Regional Council LGA – employment and industry data**

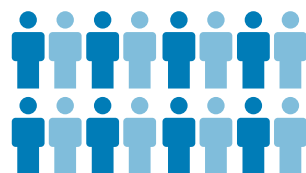
	Cooma UCL	Adaminaby UCL	Snowy Monaro Regional LGA	Non-metropolitan NSW	NSW
<b>Employment 2016</b> (% of labour force, persons aged 15 years and above)					
Full time	56.16%	69.23%	60.95%	55.16%	59.20%
Part time	33.67%	17.31%	30.07%	32.76%	29.71%
Unemployed	4.89%	5.77%	3.33%	6.63%	6.25%
<b>Median income 2016</b> (median income \$ weekly)					
Individual	\$601	\$492	\$675	\$584	\$664
Household	\$985	\$725	\$1,200	\$1,168	\$1,482
<b>Top 3 industries of employment 2016</b> (% of employed persons aged 15 years and above)					
1	Retail Trade (13.70%)	Accommodation and food services (21.84%)	Accommodation and food services (13.64%)	Health care and social assistance (14.36%)	Health care and social assistance (12.49%)
2	Health Care and social assistance (12.11%)	Retail trade (13.79%)	Agriculture, forestry and fishing (9.88%)	Retail trade (10.35%)	Retail trade (9.66%)
3	Accommodation and food services (10.74%)	Agriculture, forestry and fishing & Electricity, gas, water and waste services (9.20%)	Retail trade (9.27%)	Education and training (9.02%)	Education and training (8.36%)
<b>Top 3 occupations 2016</b> (% of employed persons aged 15 years and above)					
1	Professionals (16.70%)	Labourers (24.14%)	Managers (18.94%)	Professionals (18.08%)	Professionals (23.61%)
2	Technicians and trades workers (13.96%)	Technicians and trades workers (18.39%)	Technicians and trades workers (14.13%)	Technicians and trades workers (14.82%)	Clerical and administrative workers (13.84%)
3	Community and personal service workers (13.59%)	Managers (16.09%)	Professionals (13.74%)	Managers (13.04%)	Managers (13.49%)

Notes: This data table does not display 'inadequately described', 'not stated' and 'other type' categories of Census data. (Source: ABS)



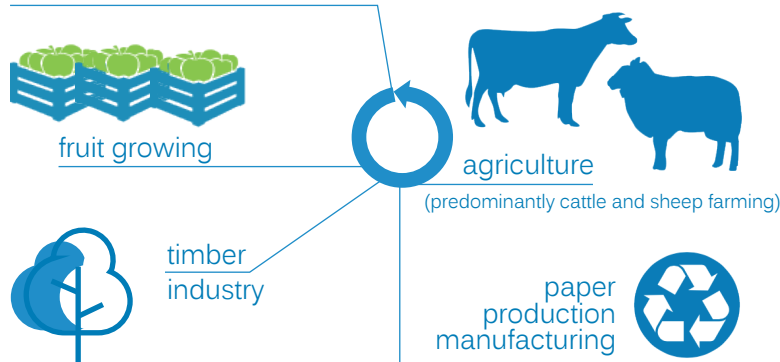
## Snowy Valleys LGA

Land size –  
**8,960 km<sup>2</sup>**



Population –  
**14,329**  
(relatively static since 2006)

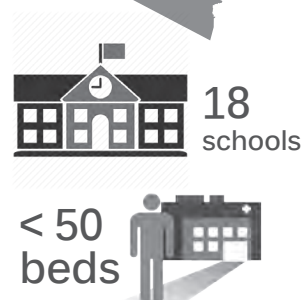
### Main sectors of employment –



Unemployment – **4.38%**

ABS socio-economic ranking below average - one of the most disadvantaged LGAs in NSW

In 2013, 26% of households did not have access to the internet



Small regional hospitals

No medical centres in Adaminaby, Talbingo and Providence Portal



Coach network connects the major towns of Cooma, Tumut and Canberra



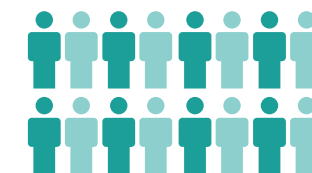
Lower proportion of occupied dwellings in Adaminaby and Talbingo



Sale properties increase in Cooma and Tumut since the announcement of Snowy 2.0

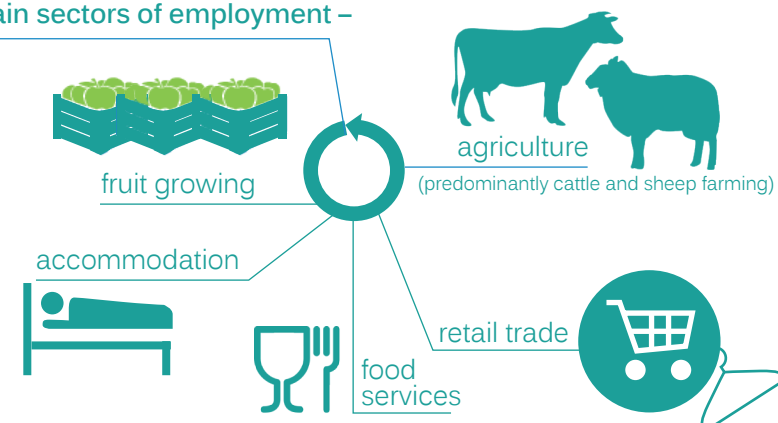
## Snowy Monaro Regional LGA

Land size –  
**15,160 km<sup>2</sup>**



Population –  
**20,617 (6,588)**  
(slight growth since 2006) reside in Cooma

### Main sectors of employment –



Unemployment – **3.33%**

ABS socio-economic ranking above NSW average

In 2013, 19.4% of households did not have access to the internet



### iii Providence Portal

Providence Portal is geographically located approximately 25 km south-east of Lobs Hole. The major access road into Providence Portal is via B72 Snowy Mountains Highway, and then via Providence Road. The closest town is Adaminaby.

There is no census data available from ABS for Providence Portal as a township.

Providence Portal is a centre for two tourism accommodation operators - Cool Mountain Lodge and Providence Holiday Park.

Providence Portal is also situated on the Bicentennial National Trail - a long distance trekking route.

### 4.2.2 Snowy Valleys LGA

Snowy Valleys Council was established in May 2016 following the merger of Tumbarumba Shire and Tumut Shire councils.

It is located in south-eastern NSW and has a land area of approximately 8,960 km<sup>2</sup>. The Snowy Valleys LGA is bounded by the Yass Valley and Cootamundra-Gundagai Regional LGAs in the north, the ACT and Snowy Monaro Regional LGA in the east, the Victorian border in the south, and Wagga Wagga City, Greater Hume Shire and Towong Shire Council LGAs to the west. The largest town in the Snowy Valleys is Tumut with a population of 5,926.

The 2016 resident population for Snowy Valleys Council area is 14,329, with a population density of 0.02 persons per hectare.

Demographic profiles for Tumut, Tumbarumba, Batlow, Talbingo and Cabramurra are provided below.

#### i Tumut

Tumut is the second largest town in the local area in terms of population size and community services. Tumut is approximately half an hour (45 km) north of Talbingo. The major access road into Tumut is via M31 Hume Highway when travelling from Sydney or Albury, then via B72 Snowy Mountains Highway.

In the 2016 Census, Tumut UCL had a total population of 6,154 people, the male and female proportion is approximately 49% and 51% respectively.

Over the 10 year period from 2006 Census to 2016 Census, the population has increased from 5,926 to 6,154 people, representing a 3.8% increase.

The full-time work-force in Tumut representing 57% and 31% for part-time. The unemployment rate in Tumut is higher than the Snowy Valleys LGA, NSW but lower than non-metropolitan NSW.

The top three industries of employment in 2016 Census is manufacturing, representing 17% of the workforce, follow by health care and social assistance, and retail trade, at 11.83% and 11.5% respectively.

Tumut has a wide range of local services, such as: tourist accommodation, medical centres, hospital, child care centres, public school, high school, cafes and restaurants, major fast food chains, police station, rural fire station, ambulance service, petrol service stations, real estate agencies, shops and retail chain supermarkets.

The Tumut Regional Chamber of Commerce represents the interest of the business community in Adelong, Batlow, Talbingo and Tumut.

The median age in Tumut is 43.

## ii Tumbarumba

Tumbarumba is located approximately 35 km west of Lobs Hole, and approximately one hour driving distance to Tumut via Batlow, and approximately 1.5 hours to Talbingo. Tumbarumba is generally equidistant from regional centres of Albury, Wagga Wagga and Cooma, although travel time to Cooma is significantly longer (approximately 2.5 hours) compared to Albury and Wagga Wagga (approximately 1.5 hours each) due to the steep terrain and the winding character of the minor link roads.

The nearest regional airport is Wagga Wagga Airport, approximately one hour and 20 minutes driving distance. Albury Airport is comparable at 1 hour and 30 minutes driving.

In the 2016 Census, Tumbarumba had a total population of 1,484 people, 49% being male and 51% female. The population movement in the last 10 years has not changed much. In 2016, 35.8% of the total population in Tumbarumba fall in the age range of 55 to 65 years old. People over the age of 55 years old represent 58% of the total population.

Almost 60% of the work-force in Tumbarumba is full time, 29% part-time. The unemployment rate is 5.64%, slightly higher than the Snowy Valleys LGA, but lower than NSW and non-metropolitan NSW.

The top three industries of employment are manufacturing, representing almost 20% of the total work-force, followed by public administration and safety, and agriculture, forestry and fishing.

The median age in Tumbarumba is 43.

The town has a range of local services, including tourist accommodation, schools, a petrol station, a supermarket, a bank, a church and a variety of small eateries.

## iii Batlow

Batlow is geographically located approximately 16 km north-west of Talbingo. The major access road into Batlow is via B72 Snowy Mountains Highway, and then via Batlow Road or Wondalga Road. The nearest town is Tumut which is located approximately 30 minutes driving distance to the north.

In the 2016 Census, Batlow recorded a total population of 1,021 people, approximately 51% being male and approximately 49% female.

Over the 10 year period from 2006 Census to 2016 Census, the population number increased slightly from 999 to 1,021.

Approximately 17% of the population in Batlow were born overseas, and 11% speak other languages at home.

The median age in Batlow is 50, higher than 45 in the Snowy Valleys LGA and 43 in non-metropolitan NSW.



The unemployment rate in Batlow is 5.89%, which is the highest in the local area compared to the other rural towns which were analysed for this report. The unemployment rate across Snowy Valleys LGA is 4.38%, 5.49% in non-metropolitan NSW and 2.89% in NSW.

Approximately 52% of the labour force is full time, and 31% part-time. The major employment industry is agriculture, forestry and fishing, follow by administrative and support services.

Batlow is famous for apples. The Apple Blossom Festival and Batlow CiderFest are annual events which bring visitors and workers to town.

There is a range of local services available in Batlow, such as tourist accommodation, post office, petrol station, church, schools, child care, eateries and a hospital.

#### iv Talbingo

Talbingo is located immediately north of Talbingo Reservoir. The major access road into Talbingo is via B72 Snowy Mountains Highway then via Murray Jackson Drive.

In the 2016 Census, Talbingo has a total population of 226 people, the male and female proportion is approximately 51% and 49%.

During 2006 to 2011 Talbingo experienced a significant decrease in population by 17.43%. Conversely, during 2011 to 2016, the population experienced a notable increase of 13.57%. However, the population still remains below what it was 10 years ago.

Talbingo is over-represented in the older age categories. The population age range of 15 to 54 comprises only 23.44% of the overall population. The Snowy Valleys LGA population within this age group is 44.72%. It is 47.31% in non-metropolitan NSW and 53.29% in NSW. This age group generally represents the educational and labour force population. A relatively low proportion of population within this age group could indicate a lack of educational opportunity, slow economic development, or lack of employment opportunities in town. The statistics suggest that the younger age groups leave in pursuit of educational and/or work opportunity elsewhere.

The labour force in Talbingo has decreased over the 10 year period, from 107 people in 2006 to 58 in 2016, almost a 50% reduction.

The major employment industry in Talbingo is accommodation and food services, and electricity, gas, water and waste service, both (in combination) representing 23.64%. Essential services and hospitality is also a major component of the total 47% employment rate in Talbingo. The current unemployment rate is above average at 8.33%.

Local services include tourist accommodation, petrol service station, supermarket and a public school in Talbingo.

The median age in Talbingo is 59. Many workers from the original Snowy Scheme retired in Talbingo.

**Table 4.3 Snowy Valleys Council LGA – population and demographic data**

	Batlow UCL	Cabramurra SSC	Tumbarumba UCL	Talbingo UCL	Tumut UCL	Snowy Valleys LGA	Non-metropolitan NSW	NSW
<b>Population 2006 – 2016</b> (count of persons and % change 2006 – 2016)								
2006	999	122	1,488	241	5,926	14,329	2,419,769	6,549,174
2011	1,026	364	1,455	199	6,086	14,293	2,512,952	6,917,656
2016	1,021	37	1,484	226	6,154	14,395	2,643,536	7,480,228
% change 2006 – 2011	↑ 2.70%	↑ 198.36%	↓ -2.22%	↓ -17.43%	↑ 2.70%	↓ -0.25%	↑ 3.85%	↑ 5.63%
% change 2011 – 2016	↓ -0.49%	↓ -89.84%	↑ 1.99%	↑ 13.57%	↑ 1.12%	↑ 0.71%	↑ 5.19%	↑ 8.13%
<b>Demographic 2016</b> (% of total population)								
Male	50.83%	54.05%	48.58%	51.77%	48.73%	50.56%	49.24%	49.28%
Female	49.46%	35.14%	51.35%	49.12%	51.30%	49.45%	50.76%	50.72%
Indigenous	2.45%	-	5.66%	2.65%	5.12%	4.38%	5.49%	2.89%
<b>Age groups 2016</b> (% of total population)								
0-4 years	4.31%	-	7.28%	4.87%	5.82%	5.62%	5.85%	6.22%
5-14 years	10.38%	10.81%	11.25%	8.45%	13.34%	12.46%	12.51%	12.32%
15-19 years	3.82%	-	5.26%	1.33%	5.72%	5.40%	6.03%	5.99%
20-24 years	4.02%	8.11%	5.32%	3.98%	5.43%	4.57%	5.58%	6.55%
25-34 years	11.17%	16.22%	10.92%	6.19%	10.59%	10.02%	10.98%	14.27%
35-44 years	9.50%	8.11%	10.98%	3.98%	11.26%	11.30%	11.53%	13.41%
45-54 years	11.46%	18.92%	12.20%	7.96%	12.74%	13.43%	13.19%	13.07%
55-64 years	16.55%	24.32%	35.81%	24.78%	12.98%	15.01%	13.77%	11.89%
65 years and over	27.62%	-	22.51%	35.84%	22.23%	22.22%	20.55%	16.28%
<b>Median age of persons 2016</b>								
Age	50	40	43	59	43	45	43	38

Notes: 1. This data table does not display 'inadequately described' and 'not stated' categories of Census data. Therefore, the sum of total percentage may not add up to 100%. (Source: ABS).  
2. The population data for Snowy Valleys LGA for 2006 and 2011 is a combination of Tumbarumba and Tumut Shire Councils' individual data. (Source: ABS).

**Table 4.4 Snowy Valleys Council LGA – employment and industry data**

	<b>Batlow UCL</b>	<b>Cabramurra SSC</b>	<b>Tumbarumba UCL</b>	<b>Talbingo UCL</b>	<b>Tumut UCL</b>	<b>Snowy Valleys LGA</b>	<b>Non-metropolitan NSW</b>	<b>NSW</b>
<b>Employment 2016</b> (% of labour force, persons aged 15 years and above)								
Full time	51.65%	72.22%	59.90%	58.33%	56.56%	58.27%	55.16%	59.20%
Part time	30.90%	-	29.15%	25.00%	31.28%	29.78%	32.76%	29.71%
Unemployed	5.90%	-	5.64%	8.33%	6.54%	5.42%	6.63%	6.25%
<b>Median income 2016</b> (median income \$ weekly)								
Individual	\$496	\$1,416	\$576	\$525	\$546	\$577	\$584	\$664
Household	\$858	-	\$1,089	\$890	\$1,066	\$1,120	\$1,168	\$1,482
<b>Top 3 industries of employment 2016</b> (% of employed persons aged 15 years and above)								
1	Agriculture, forestry and fishing (22.14%)	Accommodation and food services (61.11%)	Manufacturing (19.62%)	Accommodation and food services & electricity, gas, water and waste services (23.64%)	Manufacturing (17.16%)	Agriculture, forestry and fishing (18.18%)	Health care and social assistance (14.36%)	Health care and social assistance (12.49%)
2	Administrative and support services (11.44%)	Electricity, gas, water and waste services (16.67%)	Public administration and safety (12.46%)	Administrative and support services (9.09%)	Health care and social assistance (11.83%)	Manufacturing (13.87%)	Retail trade (10.35%)	Retail trade (9.66%)
3	Health care and social assistance (10.45%)	-	Agriculture, forestry and fishing (8.70%)	Construction (7.27%)	Retail trade (11.50%)	Health care and social assistance (9.65%)	Education and training (9.02%)	Education and training (8.36%)



**Table 4.5**      **Snowy Valleys Council LGA – population and demographic data**

	Batlow UCL	Cabramurra SSC	Tumbarumba UCL	Talbingo UCL	Tumut UCL	Snowy Valleys LGA	Non-metropolitan NSW	NSW
<b>Top 3 occupations 2016</b> (% of employed persons aged 15 years and above)								
1	Labourers (28.86%)	Technicians and trades workers (44.44%)	Labourers (19.62%)	Labourers & Professionals (18.18%)	Technicians and trade workers (16.53%)	Managers (17.29%)	Professionals (18.08%)	Professionals (23.61%)
2	Machinery operators and drivers (14.93%)	Managers & Labourers (22.22%)	Technicians and trades workers (14.51%)	Managers (16.36%)	Labourers (15.12%)	Labourers (16.07%)	Technicians and trades workers (14.82%)	Clerical and administrative workers (13.84%)
3	Community and personal service workers (12.44%)	-	Machinery operators and drivers (14.33%)	Technicians and trades workers (14.55%)	Professionals (13.74%)	Technicians and trades workers (13.87%)	Managers (13.04%)	Managers (13.49%)

Notes:    This data table does not display 'inadequately described', 'not stated' and 'other type' categories of Census data. (Source: ABS).

## v Cabramurra

Cabramurra is located approximately 18 km south of Lobs Hole. The major access road into Cabramurra is via B72 Snowy Mountains Highway, then via The Link Road and Goat Ridge Road. The two nearest major towns are Cooma and Tumut, with approximately one and half hours driving distance to both towns.

In the 2016 Census, Cabramurra had a total population of 37 people, approximately 60% being male and approximately 40% female.

Over the 10 year period from 2006 Census to 2016 Census, the population number decreased from 122 to 37 people. Being a Snowy Hydro owned town which provides housing to its local workforce, the population fluctuates from year to year.

Cabramurra was originally a town solely established for to house workers associated with Snowy Hydro. Houses were modernised and rebuilt in the early 1970s and are still used to accommodate Snowy workers and contractors. It does not provide accommodation for individual tourists and tourist groups, although drive-past tourists can use the town's cafe, bistro and toilet facilities.

The median age in Cabramurra is 40.

Cabramurra will be used temporarily to accommodate workers for the Exploratory Works when the accommodation camp is being built.

### 4.3 Education

The education levels in the local area are generally below the State average. Education continues to be identified as a service area in need of improvement for the future sustainability of the area.

There are 18 primary, secondary, combined and special schools in the local area. Of these, 13 are government schools and five are non-government schools. There are ten primary schools, three secondary schools, four combined educations and one special school. The following is a list of the schools and their details.

The percentage of the population attending primary and secondary schools in the local area is relatively lower than non-metropolitan NSW and NSW. This can be attributed to the relatively high proportion of older aged people in these communities.

**Table 4.6 School data 2017**

	Sector	Type	Year range	Teacher	Enrolment	Index of community socio-economic advantage value (ICSEA) – average ICSEA value is 1,000
<b>Adaminaby</b>						
Adaminaby Public School	Government	Primary	K-6	1	18	973
<b>Batlow</b>						
Batlow Technology School	Government	Combined	K-12	13	117	918
St Mary's Primary School	Non-government	Primary	K-6	6	51	980
<b>Cabramurra</b>						
Cabramurra Public School	Government	Primary	K-6	1	4	-
<b>Cooma</b>						
Cooma North Public School	Government	Primary	K-6	16	327	973
Cooma Public School	Government	Primary	U, K-6	12	265	964
Monaro High School	Government	Secondary	U, 7-12	40	462	972
Snowy Mountains Christian School	Non-government	Combined	K-10	9	76	1,024
St Patrick's Parish School	Non-government	Combined	K-10	27	274	1,022
<b>Providence Portal</b>						
No school in Providence Portal.						
<b>Talbingo</b>						
Talbingo Public School	Government	Primary	K-6	1	7	1,015
<b>Tumbarumba</b>						
All Saints Primary School	Non-government	Primary	K-6	6	49	1,014
Tumbarumba Public School	Government	Primary	K-6	7	164	946
Tumbarumba High School	Government	Secondary	U, 7-12	16	179	931
<b>Tumut</b>						
Franklin Public School	Government	Primary	K-6	15	292	900
Tumut Public School	Government	Primary	K-6	15	317	982
Gadara School	Government	Special	U	5	26	-
McAuley Catholic Central School	Non-government	Combined	K-10	27	337	1,018
Tumut High School	Government	Secondary	U, 7-12	45	557	950

*Note:* U = students and/or classes, which cannot readily be allocated to a specific year of education; eg, students with special education needs.

Information collected during the interview (later chapter and appendix) may not be the same as information reflected in the table above. This is due to information on published data were collected in 2017, qualitative information collected in this SA is in 2018. (Source: [myschool.edu.au](http://myschool.edu.au)).

The table compares ICSEA values for each of the schools in the local area. ICSEA is a scale of socio-educational advantage that is computed for each school in Australia. Generally schools with a value of more than 1,000 are considered to be more advantaged, while schools with a value below 1,000 are considered to be less advantaged.



Note that the very small sample size (ie population) for some localities, such as Adaminaby, introduces limits to the level of confidence when interpreting statistical data for those towns. The following analysis needs to be seen in this context.

- In most towns within the local area, pre-school attendance represents around 5% of the school attending population. In Adaminaby pre-school attendance represents only 0.59. This can be attributed to the low number of children at the age of 0 – 4 years in the population of Adaminaby as indicated in Table 4.1.
- The proportion of the population attending secondary school in Adaminaby is 28.21%, compared to the LGA average of 18.98%, non-metropolitan NSW 20.61% and NSW at 20.08%.
- The proportion of the population in Adaminaby and Talbingo attending university or other tertiary institution is 0%, compared to LGA average of 6.92% and 4.42% respectively, and non-metropolitan NSW 10.33% and NSW at 16.18%. The low attendance of university or other tertiary institution may be related to the travel required to attend a tertiary institution and/or the local employers may not require tertiary qualifications in the labour force. It also needs to be acknowledged that the populations in Adaminaby and Talbingo have a high proportion of residents in older age brackets where demand for tertiary education is generally low.
- In terms of non-school qualifications across the local area, the population of Adaminaby reported nil qualifications at graduate diploma and graduate certificate level, a small proportion with qualification at bachelor degree level (5.05%), but a high rate in certificate level qualification at 52.53% compared to the LGA average of below 50%.
- Certificate level qualification remains the top and most common form of qualification level across all of NSW. The second form of qualification in non-metropolitan NSW (as well as most of the local area) is a bachelor degree level. In rural towns such as Adaminaby, Tumbarumba and Talbingo, the second most common non-school qualification is advanced diploma and diploma level.

## 4.4 Social well-being

### 4.4.1 Health care services and facilities

The local area is located within the primary health network areas of South Eastern NSW and Murrumbidgee. The towns within the local area located within the area of South Eastern NSW Health Network area include Adaminaby and Cooma. Towns located within Murrumbidgee Health Network area include Batlow, Talbingo, Tumbarumba and Tumut.

#### i South Eastern NSW

Between 2015 to 2016, the percentage of adults (aged 15+ years) who saw a general practitioner (GP) in the last 12 months within the South Eastern NSW area was 83.3%. This is slightly higher than the national figure of 81.9%. The percentage of adults who saw a GP after hours, during 2015-2016 was 3.3%, compared to the national performance of 8%. The number of adults who visited a GP after hours increased from 4.7% in 2013 to 2014 to 7.1% in 2014 to 2015 but reduced again in 2015 to 2016.

**Table 4.7 Education data**

	Adaminaby UCL	Cooma UCL	Snowy Monaro Regional LGA	Batlow UCL	Cabramurra SSC	Talbingo UCL	Tumbarumba UCL	Tumut UCL	Snowy Valleys LGA	Non- metropolitan NSW	NSW
<b>Type of education institution attending 2016</b> (% of persons attending an educational institution)											
Pre-school	0.59%	4.80%	4.87%	5.75%	0%	5.26%	6.62%	5.47%	5.57%	6.08%	5.68%
Infants/primary	20.51%	22.16%	26.17%	22.99%	23.53%	22.81%	25.57%	27.40%	26.93%	27.26%	26.11%
Secondary	28.21%	17.31%	18.98%	19.54%	0%	15.79%	18.95%	17.49%	18.78%	20.61%	20.08%
Technical or further educational institution	23.08%	6.40%	6.19%	2.68%	0%	7.02%	6.62%	7.43%	6.26%	6.47%	6.20%
University or other tertiary institution	0%	6.40%	6.92%	5.75%	0%	0%	5.02%	4.54%	4.42%	10.33%	16.18%
<b>Non-school qualifications 2016</b> (% of persons aged 15 years and above with a qualification)											
Postgraduate degree level	3.03%	3.68%	4.06%	3.04%	0%	2.31%	1.77%	1.79%	1.91	4.45%	9.35%
Graduate diploma and graduate certificate level	0%	2.29%	2.54%	1.74%	0%	2.31%	3.06%	1.68%	1.89%	2.63%	2.06%
Bachelor degree level	5.05%	14.92%	17.13%	20%	17.65%	11.54%	11.29%	13.81%	13.75%	17.72%	23.26%
Advanced diploma and diploma level	12.12%	12.04%	13.40%	15.65%	17.65%	17.69%	11.62%	12.32%	12.82%	14.03%	12.09%
Certificate level	52.53%	38.02%	39.79%	49.13%	17.65%	44.62%	42.90%	40.16%	41.03%	40.43%	36.74%

Notes: This data table does not display 'inadequately described', 'not stated' and 'other type' categories of Census data. Therefore, the sum of total percentage may not add up to 100%. (Source: ABS).

Continued access to a preferred GP is a factor which promotes consistent health care services in any community. In the South Eastern NSW area (2013-14 data), 81.8% of adults indicated they have a preferred GP. This is higher than the national benchmark of 79.7%. For the same period, however, 39.2% indicated that they had difficulty accessing their preferred GP. This percentage is higher than the national benchmark of 28.5%.

In summary, the majority of the adults living in the South Eastern NSW area are able to identify a preferred GP but they also experience some difficulty in accessing their preferred GP when needed. This suggests that GPs identified as preferred GPs by adults in the community are not able to fully accommodate the demands for access to their services.

## ii Murrumbidgee

The percentage of adults who saw a GP in Murrumbidgee Primary Health Network area between 2015 and 2016 is 87.5%, This is higher than the national figure of 81.9%. However, the number of after hour GP attendance is only 0.17 attendance per person, while the national benchmark is 0.48.

The percentage of adults who saw a GP more than 12 times between 2015 to 2016 is 12.3%, higher than the national figure of 10.8%. The population within the Murrumbidgee area making a patient visit to the Emergency Department of the public hospitals was 23.9%, compared to the national rate of 13.5%.

In this area and in the period 2015 to 2016, 25.6% of adults saw three or more health professional for the same condition. This is notably higher than the national figure of 15.3%.

More than 80% of adults in Murrumbidgee area identified that they have a preferred GP, however 29.9% of adults indicated that they had difficulty in accessing their preferred GP. Both results are higher than the national figure.

In summary, similar to the South Eastern NSW area, residents living in the Murrumbidgee Primary Health Network Area are able to identify a local preferred GP, but gaining access to that preferred GP is reported as being difficult. Adults also see multiple health professionals for the same condition which may indicate 'GP shopping' in the community or it could also simply be as a result of the inability to access the preferred GP(s) for chronic health issues. The latter interpretation is supported by the data regarding the higher than normal reliance of emergency departments at local public hospitals.

## iii Site observation

There are no medical centres in some of the towns within the local area such as Adaminaby, Talbingo and Providence Portal. Residents in these areas travel to nearby towns such as Cooma and Tumut to access GP and hospital services. However, in towns where GP services are provided, after hour GP services are not available. Residents go to the hospital for after-hour medical services.

## iv Aged care service

There are more residential aged care places in the Snowy Valleys LGA than Snowy Monaro Regional LGA, however, the population aged 70 years and over is not in proportion to the number of aged care facilities. Snowy Valleys LGA's residential care places per 1,000 population aged 70 years and over is 85.2. This is marginally above the NSW figure of 83.4 per 1,000 and non-metropolitan of 82.4 per 1,000. However, Snowy Monaro Regional LGA's residential care places per 1,000 population aged 70 years and over, is only 68.9 places. This is below the State figure.



The ageing population in the local area will place significant and growing pressure on government and non-government providers to meet healthcare service and infrastructure demands into the future.

#### 4.4.2 Hospitalisation

Both public hospitals in Cooma and Tumut are small regional facilities, each having less than 50 beds. Both hospitals have emergency departments.

- Although the number of patients admitted to Cooma Hospital has been steady over recent years there has been a decline in childbirth, medical emergencies and surgical treatment. The number of admissions under other medical treatment has, however, increased from 866 in 2011 to 2,131 in 2016. Tumut Hospital has a similar trend in terms of decline in childbirth, medical emergencies and surgical treatment, and increase in the number of admissions under other medical treatment.
- In 2016 to 2017, 99% of patients received Category 1 surgery within 30 days at Cooma Hospital, which is consistent with the national hospital peer group performance of 99% also. Category 2 surgery within 90 days is, however, only 93% compared to national peer group average of 98%. Category 3 surgeries within 365 days have reached 100% compare to national peer group average of 99%.
- In 2016 to 2017, the median waiting time for Category 1 surgery was 15 days at Cooma Hospital, which is a slightly longer waiting period compared to the national peer group performance of 11 days. The median waiting time for Category 2 surgery was 56 days, which is a more significant variation from the national peer group performance of 35 days. A category 3 surgery has a median waiting time of 137 days compared to national peer group performance of 84 days. The overall waiting time in Cooma hospital for any type of surgery is therefore generally longer than the national average.
- Between 2016 and 2017, 10,130 patients presented to the Cooma Hospital Emergency Department for treatment. This is generally consistent with the 10,265 presentations made in the period 2015 to 2016.
- In 2016 to 2017, 100% of patients received Category 1 surgery within 30 days at Tumut Hospital, compared to national peer group performance of 99%. However, Category 2 surgery within 90 days is only 92% compared to national peer group performance of 98%. Category 3 surgeries data did not meet the criteria to calculate this indicator - due to statistically too few surgeries performed under Category 3.
- In 2016 to 2017, the median waiting time for Category 1 surgery was 20 days compared to national peer group performance of 11 days. The median waiting time for Category 2 surgery was 63 days compared to national peer group median of 35 days. Category 3 surgery data did not meet the criteria to calculate this indicator; the reason is the same as above. The overall waiting time for surgery in Tumut Hospital is longer than Cooma and national median.
- There are 5,933 patients presented to the Tumut Hospital emergency department for treatment between 2016 to 2017, decreased from 6,766 in 2015 to 2016.

Intentional self-harm hospitalisation rate is relatively high in the Snowy Valleys LGA (171 per 100,000 people), compared to Snowy Monaro Regional LGA (149.6 per 100,000 people) and NSW average (135.2 per 100,000 people).

Overall car accident related hospitalisation in Snowy Monaro Regional LGA and Snowy Valleys LGA have declined over time, particularly hospitalisation resulting from minor car accidents.

There is a regional hospital in Batlow and Tumbarumba. Both regional hospitals are called multipurpose service centres with services delivered via an alcohol and drug unit, domiciliary care unit, emergency department and nursing home care unit.

There are no hospitals in Adaminaby, Talbingo, Cabramurra, and Providence Portal.

Residents either drive to Cooma and Tumut for hospital services, or travel to Wagga Wagga, Canberra, and Sydney for complex medical procedures. Less complex health issues are managed through Batlow and Tumbarumba multipurpose centres, as well as Cooma and Tumut hospitals.

The NSW Government announced in the 2017/2018 Budget statement for regional development that the State Government will invest \$1.5 million in the Cooma Hospital redevelopment with an estimated total cost of \$10 million. The Government is also planning potential future upgrades to Tumut Hospital. The Tumbarumba multi-purpose service building is being renovated.

#### 4.4.3 Cause of deaths

Between 2014 and 2015, there were 162 deaths of residents in the Snowy Monaro Regional LGA. The death rate relative to total population has decreased by approximately 19% over the period 2001 to 2015.

The death rate in Snowy Valleys LGA decreased by 14% from 2001 to 2015.

The published data indicates that the overall cardiovascular disease death rate was higher in Snowy Valleys LGA (176.9 per 100,000 people) and marginally lower in Snowy Monaro Regional LGA (172.1 per 100,000 people). Both LGA however represent higher cardiovascular related deaths than NSW average of 155.7 per 100,000 people. Out of all circulatory disease, coronary heart disease death rate is the highest across NSW (66.8 per 100,000 people), and again this cause of death is higher in Snowy Valleys LGA (73.4 per 100,000 people) and Snowy Monaro Regional LGA (72.1 per 100,000 people).

Diabetes related death ranks second as a cause of death in both Snowy Monaro Regional LGA and Snowy Valleys LGA, representing 29.5 per 100,000 people and 28.7 per 100,000 people respectively. It is similar to NSW average of 29.5 per 100,000 people.

The road accident related death rate in Snowy Monaro Regional LGA represented 1.49% of the total NSW road accident related death rate in 2016. Snowy Valleys LGA representing 0.27%.

#### 4.4.4 Disadvantage

The Socio-Economic Indexes for Areas (SEIFA) is a suite of four summary measures that were created from Census data, including

- the Index of Relative Socio-Economic Disadvantage (IRSD);
- the Index of Relative Socio-Economic Advantage and Disadvantage (IRSAD);
- the Index of Education and Occupation (IEO); and
- the Index of Economic Resources (IER).

Each index is a summary of a different subset of Census variables and focuses on a different aspect of socio-economic advantage and disadvantage.

The ABS broadly defines relative socio-economic advantage and disadvantage in terms of peoples access to material and social resources, and their ability to participate in society. As such, SEIFA provides a basis for comparison of the level of socio-economic advantage and disadvantage between LGAs.

Note that the SEIFA provides data based on 'pre-merger' local government areas prior to 2016.

The IRSD ranks areas on a continuum from most disadvantaged (high in rank) to least disadvantaged (low in rank). The IRSAD also ranks areas in the same way, high in rank being most disadvantaged, low in rank being most advantaged.

The result of the 2016 SEIFA, relevant to the local area, can be found in Table 4.8.

**Table 4.8 SEIFA 2011 and 2016**

	<b>IRSD 2011</b>	<b>IRSAD 2011</b>	<b>IRSD 2016</b>	<b>IRSAD 2016</b>
Snowy Monaro Regional LGA	-	-	Rank 100 in NSW	Rank 90 in NSW
<i>Bombala LGA (former)</i>	Rank 56 in NSW	Rank 45 in NSW	-	-
<i>Cooma Monaro LGA (former)</i>	Rank 103 in NSW	Rank 95 in NSW	-	-
<i>Snowy River LGA (former)</i>	Rank 133 in NSW	Rank 123 in NSW	-	-
Snowy Valleys LGA	-	-	Rank 40 in NSW	Rank 34 in NSW
<i>Tumut Shire LGA (former)</i>	Rank 53 in NSW	Rank 41 in NSW	-	-
<i>Tumbarumba LGA (former)</i>	Rank 60 in NSW	Rank 59 in NSW	-	-

- Snowy Monaro Regional LGA ranked 100 and 90 in NSW respectively for IRSD and IRSAD in 2016.
  - This is the first time this LGA has been assessed following the merger of Bombala, Cooma Monaro and Snowy River Councils in 2016.
  - Compared to SEIFA index 2011, Bombala ranked 45 in NSW; Cooma-Monaro ranked 95 in NSW; and Snowy River ranked 123 in NSW.
- Snowy Valleys LGA ranked 40 and 34 in NSW respectively for IRSD and IRSAD in 2016.
  - This is also the first time this LGA has been assessed following the merger of Tumut Shire and Tumbarumba Councils in 2016.
  - Compared to SEIFA index 2011, Tumut Shire ranked 41 in NSW; Tumbarumba ranked 59 in NSW.

Snowy Monaro Regional LGA is above average in SEIFA index, and Snowy Valleys LGA is below average in SEIFA index.



#### 4.4.5 Crime

Data from the NSW Bureau of Crime Statistics and Research indicates that the average crime ranking of Snowy Monaro Regional LGA in 2016 was at 77 out of 120 LGAs (ie LGAs that have populations greater than 3,000 people), with a ranking of one being the worst and 120 being the best. In a 2012 ranking, Snowy Monaro Regional LGA was ranked 56, suggesting that crime risk in the Snowy Monaro Regional LGA has improved.

Note that the data is disaggregated by specific categories of crime (eg sexual offence, theft, fraud) and these are examined below.

Improvements are most evident in the following areas between the 2012 and 2016 periods:

- assault – non-domestic violence related offences;
- stealing related offences;
- fraud;
- intimidation, stalking and harassment related offences;
- other theft; and
- transport regulatory offences.

The two lowest ranking, being theft and transport regulatory offences had a nil incident rate in 2016.

However, Snowy Monaro Regional LGA was high in the following crime categories:

- sexual offences (ranked 40 in 2016);
- possession (ranked 20 in 2016);
- prohibited and regulated weapon offences (ranked 38 in 2016);
- offensive conduct (ranked 39 in 2016);
- offensive language (ranked 50 in 2016);
- liquor offence (ranked 6 in 2016); and
- resist or hinder officer (ranked 37 in 2016).

Liquor offence, in particular, got worse from ranking 12 out of 120 LGAs in 2012 to being number 6 out of 120 LGAs in 2016.

The average crime ranking for Snowy Valleys LGA in 2016 was 41 out of 120 LGAs (ie LGAs with a population greater than 3,000 people). Compared to its ranking at 62 out of 120 LGAs in 2012, this suggests that Snowy Valleys LGA's crime risk has reduced during that period.

Improvements are most evident in the following areas between the 2012 and 2016 periods:

- trespass;
- offensive conduct;
- offensive language; and
- resist or hinder officer.

In other crime categories, the crime ranking has moved up:

- assault – domestic violence related (ranked 28 in 2016);
- break and enter – non dwelling (ranked 23 in 2016);
- steal from motor vehicle (ranked 25 in 2016);
- stealing from a dwelling (ranked 13 in 2016);
- malicious damage to property (ranked 12 in 2016);
- receiving and handling stolen goods (ranked 14 in 2016);
- other theft (ranked 20 in 2016); and
- breach apprehended violence order (ranked 5 in 2016).

## 4.5 Telecommunications

The Australian Government's Regional Telecommunications Independent Review Committee conducted a Regional Telecommunications Review in 2015 into the adequacy of telecommunication services in regional, rural and remote parts of Australia.

It is evident in the review that regional users are evolving rapidly in their consumption of telecommunications services. They are reflecting society-wide changes in the way that they obtain entertainment and information, conduct their businesses and receive public services. They also have distinct needs and challenges arising from their geographic location and more mobile-dependent lives. Some examples of the activities that require good mobile reception in the regional areas include:

- travelling long distances and spending extended periods of time outdoors, relying on mobile services for communication and safety;
- having a high dependence on online channels for accessing entertainment, shopping and essential services such as banking, education and healthcare;
- running home-based businesses, with different communications needs in comparison to other residential premises; and
- facing risks during natural disasters such as bushfire, creating a higher dependency on reliable emergency service connections, and also a greater risk of mass service disruptions due to damage to infrastructure.

Coverage of non-metropolitan areas is lower than in urban areas. The mobile coverage by operators as a percentage of the population can be summarised as follows:

- Telstra
  - metro: 3G 100%, 4G 95%; and
  - non-metro: 3G 98%, 4G 74%.
- Optus
  - metro: 3G 100%, 4G 89%; and
  - non-metro: 3G 96%, 4G 60%.
- Vodafone
  - metro: 3G 99%, 4G 87%; and
  - non-metro: 3G 87%, 4G 50%.

In the Mobile Black Spot Program, Tumut is identified as being one of the priority locations requiring improvements in telecommunications services.

According to a survey conducted in 2016, 19.4% of private dwellings in Snowy Monaro Regional LGA and 26% of private dwellings in Snowy Valleys LGA do not have access to the internet, which represents 1,462 and 1,401 households respectively. This is greater than NSW figure of 14.7% and non-metropolitan NSW of 19.5%.

Overall, in accordance with the operators' network coverage maps, the majority of the Exploratory Works area has no mobile coverage. The closest Telstra and Optus base stations are near Selwyn Snow Resort, however, the network coverage is not wide enough to cover the Exploratory Works area.

## 4.6 Transport infrastructure

### 4.6.1 Airport

Snowy Mountains Airport is located 16 km south-west of Cooma on the Kosciuszko Road. It provides return services from the Snowy Mountains to Sydney and is serviced by Regional Express (Rex). A variety of options are available to passengers arriving at or departing from Snowy Mountains Airport, such as airport shuttle, private transfers, rental cars and taxis service the airport.

There is one flight to and from Snowy Mountains Airport from Sunday to Friday outside of the ski season. No flights are available on Saturday. During the snow season, more flights are available with up to 12 return flights a week.



The NSW Government's \$110 million Regional Tourism Infrastructure Fund supports regional tourism by funding critical visitor economy infrastructure projects such as rail trails, airports and cruise terminals. The NSW Government has committed \$70 million for upgrades to 27 regional airport projects that will boost their capacity and safety and increase their ability to attract visitors to regional NSW. The projects include terminal upgrades, apron and runway improvements, investment in airport emergency services, lighting upgrades and other vital works to accommodate more and larger aircraft, to improve safety and services. Snowy Mountains Airport has been identified as a Stage 2 regional airport infrastructure project.

#### 4.6.2 Road network

Snowy Mountains Highway (B72) is a State-funded rural highway and is the main transport route that connects the site to Cooma and the Hume Highway. It runs from Princes Highway north of Bega, via Bemboka to the Monaro Highway south of Nimmitabel; then from the Monaro Highway at Cooma at the junction of Sharp Street and Bombala Street, via Sharp Street and then via Adaminaby, Kiandra, Rules Point, Tumut and Adelong to the Hume Highway near Hills Creek.

The Monaro Highway runs from the Victorian border, via Rockton, Bombala, Nimmitabel, Cooma, Bredbo, Michelago and Royalla to Canberra.

The NSW Government, in the 2017/2018 Budget, announced several road infrastructure developments in the local area; include an investment of \$1.5 million in the Monaro Highway Overtaking Lanes and Safety Improvements and \$1.5 million in Kosciuszko Road Overtaking Lanes and Safety Improvements.

#### 4.6.3 Train and coach network

The local area is not serviced by train, but is serviced by a coach network which generally connects the major towns of Cooma and Tumut with Canberra.

### 4.7 Housing and rental

Table 4.9 provides key statistics regarding housing type, structure, and tenure within the local area, in comparison with LGA and State-wide data.

- The proportion of occupied private dwellings generally reflects the non-metropolitan state average in most of the local area and the LGAs, but below NSW overall, except Adaminaby and Talbingo which have a lower proportion of occupied private dwellings. The Snowy Monaro Regional LGA overall occupancy rate is lower than the Snowy Valleys LGA, predominantly due to the low occupancy rate and high vacancy rate in Adaminaby (36.88% vacancy) and Talbingo (63.64% vacancy).
- As would be expected in these rural areas, there is a predominance of separate houses, as opposed to semi-detached or apartment dwellings. Cooma and Tumut have a slightly higher rate of semi-detached, row or terrace house, townhouse, and apartment dwellings.

**Table 4.9 Housing and rental data**

	Adaminaby UCL	Cooma UCL	Snowy Monaro Regional LGA	Batlow UCL	Cabramurra SSC	Talbingo UCL	Tumbarumba UCL	Tumut UCL	Snowy Valleys LGA	Non- metropolitan NSW	NSW
<b>Dwelling type 2016</b> (% of all dwellings)											
Occupied private dwellings	63.13%	86.79%	75.87%	86.05%	-	36.36%	83.36%	89.52%	83.87%	86.83%	90.14%
Unoccupied private dwellings	36.88%	13.07%	24.15%	13.11%	-	63.64%	16.20%	10.21%	16.14%	13.17%	9.86%
<b>Dwelling structure 2016</b> (% of occupied private dwellings)											
Separate house	94.06%	87.02%	75.16%	93.86%	-	96.74%	93.27%	90.19%	93.41%	82.17%	65.25%
Semi-detached, row or terrace house, townhouse	0%	4.33%	4.55%	1.72%	-	0%	2.67%	4.56%	2.51%	9.20%	12.17%
Flat or apartment	2.97%	6.30%	5.51%	0.98%	-	0%	1.96%	4.86%	2.84%	6.44%	20.66%
Other dwelling	0%	1.16%	1.48%	1.97%	-	0%	1.07%	0.13%	0.59%	1.47%	1.33%
<b>Dwelling tenure 2016</b> (% of occupied private dwellings)											
Owned outright	56.44%	35.65%	38.96%	43.49%	-	61.96%	37.43%	37.02%	42.22%	37.44%	30.66%
Owned with a mortgage	17.82%	28.27%	30.85%	28.99%	-	13.04%	27.81%	29.27%	29.14%	30.61%	30.43%
Rented	16.83%	31.29%	25.05%	23.34%	-	23.91%	29.59%	30.48%	24.81%	27.91%	30.25%
Other tenure	0%	0.54%	0.97%	0.98%	-	0%	0%	0.65%	0.72%	1.00%	0.90%
<b>Mortgage repayment and rent 2016</b> (median mortgage repayments \$ monthly/median rent \$ weekly)											
Mortgage repayments	\$802	\$1,150	\$1,300	\$953	-	\$1,000	\$1,133	\$1,353	\$1,300	\$1,590	\$1,986
Rent	\$150	\$222	\$220	\$158	-	\$135	\$180	\$200	\$180	\$270	\$380

Notes: This data table does not display 'inadequately described' and 'not stated' categories of Census data. Therefore, the sum of total percentage may not add up to 100%. (Source: ABS)

- There was a higher proportion of dwellings being purchased and a lower proportion of being rented in the local area and LGA compared to NSW. Adaminaby and Talbingo contained a larger proportion of fully owned dwellings, reflecting the older population age profile of these areas, while Batlow, Cooma and Tumut having a higher proportion of mortgagees.
- Adaminaby and Talbingo have lower value rents but also a higher vacancy rate, indicating lower rental demand.
- The number of properties sold in both Cooma and Tumut increased significantly following the announcement of Snowy 2.0. The sale volume increased by approximately 45% and 108% in Cooma and Tumut respectively in the 12 months, since March 2017.

A search of long-term rental housing available in the main towns and communities within the local area was undertaken using various websites, including realestate.com.au, domain.com.au, rent.com.au and realestateview.com.au on two separate dates including 17 May 2018 and 13 June 2018 (see Table 4.10). Results were averaged over the two dates.

**Table 4.10 Long-term rental housing availability<sup>1</sup>**

	Two bedrooms	Three bedrooms	Four + bedrooms	Total
Adaminaby	0	1	0	1
Batlow	2	1	0	3
Cooma	5	5	3	13
Jindabyne	0	5	2	7
Talbingo	0	2	0	2
Tumbarumba	0	1	1	2
Tumut	6	12	8	26
<b>Total</b>	<b>13</b>	<b>27</b>	<b>14</b>	<b>54</b>

Source: realestate.com.au, domain.com.au and rent.com.au.

Note: 1 = availability was averaged over two search dates using three websites.

The results show that there were 54 properties available to rent with two bedrooms or more in the main towns and communities within the local area. There were 13 properties for rent in Cooma and 26 properties in Tumut.

## 4.8 Limitations of data

Baseline demographic data used in this SA was extracted from the Census. Using raw census data for seasonal tourism destinations, such as the areas within Snowy Monaro Regional and Snowy Valleys LGAs may not be representative of whole-year demographics. The Census was undertaken during winter and in the ski resort areas such as the Snowy Mountains, winter represents a season when visitation is high, household incomes rise and employment opportunities peak.

Desktop analysis can only rely on available and published data of the local area.

The baseline capacity data was obtained from face-to-face and telephone interviews with selected SLPs in the Snowy Monaro Regional and Snowy Valleys LGAs. The information obtained from the SLPs is subjective, with opinions varying from person to person.





## 5 Stakeholder engagement

### 5.1 Introduction

This chapter provides details on stakeholder engagement activities undertaken before and during the preparation of this SA, both as part of Snowy 2.0 and then specifically for Exploratory Works.

Stakeholder engagement commenced on the broader Snowy 2.0 before Exploratory Works was being scoped. Given the difficulty in quarantining discussion or feedback on Exploratory Works from the broader Snowy 2.0 during this time, details on engagement activities for Snowy 2.0 as the scope for Exploratory works progressed have also been included in this chapter.

Stakeholder engagement has been led by Snowy Hydro with the support of EMM and technical specialists where required.

### 5.2 Engagement objectives

Key components of this SA have been to develop an understanding of community values and uses associated with the local area, to develop qualitative data on service provision within the local area (to support the quantitative data obtained) and to understand impacts and opportunities associated with Exploratory Works specifically and on Snowy 2.0 more broadly.

By investing substantial resources and effort over many years, Snowy Hydro has established significant stakeholder goodwill and an enviable reputation as a trusted and respected corporate and community 'citizen'. This is reflected in exceptionally high results in community perception research. Snowy Hydro has successfully met the growing demands of societal and political expectations of corporate social responsibility by supporting the communities in which it operates on various events, activities and special projects.

Snowy Hydro has adopted a proactive and flexible stakeholder engagement strategy for Snowy 2.0, which will be applicable to all phases of Snowy 2.0, including Exploratory Works. It aims to meet the demands of a diverse range of stakeholders with changing needs. The strategy has been designed to deliver the following objectives:

- create awareness of Snowy 2.0, what the project will involve, potential impacts on stakeholders and the role the project will play in the NEM among key stakeholder groups;
- retain and build stakeholder support for Snowy 2.0 and encourage positive collaboration between Snowy Hydro and stakeholders;
- build strategic relationships and work in partnership with key stakeholders to ensure the matters impacting Snowy 2.0 can be mitigated or managed;
- identify and manage emerging issues through effective two-way engagement ; and
- be customisable, flexible, and dynamic to ensure engagement strategies meet the needs of stakeholders.

The specific objectives of stakeholder engagement for Exploratory Works are to ensure identified stakeholders have a sufficient understanding of:

- the scope of Exploratory Works;
- how Exploratory Works may affect them;
- how engagement contributes to the overall approval process for Exploratory Works; and
- how they can participate in the approval process and be informed and consulted;
- collect qualitative and quantitative data, evidence and insights for scoping the EIS, in ways that maximise diversity and representativeness;
- understand the interests that stakeholders have in Exploratory Works, and how potential impacts are predicted to be experienced from their perspective;
- consider the views of stakeholders in a meaningful way and using these insights to inform project planning, mitigation and enhancement measures, and monitoring and management frameworks; and
- respect people's privacy, allowing them to communicate their views anonymously if they desire.

### 5.3 Stakeholder engagement framework

To ensure all objectives outlined above are addressed, Snowy Hydro has developed an end-to-end framework for stakeholder engagement outlined in Figure 5.1. The framework is based on the International Association for Public Participation's (IAP2) *Public Participation Spectrum, 2014* (the Spectrum).

The framework will be applied throughout the lifespan of Snowy 2.0, with the ability to adapt if/when Snowy 2.0 progresses (including Exploratory Works) and as/when stakeholder requirements change, while remaining consistent with the overarching objectives.

The key phases are shown in Figure 5.1 and summarised below:

1. identify - identification of stakeholders and impacts;
2. design and prepare - definition of desired level of engagement (to inform, consult, involve, or collaborate), and the development of corresponding stakeholder engagement tools and methods;
3. engage - commence stakeholder engagement in line with the level identified in the previous phase, and implement relevant methods;
4. provide feedback - create mechanisms for timely two-way feedback on stakeholder needs and concerns; and
5. review - implement a continuous improvement loop to assess the adequacy and effectiveness of engagement, and where required, change the nature of engagement.

# 1. Identify

Three key stakeholder groups that require engagement have been identified:

- government agencies
- community
- industry groups

A range of potential impacts both positive and negative, of Exploratory Works were identified:

- impacts and opportunities on local employment, businesses, recreation and tourism
- impacts and benefits to towns, localities and services in the region
- impacts on roads; the environment and heritage

## 2. Design and prepare

Four levels of engagement were assigned to each stakeholder group; they include:

1. **Inform** – create awareness amongst stakeholders and communicate progress
2. **Consult** – proactively seek feedback through formal and informal mechanisms
3. **Involve** – in cases where feedback is provided on direct impacts, consider feedback when designing relevant activities
4. **Collaborate** – actively seek and incorporate stakeholder input into the design and implementation

## 3. Engage

The following engagement activities have been undertaken by Snowy Hydro:

- Community consultations in local townships
- Feedback surveys
- Community information booklets
- Regular updates to the company website about the project
- Snowy Hydro's quarterly newsletter
- Ongoing consultation with NPWS, DP&E, local councils (Snowy Valleys & Snowy Monaro Regional Council)
- Ongoing consultation with key stakeholders such as Aboriginal groups
- Briefings and engagement with local communities and community stakeholders obtained through existing relationships with the community; and
- Briefings and engagement with local business

A range of permanent engagement channels have been established for Snowy 2.0 to seek input from stakeholders and to support stakeholder engagement on an ongoing basis

A range of tools continue to be used to support communication and engagement for Snowy 2.0 and Exploratory Works, including: publications and information materials, community consultation sessions, presentations, meetings, workshops, media releases, articles, interviews, website updates and surveys

## 5. Review

The intent of this phase is to implement a continuous improvement loop to assess the adequacy and effectiveness of engagement, and where required, change the nature of engagement

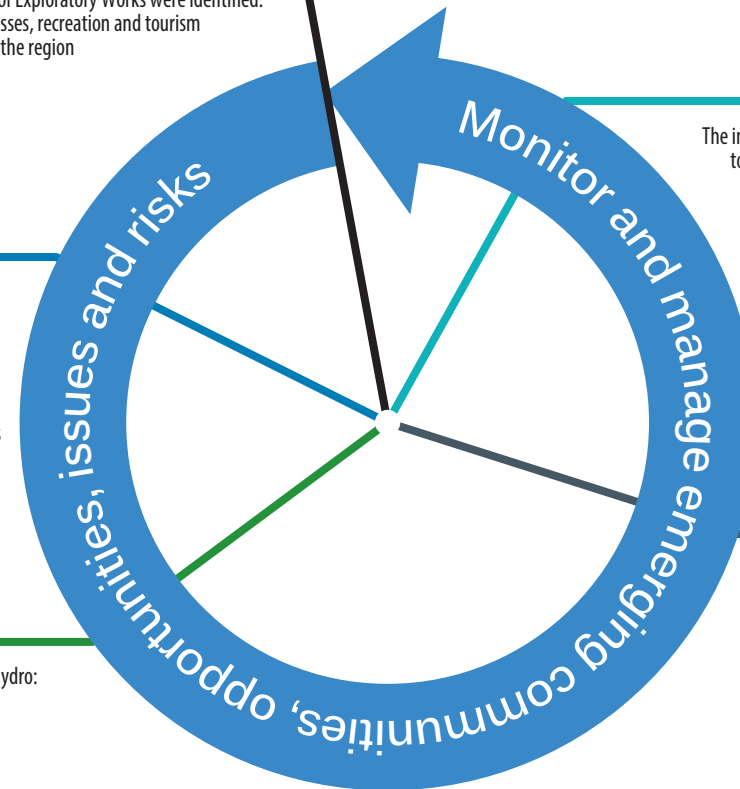
Snowy Hydro has undertaken the following activities:

- research into better practice in community engagement
- validation and testing with key internal stakeholders

## 4. Feedback

Purpose is to capture feedback during stakeholder engagement and to identify issues by the stakeholders to address throughout Snowy 2.0

Opportunities for future feedback will include the exhibition period for the Exploratory Works EIS



### 5.3.1 Phase 1 – identify

Snowy Hydro identified three key stakeholder groups, being government agencies, community and industry groups.

A range of potential impacts on the local community and industry groups, both positive and negative, of Exploratory Works were identified early by Snowy Hydro based on existing relationships with the stakeholder groups. Broadly, these were:

- impacts and opportunities on local employment and businesses;
- impacts and benefits to towns and localities in the region;
- impacts and benefits to services in the region;
- impacts and opportunities on recreation and tourism;
- impacts on roads; and
- impacts on environment and heritage.

Further details on the results of engagement with the local community and industry groups, particularly SLPs, is provided in sections 5.4 to 5.11.

### 5.3.2 Phase 2 – design and prepare

Targeted methods of consultation and engagement from the IAP2's Spectrum were identified to match the needs of each stakeholder group and subgroup.

The stakeholder engagement framework is supported by four levels of engagement as follows:

1. Inform - create awareness amongst stakeholders and communicate progress of the Project in a timely manner;
2. Consult - proactively seek feedback through formal and informal mechanisms to identify and mitigate potential concerns; and establish processes for ongoing dialogue and complaints management;
3. Involve - in cases where feedback is provided on direct impacts, consider feedback when designing relevant activities; and
4. Collaborate - actively seek and incorporate stakeholder input into the design and implementation of that stakeholder-centric project activity.

Table 5.1 outlines Snowy Hydro's definition of the desired level of engagement for the identified stakeholder groups, based on the desired engagement levels.

Snowy Hydro has designed their approach with the intention to suit the identified stakeholder needs, with the level of engagement, communication tools, and activities tailored for each group; to be periodically reviewed to ensure they remain fit-for-purpose.



**Table 5.1 Stakeholder engagement - levels of engagement for identified stakeholder groups**

Level	Stakeholder	Stakeholder groups	Engagement goal	Commitment
Inform	Government	MPs and Senators Parliamentary committee	Provide stakeholders with information to assist their understanding of Snowy 2.0, including Exploratory Works, and build advocacy Provide a two-way communication between Snowy Hydro and stakeholder groups	Keep informed by providing with information and updates as Snowy 2.0 advances
	Community stakeholders	Environment groups Irrigators Other local groups General public Principal Contractors		
	Industry groups	Business groups Energy sector peak bodies Generators/retailers Regional/special interest groups Environment/green groups		
Consult	Government	Policy/regulatory agencies Federal and State departments Federal and State Ministers/Opposition spokespeople Local councils	As per 'inform' plus: Provide information and seek community stakeholder feedback	As per 'inform' plus: Listen to, acknowledge concerns, and give feedback on how input has been actioned
	Community stakeholders	Townships/communities Chambers of Commerce and community groups Recreational park users Snowy Hydro staff		
Involve	Government	Shareholder governments	As per 'Consult' plus: Work directly with stakeholders throughout Snowy 2.0 to understand and consider issues and expectations	As per 'Consult' plus: Maintain a two-way dialogue to ensure concerns and aspirations are understood. Give feedback on how input has been used in making project decisions
	Community stakeholders	Key individuals Tourism operators		
Collaborate	Government	Key environmental and planning departments and agencies	As per 'involve' plus: Partner with stakeholders on specific aspects of Snowy 2.0's technical implications and the development of alternatives required to determine critical project decisions	As per 'involve' plus: Seek direct advice, recommendations and agreement that adherence to protocols and compliance procedures has occurred
	Community stakeholders	Local government Aboriginal stakeholder groups		

### 5.3.3 Phase 3 - engage

#### i Engagement activities

Engagement on Snowy 2.0 commenced in early 2017 and has been ongoing. Engagement commenced on Exploratory Works in late 2017. The following engagement activities have been undertaken by Snowy Hydro:

- community consultations in local townships;
  - November 2017 - community drop in sessions held in Adaminaby, Talbingo, Tumut and Cooma;
  - April to June 2018 - community briefings including project updates and information about exploratory works held in Jindabyne, Tumut, Tumbarumba, Adaminaby, Corryong, Cooma and Talbingo;
- feedback surveys;
  - November 2017 to May 2018 - survey available online and in hard copy for community members to provide project feedback;
- community information booklets;
  - Booklet one in November 2017 - introducing the project;
  - Booklet two in January 2018 - summarising the results of the Feasibility Study; and
  - Booklet three in April 2018 - regarding Exploratory Works.
- regular updates to the company website about the project;
- Snowy Hydro's quarterly newsletter which is delivered by mail box drop provides project updates to communities in the Snowy Valleys and Snowy Monaro Regional LGAs;
- ongoing consultation with government agencies, including but not limited to NPWS, OEH, DPE, EPA and local councils (Snowy Valleys and Snowy Monaro Regional councils);
- ongoing consultation with key stakeholders such as Aboriginal groups;
- briefings and engagement with local communities and community stakeholders obtained through existing relationships with the community; and
- briefings and engagement with industry groups.

As the design for Snowy 2.0 developed and the need for Exploratory Works became apparent, stakeholder engagement activities evolved to continue to inform stakeholders about Exploratory Works, as well as the broader Snowy 2.0.

## ii Engagement tools

A range of permanent channels have been established for Snowy 2.0 to seek input from stakeholders and to support stakeholder engagement on an ongoing basis. These channels include:

- company website (<http://www.snowyhydro.com.au/our-scheme/snowy20/>), provides background information, maps, videos, information on environmental approvals, frequently asked questions, and details on how to enquire about the project;
- the Snowy 2.0 Business Directory is an online form used to capture details of businesses interested in working with the project. This database will be used to specifically target local businesses in the engagement process; and
- a dedicated project email address ([snowy2.0@snowyhydro.com.au](mailto:snowy2.0@snowyhydro.com.au)) to facilitate project feedback and comments.

Additionally, a range of tools continue to be used to support communication and engagement for Snowy 2.0 and Exploratory Works, including:

- publications and information materials;
- community consultation sessions (open to the public);
- stakeholder presentations;
- meetings, workshops and formal working groups (State/Federal/Local governments);
- traditional media (media releases, articles and interviews);
- Snowy Hydro and KNP shopfronts - sharing and distributing information;
- Snowy 2.0 project website updates;
- social media;
- surveys; and
- the Community Relations Team responding to enquiries.

### 5.3.4 Phase 4 – feedback

The purpose for phase 4 of the stakeholder engagement framework is to capture feedback during stakeholder engagement and to identify issues raised by the stakeholders to address throughout Snowy 2.0 and also during the development of the EIS for Exploratory Works.

The EIS outline the issues raised for each stakeholder group to date on Snowy 2.0 and where these issues relate to Exploratory Works, how they have been addressed in the EIS. This SA focuses on issues raised by the community and service providers.

Additionally, DPE will be responsible for exhibiting the EIS once complete, and will make the EIS publicly available. During the exhibition period, the community and other stakeholders may comment on the EIS by making a submission to DPE.

On completion of the exhibition period, DPE may require Snowy Hydro to prepare a submissions report. This report describes the response to the issues raised in any submissions, including any resulting changes to the project or mitigation measures. Therefore allowing for an opportunity to provide further feedback to stakeholders as to how their issues or concerns have been addressed.

#### 5.3.5 Phase 5 – review

The intent of phase 5 is to implement a continuous improvement loop to assess the adequacy and effectiveness of engagement, and where required, change the nature of engagement.

As part of phase 5, Snowy Hydro has undertaken the following activities.

- research into better practice in community engagement; and
- validation and testing with key internal stakeholders.

### 5.4 Community consultation

#### 5.4.1 General

Snowy Hydro has established strong relationships with community stakeholders and a sound understanding of local community needs.

Snowy Hydro's key drivers for engagement include:

- establish Snowy Hydro as the point of focus for community and government enquiries;
- build stakeholder and community confidence and trust in Snowy Hydro and the decisions it makes;
- ensure the local community and stakeholders are kept informed about the progress of the project through timely and targeted consultation activities;
- understand the drivers and concerns of local communities (Snowy Monaro Regional and Snowy Valleys LGAs) and stakeholders;
- provide a range of opportunities for the community and stakeholders to ask questions, provide input and feedback so that concerns or expectations can be considered, managed or mitigated during the development of the EIS;
- manage community and stakeholder expectations through clear messages and project information;
- build and strengthen partnerships with the community and stakeholders to maximise project and community outcomes;
- create a feedback loop back to the community regarding how their concerns and expectations have been addressed; and
- monitor and evaluate stakeholder feedback to measure success and the appropriateness of communication mechanisms being used.

An overview of engagement with the community and SLPs can be seen in Figure 5.2 and Figure 5.3. It should be noted that Figure 5.2 also shows engagement with government agencies.



## 5.4.2 Community consultation sessions

### i First round

In November 2017, Snowy Hydro undertook a series of community consultation sessions regarding Snowy 2.0. These sessions aimed to:

- connect with communities proximate to the Snowy 2.0 project area;
- provide information about Snowy 2.0;
- provide factual information about Snowy 2.0 and reduce speculation;
- obtain feedback about public perceptions of Snowy 2.0; and
- to reinforce Snowy Hydro's positive reputation in the community.

Community consultation sessions were held for local communities in Adaminaby, Cooma, Talbingo and Tumut where members of the public were able to drop in and speak to Snowy Hydro staff about Snowy 2.0, as follows:

- Adaminaby - 8 and 9 November 2017;
- Cooma - 14, 15 and 16 November 2017;
- Talbingo - 21 and 21 November 2017; and
- Tumut - 22 and 23 November 2017.

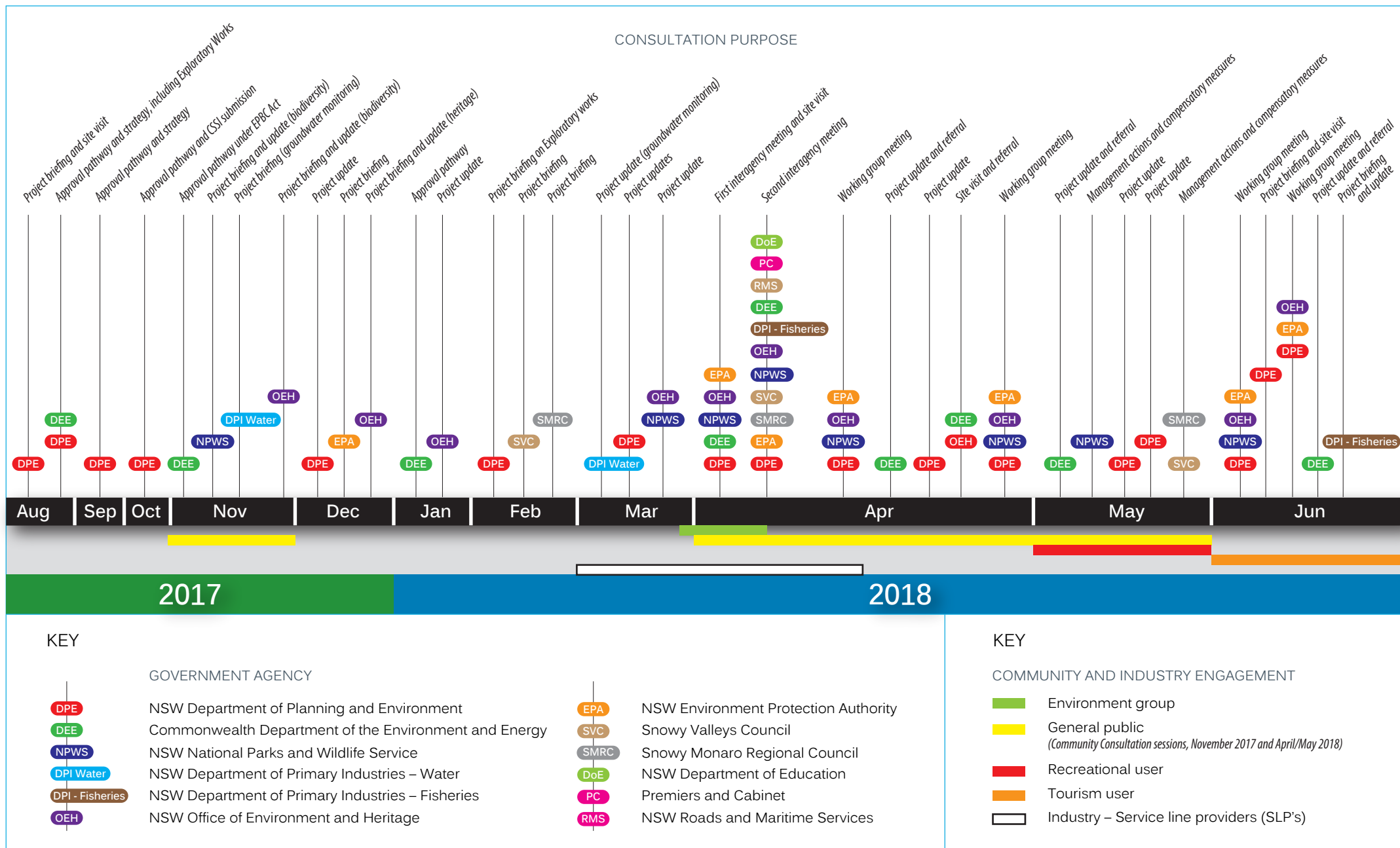
Snowy Hydro staff attended and facilitated the sessions. They were open from midday until 6.00 pm to allow for visitors at both lunchtime and after work.

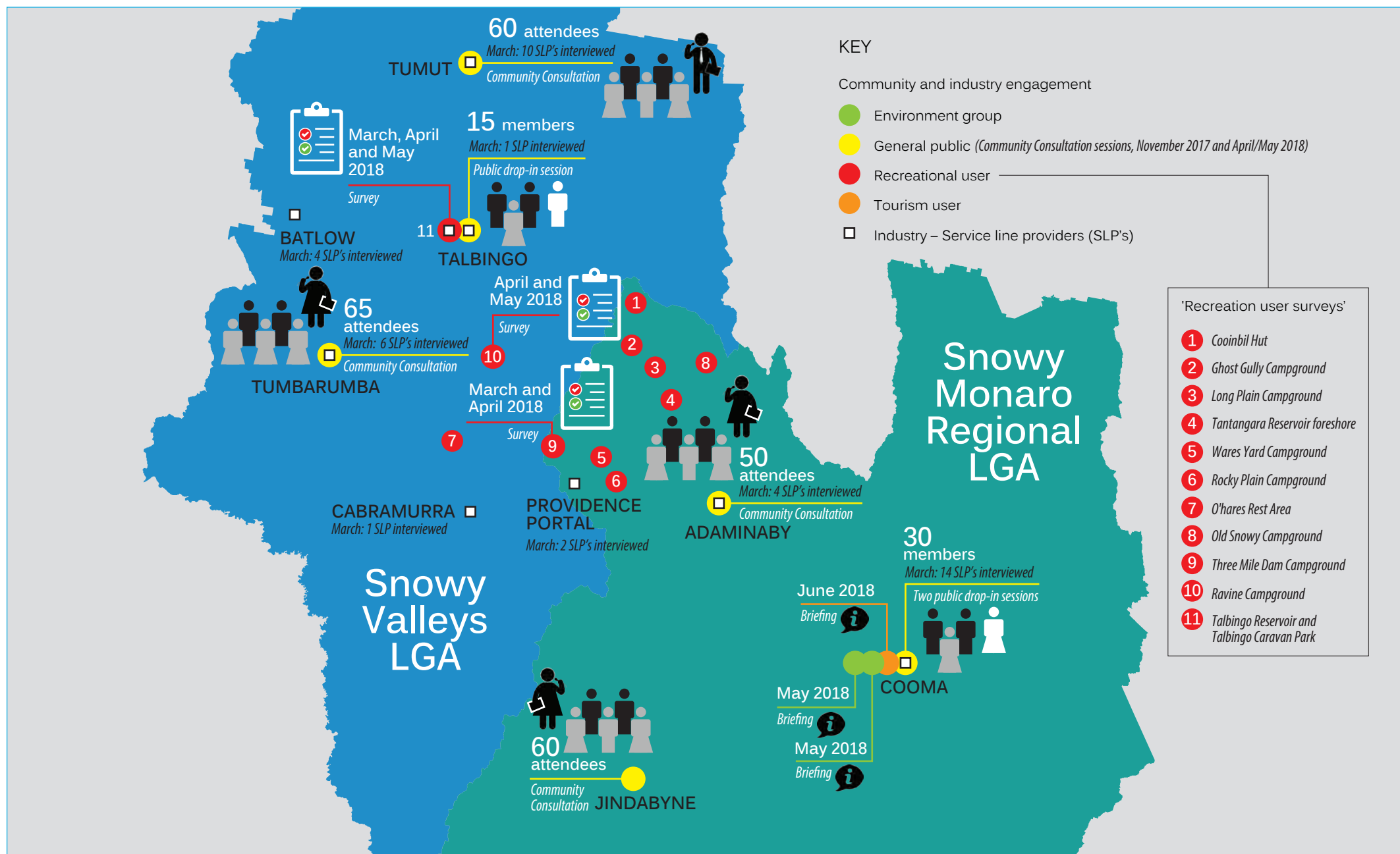
The community consultation sessions were advertised in the local papers and on the radio.

An information booklet (see Appendix A) was produced in October 2017 to support the community consultation sessions. The booklet, which was widely distributed in the local area, gave an overview of Snowy Hydro, what Snowy 2.0 is and why it is needed, the feasibility study, the design and what Snowy 2.0 might look like if the project goes ahead, and the approval process.

During the community consultation sessions, information was also available for the public to view on a number of pull-up banners that contained a summary of the above information.

A total of 281 visitors attended the sessions across the four communities, 46 in Adaminaby, 102 in Cooma, 30 in Talbingo and 103 in Tumut.





## ii Second round

In April, May and June 2018 Snowy Hydro undertook a second round of community consultation sessions specifically regarding Exploratory Works. Similar to the first round of community consultation sessions, the second round aimed to:

- connect with local communities;
- provide information about Exploratory Works;
- obtain feedback about public perceptions of Exploratory Works; and
- to reinforce Snowy Hydro's strong reputation in the community.

Community consultation sessions were held for local communities in held in Adaminaby, Cooma, Corryong, Jindabyne, Talbingo, Tumbarumba, Corryong and Tumut, as follows:

- Adaminaby - 26 April 2018;
- Cooma - 4 and 11 May 2018;
- Corryong – 19 June 2018;
- Jindabyne - 11 April 2018;
- Talbingo - 3 May 2018;
- Tumbarumba - 8 May 2018; and
- Tumut - 28 April and 9 May 2018.

It should be noted that Corryong is in Victoria and outside.

The format of the sessions was tailored to the needs of each community, however at all sessions members of the public were encouraged to ask questions of Snowy Hydro and provide feedback.

Four of the sessions were public meetings hosted by the local Chambers of Commerce (Adaminaby, Tumut, Jindabyne and Tumbarumba). This method was chosen to build strong relationships with the local chambers and to ensure engagement with business owners as well as the general public in the region. In the other two towns (Cooma and Talbingo), drop-in sessions were held in the main street for members of the public to find out more information on a one-on-one basis.

The community consultation sessions were advertised using social media networks, as well as news and editorial coverage in local newspapers and radio.

An information booklet (see Appendix A) was produced in April 2018 to support the community consultation sessions. The booklet, which was widely distributed in the local area, provided details on Exploratory Works, including its location and components, the approval process and community feedback and surveys. An overview of Snowy 2.0 was also provided including what it is and why it is needed.



During the community consultation sessions, information was also available for the public to view on a number of pull-up banners that contained a summary of the above information.

A total of about 360 visitors attended the sessions across the six communities, 50 in Adaminaby, 30 in Cooma, 80 in Corryong, 60 in Jindabyne, 15 in Talbingo, 65 in Tumbarumba, and 60 in Tumut.

Snowy Hydro has provided a summary of the key issues raised during the second round of community consultation sessions, including:

- local employment and business opportunities:
  - this is the biggest issue locally;
  - opportunities for businesses and individuals to participate;
  - how do locals find out about or express their interest in being involved with the project?
- recreation and tourism
  - access to Talbingo and Tantangara reservoir as well as other areas of KNP;
  - horse riders - access to Tantangara Road, Tantangara Reservoir, Wares Yards etc;
  - dam levels on Talbingo, Tantangara and Eucumbene reservoirs (ie will they fluctuate?);
  - impacts to tourism and fishing;
  - opportunities for tourism (eg viewing areas or signage for the project);
- impact or benefits to towns in the region:
  - benefits to local towns if the workforce is FIFO and DIDO;
  - what airport will be used for FIFO workforce?
  - short and long-term housing availability;
- roads:
  - impact of project on traffic on local roads (traffic etc);
  - how will the large equipment be transported to site?
  - will local roads be upgraded as part of the project, including Bobeyan Road (between Adaminaby and Canberra) and Elliot Way/Link Road (between Kiandra and Tumbarumba);
- workforce:
  - how many workers will live in the accommodation camp?
  - where will the workers come from?
  - what will they do in their off-swing?

- environmental impacts
  - impact of drilling on Yarrangobilly Caves;
  - impact of subaqueous placement of excavated rock (turbidity and water quality);
  - risk of transfer of Redfin from Talbingo Reservoir to Tantangara Reservoir;
  - impact from construction sites and accommodation camps;
- heritage
  - impact on Washington Hotel ruins;
  - impact on Aboriginal heritage;
  - consultation with local Aboriginal groups;
- other issues:
  - impact on health or emergency services;
  - can communications in the area be improved as part of the project?
  - what will happen to construction camps and sites after the project is finished?
  - environmental monitoring.

Snowy Hydro advised that local employment and business opportunities was the issue most commonly raised by attendees at the second round of community information sessions.

### 5.4.3 Survey

During the community consultation sessions a survey was undertaken to obtain feedback about Snowy 2.0 and about recreational usage of the project area within KNP. The survey was available in hard copy at the sessions and also on the Snowy Hydro website. The survey was included in the information booklet and also printed as a separate handout. Members of the public were encouraged to fill out and return the survey or to go online to complete it on the Snowy Hydro website. The survey is still available for completion on the website.

At the time of writing this SA, 70 respondents have completed the survey, the results of which are summarised below. A detailed summary of the survey results is provided in Appendix B.

The survey asks three questions:

1. If Snowy 2.0 goes ahead, how important are the following issues to you?
  - a) reliability in the electricity network;
  - b) flora and fauna of the KNP;
  - c) recreational Experiences within KNP;

- d) maximising benefits to our communities;
  - e) minimising impacts on the community during construction;
2. What benefits/positives can you see coming out of Snowy 2.0 if it goes ahead? and
  3. Are there any aspects of Snowy 2.0 that concern you?

In relation to the first question, the survey results (see Table 5.2) show:

- A large majority of respondents (84%) see the reliability of the electricity network to be important or extremely important. Respondents noted that Snowy 2.0 would contribute to increased stability of the network.
- Most respondents (over 75%) think that maximising the economic benefits of Snowy 2.0 within local communities is important or extremely important. This includes employment opportunities in the local area.
- The majority of respondents (66%) stated that flora and fauna of the KNP was important or extremely important. Similarly, the majority of respondents (almost 75%) stated that recreational use of KNP was important or extremely important.
- Notwithstanding the above, while 59% of respondents stated that minimising impacts on local communities during the construction phase of Snowy 2.0 was important or extremely important, 36% of respondents stated that impacts didn't concern them or was not important.

**Table 5.2** If Snowy 2.0 goes ahead, how important are the following issues to you?

	Extremely unimportant	Unimportant	Neutral	Important	Extremely important	No response
Reliability in the electricity network	10.7%	1.8%	0%	16%	67.8%	3.5%
Flora and fauna in KNP	1.8%	12.5%	16.7%	21.4%	44.6%	3.5%
Recreational experiences in KNP	5.3%	7%	8.9%	32.1%	42.8%	3.5%
Maximising economic benefits to local communities	7.1%	3.5%	7.1%	12.5%	64.3%	3.5%
Minimising impacts on local communities during construction	8.9%	12.5%	14.3%	32.1%	26.8%	5.3%

Answers to the second question were categorised according to key themes, as follows:

- reliability/affordability of supply - 27.6%;
- employment opportunities - 23.7%;
- economic benefits - 19.7%;
- renewable/clean energy - 15.7%; and
- positive tourism impacts - 6.5%.

Other themes included environment (1.3%), access to KNP (1.3%) and opportunities for contractors (1.3%).

The interest in employment opportunities and economic benefits by over 40% of respondents is consistent with the level of interest expressed in face to face discussions with attendees at the community consultation sessions.

Answers to the third question were also categorised according to key themes, as follows:

- environmental concerns - 30.8%;
- access to KNP - 12.1%;
- cost of the project - 9%;
- water levels or flows - 6%;
- excavated rock management - 6%; and
- adverse tourism impacts - 6%.

Up to 30.8% of respondents indicated that one of the key aspects of concern was the impact on the environment, followed by a reduction in access to the KNP, representing 12.1%. Only 6% of the respondents indicated that impacts on tourism were of concern.

Some of the respondents involved in the consultation session were also recreational users in the KNP, these users were found to be participating in the following activities: camping, fishing, horse riding, bushwalking, bike riding and caving. These users raised concern with regard to restricted access to the KNP during construction.

#### 5.4.4 Service level provider perceptions

During interviews, SLPs were asked to provide their general perceptions towards on Snowy 2.0 and Exploratory Works – as members of the local community. The majority (64%) of the interviewees were positive about the Snowy 2.0, some were neutral (33%) and did not express any positive or negative viewpoints. One respondent raised some concerns regarding potential environmental impacts.

The perceived opportunities and impacts identified during the interviews have been categorised into five groups:

- environmental;
- economic;
- infrastructure and services;
- real estate; and
- recreational use.

The key perceived impacts and opportunities identified by interviewees are shown in Table 5.3.



**Table 5.3** Perceived impacts and opportunities

<b>Economic</b>
<ul style="list-style-type: none"><li>• Potential partnership with local businesses</li><li>• Bring in new skill-set and wealth</li><li>• Difficult to retain doctors in Tumut</li><li>• Lack of rental properties in Cooma, Tumut, Tumbarumba and Batlow</li><li>• Prefer more trucks coming through towns, stopping and spending money in towns/townships</li><li>• Difficult to recruit local full-time employees</li><li>• Lack of modern and quality tourist accommodation in Cooma</li></ul>
<b>Infrastructure and services</b>
<ul style="list-style-type: none"><li>• Medical centre staff/doctors in Tumut are stretched for capacity</li><li>• Some medical representatives mentioned that both Cooma and Tumut hospitals are under pressure</li><li>• Upgrade major transport corridor and local roads</li><li>• Closure of Lobs Hole Ravine Road</li><li>• Concern over tourist accommodation availability in winter months</li><li>• Most school and child care centres have capacity to accept more enrolments</li><li>• Increase traffic travelling along the Snowy Mountains Highway, the link Road and Murray Jackson Drive is likely to have an impact on the journeys of recreational users, particularly during winter</li></ul>
<b>Real estate</b>
<ul style="list-style-type: none"><li>• Concern regarding lack of housing and residential land</li><li>• Future recreational visits to the area</li><li>• Restrictions to use of Talbingo Reservoir for construction and operation of wharfs and barge</li><li>• Closure of Ravine Campground</li></ul>
<b>Environmental</b>
<ul style="list-style-type: none"><li>• Concern about water level of Eucumbene River</li><li>• Noise from operations and traffic</li><li>• Concern about aquatic ecology in Eucumbene River</li></ul>

## 5.5 Council briefings

A key component of the consultation program for Snowy 2.0, including Exploratory Works, is for Snowy Hydro to maintain strong relationships with both the Snowy Monaro Regional and Snowy Valleys councils through regular project updates and meetings with key councillors and staff.

A number of briefings and meetings have been held with councillors and staff since the announcement of Snowy 2.0. For Exploratory Works, Snowy Hydro hosted each council at Cabramurra in the week of the 21 May 2018 for a briefing about the works, a site visit to the T2 underground power station and also a familiarisation with the Lobs Hole area.

These briefings allowed councillors and staff to gain an understanding of the scope of Exploratory Works, including likely socio-economic impacts based on the results of the assessments undertaken to that date. The briefings also provided an opportunity for dialogue about longer term expectations around Snowy 2.0.

Based on feedback provided at the briefings, both Snowy Monaro Regional and Snowy Valleys councils are extremely positive about Snowy 2.0, including Exploratory Works. Understandably both councils want to maximise the economic benefits of the project within the local area and understand potential impacts on council services.

## 5.6 Recreational users

TRC undertook a survey to understand potential impacts of Exploratory Works on recreational users. The survey was undertaken recreational users of the KNP and Talbingo Reservoir. Results of surveys are summarised below, but can be found in full in the recreation uses assessment contained in Appendix C.

Surveys were undertaken between 30 March and 14 April 2018 when recreational usage was considered to be at a peak. A total of 83 groups were surveyed by TRC which represented approximately 775 park users (based on group size).

Surveys were conducted at Three Mile Dam and Lobs Hole in the KNP, Talbingo Reservoir and Talbingo Caravan Park on the following dates:

- 30 March (Good Friday), 31 March (Easter Saturday) and 1 April (Easter Sunday) and 2018;
- 7 and 8 April 2018; and
- 14 April 2018 (first weekend of the NSW and ACT school holidays and the final weekend of the Victorian school holidays).

The surveys on 7 and 8 April 2018 were undertaken outside the holiday periods to ascertain recreational usage outside of the busier times.

In summary, the surveys provide the following insights into users of the Lobs Hole area within the KNP:

- the site is not a high visitation area (over the peak Easter period approximately 96 people were counted at the site);
- visitors are generally from within the local area, with most travelling less than three hours;
- users value the scenery, remoteness, unspoiled nature and lack of crowds at the site;
- for those with a family connection to the site, the history of the place was also important;
- for a proportion of people, Lobs Hole is the only place in KNP they visit; and
- most of those surveyed will be likely to go elsewhere in KNP if they cannot go to Lobs Hole; some will travel outside the park.

The surveys provide the following insights into users of Talbingo Reservoir:

- Talbingo Reservoir is characterised by high levels of repeat visitation;
- fishing, swimming and water skiing were the most popular activities;
- the scenery and the activities available at Talbingo were the most highly valued attributes;
- a high proportion of visitors to Talbingo Reservoir don't go elsewhere in KNP; and
- lake levels were a significant concern to Talbingo Reservoir users.

Overall, the survey results indicate that some KNP recreational users will utilise other places in and outside the KNP when the Lobs Hole area is closed during road and construction works. This will result in some displacement of recreational users to other areas. The places most commonly nominated by recreational users as alternative locations were Three Mile Dam, Yarrangobilly and Blowering Dam.

Other KNP recreational users stated that they will not find alternate recreational locations due to their family connection to the Lobs Hole area.

## 5.7 Service level providers

### 5.7.1 Profiling and mapping

A wide range of study and analytical methods have been utilised for the purpose of SLP profiling and mapping, including extensive desktop research to determine the relevant industries, organisations and sectors to be consulted within the local area.

SLPs within the local area were identified for consultation with the aim of including at least one SLP in each industry, organisation or sector identified above, within each town, including the smaller towns.

When initially contacted, the selected SLPs were provided with a brief summary of the project, an explanation of the SA process and invited to arrange an interview time.

Interviews were generally conducted using a structured interview method. During these interviews, open-ended questions were asked which facilitated a discussion in relation to:

- the current service capacity of their service area/business/agency;
- whether their service area/business/agency and town had the capacity to accommodate the needs of additional workers and families;
- any reasons as to why their service area/business/agency and town may not be able to accommodate the needs of additional workers and families (eg lack of staff or technical expertise); and
- general attitudes towards the project (Snowy 2.0 and Exploratory Works).

In addition, SLPs were asked about their knowledge of Snowy 2.0 and Exploratory Works, and provided with an overview of the scope of the projects. Each SLP was given copies of the first and second information booklets. The third information booklet was not available at the time the interviews were conducted.

All data collected during the interview was recorded in EMM's central database. All information recorded was stripped of any personal identifiers (ie name, address) in line with the Australia Privacy Principles (APPs) (OAIC 2014) for managing personal and sensitive data as provided for in the Commonwealth *Privacy Act 1988*.

A total of 42 SLPs were interviewed, as shown in Table 5.4.

SLP interview results are summarised in the following subsections into two ways: one summarises the service capacity by town, and another summarises service capacity by service sectors.

EMM's research also recorded community perceptions and key insights regarding the provision of community infrastructure and services. Refer to Appendix D for a detailed report of interview results. Refer to Appendix E for a sample of the interview questions.

Interviews were conducted on the following dates and locations:

- 6 and 7 March 2018 - Cooma and Tumut;
- 19, 20 and 21 March 2018 - Talbingo, Tumut, Cabramurra, Providence Portal, Adaminaby and Cooma;
- 10 and 11 April 2018 - Tumbarumba and Batlow; and
- 26 March, 12 and 13 April 2018 - phone interviews.

**Table 5.4**      **SLP interviews**

SLP category/ sector	Snowy Monaro Regional LGA			Snowy Valleys LGA					Total
	Cooma	Adaminaby	Providence Portal	Cabramurra	Tumut	Talbingo	Batlow	Tumbarumba	
Child care services	2				1		1	1	5
Tourist accommodation services	3	3	2		3	1	1	2	15
Health care services	3				2		1	2	8
Education services	4				2		1	1	8
Real estate services	1	1			1				3
Community and/or governance and economic services	1				1				2
Snowy Hydro township				1					1
<b>Total interviewed</b>	<b>14</b>	<b>4</b>	<b>2</b>	<b>1</b>	<b>10</b>	<b>1</b>	<b>4</b>	<b>6</b>	<b>42</b>



### 5.7.2 SLP views regarding service capacity (by town)

#### i Adaminaby

Adaminaby offers basic accommodation and eateries for recreational visitors and workers passing through the town. Adaminaby is used as the principal source of accommodation for the Selwyn Snow Resort. When accommodation is fully booked by workers, the recreational visitors (primarily those skiing at Selwyn) are unable to stay in the town. This also has a negative effect on local hospitality business operators as workers do not stay in town during the daytime and therefore do not rely on local services.

There is plenty of on-street parking in town, but truck and caravan parking is an issue. As a result, many truck drivers drive through Adaminaby without stopping. The next town with hospitality services is Talbingo, which is approximately a one hour and 10 minutes drive from Adaminaby.

Recruitment of quality hospitality staff is difficult in Adaminaby, the local businesses tend to employ locals as staff employed from out of town have no incentive to stay. Therefore there is a regular issue with loss of staff.

Dining options in Adaminaby are fairly limited, with only two main places to dine for meals. One of these has irregular operating hours and is often not open in the evening.

#### ii Batlow

Batlow offers a range of essential community services that provide the day to day basic living needs of the community. Notwithstanding this, many people living in Batlow travel to Wagga Wagga for grocery shopping.

A majority of the essential community services have capacity, particularly the school in town which is able to accommodate more enrolments. However, the town does struggle with lack of rental property.

People who live in Batlow normally travel to Wagga Wagga to work. There are very few employment opportunities in town, and as such, graduates from the local school generally seek work in Wagga Wagga or pursue further education in Wagga Wagga, Canberra or Wollongong.

There are not many young people living in town, most residents are 50 years and above.

The town's population doubles during the fruit picking season and an interviewee indicated the town copes well with the increase and fluctuation in numbers.

#### iii Cabramurra

Cabramurra is a Snowy Hydro owned town and the workers who stay there are well catered for with a high level of services and facilities.

The maximum number of workers the town can accommodate is currently 400 persons. The existing accommodation facilities can only cater for Snowy workers and contractors, with few rooms available for the general public. The town is equipped with basic living needs such as a cafe and bistro, a post office, a small grocery store, a sporting field and an on-site medical centre.

We note that while the accommodation camp is being built for the Exploratory Works, the construction workers will be accommodated in Cabramurra.

A Traffic Management Plan is currently being prepared for Cabramurra as the existing incoming roads are unsafe, particularly during the winter months. Goat Ridge Road coming into Cabramurra is dangerous as it is very narrow and has no guard rails. Often, it is necessary for staff in Cabramurra to assist motorcyclists and cars that veered off the road into the bush.

#### iv Cooma

For a town of its size and regional location, Cooma was considered to be currently well served by essential community services and facilities.

The existing service level was seen as adequate and some respondents speculated that some services have additional capacity. Majority of the representatives responded that it is easy to retain doctors in Cooma and almost all representatives commented there are a sufficient number of doctors for the current population. Most patients can obtain a same day appointment. In terms of emergency services, the NSW Ambulance service is busy during the snow season. Under the current operation, Cooma hospital has the capacity to expand for additional hospital beds and maternity beds. Half of the pre-school/child care services comment they have the capacity to enrol more children. Three out of four primary and secondary schools responded they are able to enrol another 100 or more students. While the school catchment area extends out to the surrounding localities, there are still plenty of capacities in schools.

However, many interviewees from the real estate and community organisation indicate the town do not have sufficient new and modern style housing to attract new residents. This is the same with tourist accommodation. Most houses and motel accommodation were built in the 1950s. While there is demand for serviced apartment style hotels/motels, the tourist accommodation in Cooma is regarded by locals as relatively old and not able to meet contemporary accommodation demands.

#### v Providence Portal

There are only four residents in Providence Portal, being the two tourist accommodation operators. Apart from tourist accommodation, there are no essential community services in this small locality. Cooma is within close driving distance and therefore residents travel to Cooma for grocery shopping and medical services.

Providence Portal is a fairly isolated locality as there is no mobile phone coverage. Residents communicate via landline or satellite phone. Satellite TV and internet is available to the residents only, it is not open for all visitors.

A resident of Providence Portal raised concern about the dam level of Eucumbene River.

#### vi Talbingo

Talbingo is a rural centre for shopping and financial transaction. There is a post office, a supermarket and bank in the towns. Situated next to Tumut River, Talbingo attracts many recreational visitors during the summer season. Visitors travel to and stay in Talbingo for camping, fishing and other water activities. During the winter season, many recreational visitors travel to and stay in Talbingo to go to Selwyn Snow Resort. Spring and autumn seasons are relatively quiet.

There is no doctor in Talbingo, the residents travel to Tumut for medical appointments.

Talbingo is an ageing community, with many workers from the original Snowy Scheme having retired in Talbingo.

## vii Tumbarumba

Tumbarumba is a small town, with the nearest regional town being Tumut. There are a number of underlying concerns in the community such as a shortage of child care staff, a lack of capacity for baby and toddlers at local child care facilities; lack of rental properties, insufficient supply of aged care infrastructure and services, relatively high percentage of socially and economically disadvantaged families and children, and lack of community social services. The nearest regional centres are Albury and Wagga Wagga. Both of these centres have a long waiting list for community social services.

For a number of years, there was only one GP in town which placed much pressure on that particular GP to provide medical services to the entire community. Over the years, this has slowly improved with the number of local health professionals having increased.

## viii Tumut

Tumut is also considered to be well serviced by essential community facilities and services, apart from lack of GPs. There are 24 doctors in Cooma and eight in Tumut. Being a regional town, Tumut is stretched for medical services. The local medical centre finds it difficult to retain doctors and registrars, with many of the registrars relocating to larger cities after completing 6 months of practical training in Tumut.

Apart from medical services, Tumut seems to cope well with the demand induced by the influx of construction workers in the past. A majority of community facilities and services have some capacity.

### 5.7.3 SLP views regarding service capacity (by service sector)

#### i Child care

Generally, the local child care services across all regions within Snowy Monaro Regional and Snowy Valleys LGAs have capacity to cater for additional children. Tumbarumba was a notable exception.

#### ii Education

Generally, schools in the local area have capacity to take more enrolments apart from one public school in Cooma which is approaching full capacity. Schools that reach full capacity normally direct excess enrolments to other schools in the town.

There are school buses that pick up and drop off students from schools across the Snowy Mountains region. Some students travel more than one hour on the school bus on a single trip.

#### iii Property market

The real estate agencies in Cooma generally look after sales and rental properties in the local towns of Cooma and Adaminaby. The real estate agencies in Tumut generally look after sales and rental properties in Tumut, Batlow. Both the agents in Cooma and Tumut generally look after sales and rental properties in Talbingo.

Generally, there is a lack of housing and residential land in Cooma. Also, there is generally a lack of modern and quality long-term rental accommodation in Cooma and Tumut all year round. Short-term accommodation options tend to be older in style.

In Cooma, agents stated that there have been other large projects (ie wind farm project) in the past that have brought construction workers to town. As these projects have not provided accommodation for their workers, property and rental values significantly increased (on average rent increased by \$100 per week). After completion of the project, property market values returned to normal as construction workers moved out of the area.

The real estate agencies have noticed that since Snowy 2.0 was announced, property sales in Talbingo have significantly increased.

Some tourist accommodation operators in Tumut are accepting short and long-term visitors for six to 12 months.

#### iv Tourist accommodation

Overall, the tourist accommodation in Cooma, Adaminaby, Providence Portal, Talbingo are all busy during winter and the peak holidays in summer, and relatively quiet during the off-peak seasons.

The tourist accommodation in Tumut does not rely on the leisure market as many of their guests are corporate and business customers. Most of the tourist accommodation operators in Tumut do not consider the snow season as their peak business period.

A tourist accommodation operator raised concern that there are perceived threats to snow field businesses in winter if construction workers are taking up the limited accommodation in the surrounding localities.

#### v Health care

There is a hospital in both Cooma and Tumut and multi-purpose health services centres in Tumbarumba and Batlow. Tumbarumba multi-purpose centre is an aged and acute care facility with emergency department and community health centre in the same premises. Batlow/Adelong multi-purpose centre is an integrated health service with emergency department and community health centre in the same premises.

Most Government funded health services in remote communities are delivered via multi-purpose centres.

Both hospitals in Cooma and Tumut are government funded and have capacity for additional beds.

In Tumut hospital, there is a gap in anaesthesias, which limits the ability for the medical staff to perform emergency procedures. However, the hospital nurses are highly trained and are able to undertake a variety of procedures. The only emergency surgery undertaken by the hospital is a caesarean. Emergency service vehicles generally go to Wagga Wagga and do not deliver patients to Tumut.

In Cooma, there are 14 to 15 permanent doctors and one visiting doctor. The doctors are on call 24/7 and on a roster system. There are no after-hours GPs.

Most patients in the Cooma region who require a specialist in need to travel to Canberra, however, there are a few travelling specialists who visit Cooma on request. Similarly, patients in Tumut travel to Wagga Wagga to see specialists and specialist doctors often travel to Tumut for monthly appointments.

There are approximately eight doctors in Tumut. As a regional town, local GPs expressed difficulty in retaining doctors and registrars. Some local GPs are required to work long hours and occasionally on the weekend due to a lack of local doctors.



Both the Cooma and Tumut hospitals and medical practices are extremely busy during the summer and winter seasons.

Interview responses from medical centre representatives and hospital representatives were slightly contradictory in terms of service capacity, some indicating there was capacity for more patients and others indicating that there is a shortage of medical staff.

## vi Infrastructure

The SLPs noted that the Snowy Mountains region experiences difficult road conditions during the snow season. It was acknowledged that upgrades could improve safety and all-weather accessibility issues for the existing road infrastructure. A wide range of representatives from medical service, business organisation and hospitality industries emphasised the tough road conditions they have experienced and observed over the years. Some have helped motorcyclists and cars that veer off the path into the bush on a narrow road without fencing.

It was perceived that local roads are likely to require upgrades to accommodate large and heavy vehicles during the construction period.

Local businesses in the smaller towns, such as Adaminaby, have raised concern that while there is plenty of on-street parking in town, the spaces are not wide enough for trucks and caravans to park. It was acknowledged that truck drivers do not tend to stop at Adaminaby as a rest venue.

In Providence Portal, telecommunications coverage is weak, with poor mobile phone reception. Residents are currently using landlines, satellite phones and the internet for communications. While some level of communication services is available, these services are not provided for visitors. In the 2016 Census, 19.4% and 26% of private dwellings in the Snowy Monaro Regional and Snowy Valleys LGA respectively do not have access to the internet. This is a relatively poor performance consider the average NSW status is 14.7%. Furthermore, Tumut has been identified as being one of the priority locations in the Mobile Black Spot Program for improvements in telecommunication services. The average 4G network coverage in non-metropolitan NSW is approximately 61%.

### 5.7.4 Summary

The SLP's perception and attitude towards the Exploratory Works and Snowy 2.0 can be summarised as follows:

- generally SLPs, particularly local businesses, welcome Snowy 2.0 as they believe the project will result in an increase in the local population and bring economic stimulus and income to the region;
- there was particular interest in the proposed workforce arrangements, potential employment opportunities for local people and how local people could position themselves for jobs or contracts with Snowy Hydro or its contractors;
- there was some concern amongst business owners in the region that Snowy 2.0 could potentially attract their workers and that as a result they would lose staff;
- the local community, particularly residents in Cooma, are concerned there is lack of residential land in town. They are concerned that should workers and their families were to relocate to town for a number of years, there would not be enough residential land for new housing development; and not enough quality housing to attract buyers;

- the tourist accommodation operators would like to receive ample notice prior to workers taking up their accommodation, as they often have repeat visitors during peak times (ie summer and winter); and
- some local business operators do not see the Exploratory Works and Snowy 2.0 having a direct impact on the community and their businesses; however, they are aware as there could be 'flow on' effect that may impacts on them, both positive and negative.

## 5.8 Tourism operators

One-on-one meetings regarding Snowy 2.0 and Exploratory Works have been held with key local tourism operators including the owner of Selwyn Snow Resort as well as proprietors of the two local commercial horse riding operations.

Snowy Hydro representative have also attended Tourism Snowy Mountains meetings to update the committee and seek feedback.

The principal of one commercial horse riding operations raised concerns regarding potential impacts of construction activities from Snowy 2.0 on its operations, including investigations works such as the geotechnical drilling. However, it was acknowledged that works associated with Exploratory Works will not have an impact on its operations.

Feedback from Selwyn Snow Resort has indicated that they are positive about the project and that their main concern would be around availability of holiday accommodation in the area over the winter months as well as the potential increase in traffic on the Link Road and Snowy Mountains Highway.

## 5.9 Aboriginal stakeholders

New South Wales Archaeology Pty Ltd (NSW Archaeology) was engaged to undertake an Aboriginal cultural heritage assessment (ACHA) of Exploratory Works. As part of this assessment, NSW Archaeology undertook a formal process of Aboriginal community consultation in accordance with the guidelines as set out in the NSW OEH's *Aboriginal cultural heritage consultation requirements for proponents* 2010 (NSW DECCW 2010).

In order to identify, notify and register Aboriginal people who may hold cultural knowledge relevant to determining the cultural significant of Aboriginal objects and/or places in the project area, correspondence dated 31 July 2017 was sent to:

- NSW OEH Queanbeyan office;
- Wagonga and Brungle-Tumut Local Aboriginal Land Councils;
- the Registrar, *NSW Aboriginal Land Rights Act 1983*;
- the National Native Title Tribunal, requesting a list of registered native title claimants, native title holders and registered Indigenous Land Use Agreements;
- Native Title Services Corporation Limited (NTSCORP Limited);
- Snowy Monaro Regional Council and Snowy Valleys Council; and
- Cooma Local Land Services.

In addition, advertisements were placed in the Monaro Post on 2 August 2017 and Tumut and Adelong Times on 4 August 2017.

Following information received from OEH, further letters of notification were sent to potential Aboriginal parties on 3 August 2017.

There are five Registered Aboriginal Parties (RAPs) for Exploratory Works:

- Iris White, on behalf of the Ngarigo people;
- Koomurri Ngunawal Aboriginal Corporation;
- Corroboree Aboriginal Corporation;
- Bega Local Aboriginal Land Council; and
- Lindsay Connolly, Steve Connolly and Ramsey Freeman.

A late registration of interest was received from the Brungle-Tumut Local Aboriginal Land Council in December 2017, the Ngunnawal Elders Corporation, via email on 28 February 2018 and Ellen Mundy in June 2018.

The RAPs were engaged frequently during the process of preparing the ACHA, including during fieldwork and following preparation of the draft ACHA,

In accordance with Section 4.2 and 4.3 of the *Aboriginal cultural heritage consultation requirements for proponents 2010* (NSW DECCW 2010) guidelines, information with regard to the project, proposed consultation process and assessment methodology was furnished to the RAPs for comment on 5 August 2017.

The following additional consultation has been undertaken:

- letters dated 16 June 2017 were sent to Wagonga and Brungle-Tumut Local Aboriginal Land Councils to provide preliminary advice about the project;
- NSW Archaeology and Snowy Hydro provided a preliminary presentation to the Northern and Southern MOU Kosciuszko Advisory Groups on 11 September 2017 and 16 September 2017, respectively.
- Snowy Hydro provided a further presentation to the Northern MOU Kosciuszko Advisory Group on 9 April 2018 and the Southern MOU Kosciuszko Advisory Groups on 4 May 2018.

An updated project consultation process and heritage assessment methodology was provided to RAPs on 14 January 2018. One response was received with a question regarding traditional boundaries. Snowy Hydro subsequently responded to the question via telephone and provided mapping as requested.

Updated information about Exploratory Works and a copy of the ACHA was provided to RAPs on 21 April 2018 for a review and consideration of the potential impacts of Exploratory Works on Aboriginal heritage and proposed management strategies. However, at the time of finalisation of the EIS, no response has been received. Any responses received after finalisation of the EIS will be provided within the submissions report, if required.

## 5.10 Irrigators

Two briefings with irrigators were held on the 11 October 2017 in Renmark and 27 February 2018 in Balranald. Irrigation interests were focused on the security water releases under the Snowy Water Licence. These stakeholders were generally supportive of Snowy 2.0 as long as there were no changes to the volume of water being released from the Murray and Tumut developments for consumptive uses.

## 5.11 Environment groups

Briefings were held with a number of environmental groups, which included the Colong Foundation, National Parks Association (NPA), Nature Conservation Council (NCC) and the Total Environment Centre (TEC). During a briefing on 21 May 2018, the Colong Foundation stated that it was opposed to any works such as Snowy 2.0 within national parks. As such, the Colong Foundation stated that it was opposed to Snowy 2.0 being undertaken within the KNP.

Based on the briefings with the NPA on 7 May and 21 May 2018, and the TEC on 21 May 2018 both groups stated that their main concern with Snowy 2.0 centred around the viability of the project in light of the increased take-up of renewable energy generation projects. Both groups stated that, in their view, there was not enough information publicly available that justified the project progressing, particularly within the KNP.

Other concerns raised by the NPA and TEC principally related to Snowy 2.0 rather than Exploratory Works. These concerns were:

- possibility that multiple approvals would be sought for different components of Snowy 2.0 (like Exploratory Works);
- potential impact of works required to upgrade the transmission network for Snowy 2.0;
- impact of maximising water storages in Tantangara Reservoir;
- impact of the disposal of excavated rock in the reservoirs; and
- transfer of Redfin from Talbingo Reservoir to Tantangara Reservoir and its tributaries.

Some matters raised during the engagement process have been identified as best to address in subsequent EIS(s), as will they will be more in line with subsequent scope of works or not relevant to Exploratory Works. Other matters raised that are not relevant to Exploratory Works or Snowy 2.0 will be addressed by Snowy Hydro through current communication channels.



## 6 Assessment of impacts and opportunities

### 6.1 Introduction

An important function of an SA is as a means to predict the likely direct and indirect impacts a project will have on the community.

The SA has synthesised and analysed data from a number of sources to develop a layered picture of likely perceived and technical social impacts from Exploratory Works. These include those perceived by community stakeholders and revealed through consultation and those identified through technical assessments. As a result of this process, the following potential impacts associated with Exploratory Works have been identified:

- potential impacts associated the workforce;
- potential impacts on housing and accommodation;
- potential impacts on community services and SLPs;
- potential impacts to recreational users; and
- potential impacts on the environment.

An assessment of impact (ie low, medium, high) is undertaken for the unmitigated technical risk (based on technical assessments) and the perceived level of stakeholder risk (based on stakeholder engagement) associated with each of these identified impact areas. An overall assessment of the social impact (unmitigated) is then determined. This assessment of social impact is informed by an overarching social risk assessment framework developed by Coakes Consulting Pty Ltd (Coakes) (see Appendix F). This framework provides specific definitions of low, medium, and high social risks across key categories of social impact.

The individual assessment of each unmitigated technical, stakeholder-identified and overall social impact is presented in a table at the end of each impact section below, together with relevant project-influencing factors, timing/duration and affected/interested groups. It is important to note, that the stakeholders and stakeholder groups identified for each impact may vary in their experiences and concerns around the impact, however an overall assessment of social impact is provided across all stakeholder groups.

From this assessment process, potential management and enhancement strategies are then identified to address the identified social impact (see Chapter 7). These strategies are designed to reduce any possible negative social impacts associated with Exploratory Works, and enhance any positive impacts where possible.

A residual risk assessment is undertaken to determine potential social impacts after management and enhancement strategies are applied (see Chapter 6).

## 6.2 Workforce impacts

### 6.2.1 General

The workforce associated with a new project has the potential to cause population change in nearby communities, depending on the proportion of the workforce which is housed locally. Changes in population may result in a range of social impacts that affect individuals, families, and communities. For example, increases in population may affect (enhance or limit) existing residents' access to local housing, services and facilities. Increases may also place SLPs under stress.

The purpose of this section is to predict the expected population change associated with the introduction of the Exploratory Works workforce, as this may have potential impacts on the accessibility and affordability of housing and accommodation, and community services. It is important to note here that this assessment has been conducted for a construction workforce only, as there is no operational phase to Exploratory Works. As previously stated, it is also restricted to the Exploratory Works phase of Snowy 2.0, not Snowy 2.0 itself.

In order to identify construction workforce trends, the workforce is modelled, providing projections of how this workforce is likely to change over time (eg short-term and long-term), and where it is likely to be sourced (eg locally or further afield).

As mentioned in Chapter 2, Exploratory Works is likely to take 34 months to complete, from initial site mobilisation to completion of the exploratory tunnel. The estimated time to complete the construction of the accommodation camp is up to 10 months after construction starts from initial mobilisation. Workers constructing the accommodation camp will be accommodated within Cabramurra and Snowy Hydro owned accommodation at Talbingo until the accommodation camp is constructed and operational. As such, there will be no need for the short-term or long-term accommodation of the workforce by external providers in the local area.

To predict a range of impacts, the total workforce is modelled based on four alternate workforce scenarios. These scenarios are established from estimations provided by the project schedulers, Turner & Townsend, as well as publicly available information on other construction workforces and other potential workforce mixes.

The following sections provide further discussion and modelling of the workforce, drawing on these workforce scenarios. Following this, the construction workforce models are used as a basis for identifying likely social impacts that arise as a result of these projected population changes – ie accessibility and affordability of housing and accommodation, and provision of community services.

### 6.2.2 Workforce

Based on estimations from Turner & Townsend, Exploratory Works will require a long-term workforce over the entire construction period (up to 34 months).

It has been estimated that there will be up to 201 workers employed over the life of the Exploratory Works project, which includes a workforce of 20 operating the accommodation camp. All of the workforce would work on a swing schedule where the likely swing will be two weeks on and one week off (eg two weeks on-swing and one week off-swing).

It is expected that there will be a maximum of 164 workers on-swing at any one time (with the remainder being off-swing).

As previously stated, all of the workforce would initially stay within Cabramurra or Snowy Hydro owned accommodation in Talbingo until the accommodation camp is constructed, and then afterwards within the accommodation camp while on-swing.

It is expected that the majority of the workforce would be FIFO and DIDO; with FIFO into Cooma or Canberra (location to be confirmed) and then DIDO by bus. The remainder of the workforce would be sourced from the local area and region and would drive to a DIDO location (again location to be confirmed) and then DIDO by bus.

Given that the construction period is estimated to take up to 34 months, it has been assumed that some of the workers are likely to relocate their families to the local area. It has also been assumed that those relocating with their families would demonstrate similar household characteristics (eg household size) to those of NSW (averaged).

Table 6.1 provides an overview of a number of workforce mix scenarios which could eventuate based on the workforce sourced within the local area and region, the FIFO/DIDO workforce that does not relocate to the local area and the FIFO/DIDO workforce that does relocate to the local area.

**Table 6.1 Workforce mix scenarios**

	Scenarios			
	A	B	C	D
Workforce sourced from local area and region	50	58	70	80
Workforce that doesn't relocate to local area	148	137	119	106
Workforce that relocates to local area	3	6	12	15
Total	201	201	201	201

Scenario B is considered to be the most realistic scenario based on information provided by Turner & Townsend and observations and experience of EMM on other projects. Scenario B assumes:

- that 58 workers (or 29% of the total workforce) will come from the local area and region;
- of the 58 workers that come from the local region, 23 workers (or 11% of the total workforce) will come from the local area;
- that 137 workers (or 68% of the total workforce) will come from outside of the local region and not choose to relocate to the local area for the term of their employment on Exploratory Works; and
- that 6 workers (or 3% of the total workforce) that come from outside of the local region would choose to relocate to the local area for the term of their employment on Exploratory Works.

Scenarios A, C and D reflect other possible workforce mix scenarios as follows:

- Scenario A has the least number of local workers, the least number of workers choosing to relocate to the local area; and
- Scenario D has the most number of local workers and the most number of workers choosing to relocate to the local area.

For the purposes of this assessment it has also been assumed that all of the workers that choose to relocate to the local area for the term of their employment on Exploratory Works:

- have a family;
- the family size is based on the average household size of NSW (2.6 persons based on 2016 Census);
- their children would likely be primary school age and below;
- they would relocation to any town within the local area – rural property, village or town; and
- they would likely choose to take up rental accommodation (on the assumption no-one would buy a property for a contract of 34 months).

**Table 6.2 Population change**

	Scenarios											
	A			B			C			D		
	1	2	3	1	2	3	1	2	3	1	2	3
Snowy Monaro Regional	8	4	0	16	8	0	31	16 <sup>1</sup>	0	39	20 <sup>1</sup>	0
Snowy Valleys	0	4	8	0	8	16	0	16 <sup>1</sup>	31	0	20 <sup>1</sup>	39
Total	8	8	8	16	16	16	31	32 <sup>1</sup>	31	39	40 <sup>1</sup>	39

*Note:* Shaded cells considered to be the most likely population change scenario.

*1 = due to rounding*

Table 6.2 shows that under Scenario A, the local area would see a population increase of eight people. Under Scenario D, the local area would see a population increase of about 40 people. Under Scenario B, considered to be the most likely scenario, the local population would increase by 16 people.

If it is assumed that all of the new people moving into the area move to one LGA only, each LGA in the local area could see an increase from between 0 to 40. However, a more realistic scenario is that 50% of the new people moving into the area move into the Snowy Monaro Regional LGA and 50% move into the Snowy Valleys LGA. Under Scenario A, this would lead to a population increase of four people in the Snowy Monaro Regional LGA and four people in the Snowy Valley LGA (Scenario A2). Under Scenario B, this would lead to a population increase of eight people in the Snowy Monaro Regional LGA and eight people in the Snowy Valley LGA (Scenario B2). Under Scenario D, this would lead to a population increase of about 20 people in each of the LGAs (Scenario D2).

The Snowy Monaro Regional and Snowy Valleys LGAs have a population of 20,218 and 14,395 respectively. A population increase of four people in each LGA (Scenario A2), a realistic population increase of six people in each LGA (Scenario B2) and a maximum population increase of 39 people in each LGA (Scenarios D1 and D3) represents a population change of between 0.03% and 0.2% for the LGAs.

In *A Community Guide to Social Impact Assessment*, Burdge (2004) presents a social consequences model. In summary, it indicates that the social consequences of population change (to a community) can be catastrophic where there is a greater than 15% population change in a region. Conversely it indicates that the social consequences of population change (to a community) are negligible where there is a less than 1% population change in a region (see Table 6.3).



**Table 6.3 Social consequences of population change**

<b>Catastrophic</b>	<b>Massive</b>	<b>Major</b>	<b>Moderate</b>	<b>Negligible</b>
Greater than 15% population change in an area	Greater than 10% population change in an area	Greater than 5% population change in an area	Less than 5% population change in an area	Less than 1% population change in an area

Source: Burdge (2004)

Accordingly, population changes of between 0.03% and 0.2% for the Snowy Monaro Regional and Snowy Valleys LGAs as a result of Exploratory Works will have a negligible social impact on the local area.

Based on Burdge (2004), a population change:

- of up to 346 people (1% of the population of the Snowy Monaro Regional and Snowy Valleys LGAs) would not have more than a negligible social impact on the local area; and
- of up to 1,731 people (5% of the population of the Snowy Monaro Regional and Snowy Valleys LGAs) would not have more than a moderate social impact on the local area.

Based on the estimated workforce requirements and predicted sources of this workforce, it can be concluded that Exploratory Works' impact on population will be negligible in all scenarios. Using the social risk assessment framework (Appendix F), the social impacts presented by population change are assessed as medium (positive) reflecting stakeholders perceptions about the positive impact the influx of workers will have on the population of the local region (see Table 6.4).

**Table 6.4 Summary table of estimated population change and social consequences**

<b>Impact</b>	<b>Project influencing factors</b>	<b>Timing/duration</b>	<b>Affected/interested groups</b>	<b>Unmitigated<sup>1</sup> technical impact</b>	<b>Stakeholder perceived impact</b>	<b>Unmitigated impact</b>
Population change	Construction workforce relocating	34 months	Broad community	Low	Medium (positive)	Medium (positive)

Note: <sup>1</sup> = unmitigated technical impact indicates the impact from Exploratory Works without implementation of avoidance, mitigation or management strategies.

### 6.2.3 Housing and accommodation

Exploratory Works could potentially impact housing and accommodation given the potential introduction of new workers into the local area. Potential long-term housing impacts are possible as a result of those workers choosing to relocate to the local area during the Exploratory Works. Potential short-term accommodation impacts are possible as a result of those workers that would stay within the local area and region between their swings.

#### i Long-term housing

As per Table 6.5, a range of scenarios were developed to estimate the number of workers choosing to relocate to the local area during Exploratory Works. This ranged from three in Scenario A to 15 in Scenario D. As previously stated, the most likely is considered to be seven.

**Table 6.5 Workforce mix scenarios**

	Scenarios			
	A	B	C	D
Existing residential workforce	50	58	70	80
Workforce that doesn't relocate to local area	148	137	119	106
Workforce that relocates to local area	3	6	12	15
<b>Total</b>	<b>201</b>	<b>201</b>	<b>201</b>	<b>201</b>

*Note: Shaded cells considered to be the most likely population change scenario.*

For the purposes of assessing the potential housing impacts, it has been assumed that all of the workers that choose to relocate to the local area for the term of their employment on Exploratory Works would choose to take up rental accommodation (on the assumption no-one would buy a property for a contract of 34 months). Also, given that it has been assumed that those relocating have an average family size of 2.6 persons and have children at primary school age and below, it has been assumed that rental housing would need to be a minimum of two-bedrooms.

As previously discussed, a search of long-term rental housing available in the main towns and communities within the local area was undertaken using various websites, including realestate.com.au, domain.com.au, rent.com.au and realestateview.com.au on two separate dates including 17 May 2018 and 13 June 2018 (see Table 6.6). Results were averaged over the two dates.

**Table 6.6 Long-term rental housing availability<sup>1</sup>**

	Two bedrooms	Three bedrooms	Four + bedrooms	Total
Adaminaby	0	1	0	1
Batlow	2	1	0	3
Cooma	5	5	3	13
Jindabyne	0	5	2	7
Talbingo	0	2	0	2
Tumbarumba	0	1	1	2
Tumut	6	12	8	26
<b>Total</b>	<b>13</b>	<b>27</b>	<b>14</b>	<b>54</b>

*Source: realestate.com.au, domain.com.au, rent.com.au and realestateview.com.au.*

*Note: 1 = availability was averaged over two search dates using three websites.*

The results show that there were 54 properties available to rent with two bedrooms or more in the main towns and communities within the local area. This demonstrates that there is sufficient capacity within the local market to cater for the demand generated by the workers that choose to relocate to the local area for the term of their employment on Exploratory Works.

## ii Short-term accommodation

A range of scenarios were developed to assess the potential short-term accommodation impacts as a result of those workers that would stay within the local area and region between their swings.

As previously stated, it has been estimated that there will be up to 201 workers employed over the life of the Exploratory Works project, which includes a workforce of 20 which would operate the accommodation camp. All of the workforce would work on a swing schedule where the likely swing will be two weeks on and one week off.

It is expected that there will be a maximum of 164 workers on-swing at any one time with the remainder (37 workers) being off-swing. As previously stated, all of the workforce would stay initially at Cabramurra and Snowy Hydro owned accommodation at Talbingo until the accommodation camp is constructed, and afterwards within the accommodation camp while they are on-swing. However, accommodation at Cabramurra, Talbingo and the camp will not be provided for workers off-swing.

It is expected that a percentage of the off-swing workers are likely to stay within the local region and take advantage of the recreational opportunities the region provides. Given that accommodation would not be provided at the accommodation camp for those choosing to stay between swings, these workers would need to utilise short-term accommodation within the local area, including camping and accommodation within the KNP. The maximum number of workers that would utilise this accommodation is 37 assuming all workers stay within the region between swings, but realistically this is likely to be lower. Conservatively it has been assumed that 24 workers (65% of the workforce off-swing) would stay within the local region between swings.

The ABS *Tourist Accommodation, Small Area Data, Australia, Jun 13* provides data on short-term accommodation in the Snowy Mountains Tourist Region up to the June quarter in 2013 (April, May and June 2013). The region includes both the Snowy Monaro and Snowy Valleys LGAs.

The June 201 data is latest data available from the ABS as it ceased collecting this data at this point in time.

The data excludes camping areas within the KNP and other camping areas within the region.

**Table 6.7 Short-term accommodation availability - June quarter 2013**

	Establishments	Rooms	Bed spaces	Room nights occupied	Room occupancy rate
	no.	no.	no.	no.	%
Hotels and resorts	16	971	3,574	16,976	26.5
Motels, private hotels and guest houses	43	1,196	4,024	25,452	27.2
Serviced apartments	5	254	1,106	7,312	34.2
Total	64	2,421	8,704	49,740	27.8

Source: ABS *Tourist Accommodation, Small Area Data, Australia, Jun 13*.

The data shows that within the Snowy Mountains Tourist Region in the June quarter 2013 there were 64 short-term accommodation establishments providing 2,421 rooms and 8,704 bed spaces. During the June quarter 2013 there were 49,740 room nights occupied which translated into a room occupancy rate of 27.8%. This means that, on average, there were 1,748 rooms vacant per night (27.8%) during the June quarter 2013.

Assuming that each worker that stays within the local region between swings requires one room, based on a maximum demand of 37 rooms, and a likely demand of 24 rooms, the ABS data clearly indicates that there is sufficient capacity within the short-term accommodation market within the local region to accommodate demand. There would be more capacity if camping areas were included in this assessment.

Notwithstanding the above, some concerns were raised by accommodation providers in Adaminaby that workers on Snowy 2.0, including Exploratory Workers, could impact on the availability for tourist accommodation particularly during the weekends and winter holidays when demand for accommodation to support the Selwyn Snow Resort is high.

### iii Summary

Based on the information currently available and the assumptions provided, the unmitigated impacts of Exploratory Works are considered to be medium for both long-term rental housing and short-term accommodation, as outlined in Table 6.8, reflecting some stakeholders concerns regarding impacts on housing and accommodation.

**Table 6.8 Summary table of housing and accommodation consequences**

Impact	Project influencing factors	Timing/duration	Affected/interested groups	Unmitigated <sup>1</sup> technical impact	Stakeholder perceived impact	Unmitigated impact
Long-term housing	Construction workforce relocating	34 months	Broad community	Low	Medium	Medium
Short-term accommodation	Construction workforce recreating	34 months	Tourists and general travellers	Low	Medium	Medium

*Note: 1 = unmitigated technical impact indicates the impact from Exploratory Works without implementation of avoidance, mitigation or management strategies.*

## 6.3 Service level provider impacts

Exploratory Works has the potential to impact access to community services and facilities and SLPs via the influx of the workforce to the local area. As outlined Section 5.7, the local area has a wide range of community services, facilities and infrastructure particularly in Cooma and Tumut. These include health facilities, education services, utility infrastructure and services, parks and recreation facilities.

Table 6.5 provides an overview of a number of workforce mix scenarios which could eventuate based on the existing residential workforce within the local region, and the FIFO/DIDO workforce that does/does not relocate to the local area. As stated above, under Scenario A, the local area would see a population increase of 8 people. Under Scenario D, the local area would see a population increase of 40 people. Under Scenario B, considered to be the most likely scenario, the local population would increase by 16 people.

Using the risk assessment framework (Appendix F), the social impacts on SLPs as a result of these population changes are predicted to be low as there will be no measurable impacts on the capacity of community services and infrastructure. This is based on the negligible population changes and the existing service and infrastructure capacity of SLPs within the local area.

**Table 6.9** Summary table of SLP consequences

Impact	Project influencing factors	Timing/duration	Affected/interested groups	Unmitigated <sup>1</sup> technical impact	Stakeholder perceived impact	Unmitigated impact
Increased demand on SLPs	Construction workforce	34 months	SLPs and broad community	Low	Low	Low

Note: 1 = unmitigated technical impact indicates the impact from Exploratory Works without implementation of avoidance, mitigation or management strategies.

## 6.4 Recreational users impacts

### 6.4.1 General

An assessment of impacts of Exploratory Works on recreational users was undertaken by TRC (see Appendix C).

TRC has advised that recreational values are affected by a range of factors, such as:

- the activities available at a location;
- the quality of the activity (eg the quality of the fishing);
- the availability of the activity elsewhere;
- the scenic amenity of the area in which the activity takes place and the opportunity to connect with nature; and
- the numbers of other people in the area and the opportunity to connect with others, or to find solitude.

The severity of an impact on recreational values depends on the change to these values as a result of proposed works. The significance of an impact is assessed by considering the change to the recreational value and the magnitude of the impact before and after the application of mitigation and management measures, using the risk levels described in the table below.

**Table 6.10** Recreational users risk levels

Degree of impact	Description of degree of impact
Low	An impact on one or two of the recreational values of an area that is temporary or short-term and affects a small number or only some users
Medium	An impact that changes the recreational values of an area for a longer period or for a larger number of users
High	An impact that is long lasting or results in substantial and irreversible change to the recreational value of an area affecting a significant proportion of visitors to an area

Source: TRC (2018)



## 6.4.2 Lobs Hole

### i Immediate impacts

As part of the Exploratory Works, road access to Lobs Hole (via Lobs Hole Ravine Road) will be closed to the public. This will have an immediate impact on Lobs Hole users (ie campers at Ravine Campground) as the site will no longer be able to be accessed for recreational purposes for the duration of the Exploratory Works (or Snowy 2.0 if it proceeds). In addition, Lobs Hole will also be unable to be accessed for recreational purposes from Talbingo Reservoir.

Visitor counts undertaken over the 2018 Easter weekend recorded approximately 96 people camping in the area. Easter represents a peak period at the campground. Assuming that this level of visitation occurred every weekend over the summer period (which is unrealistic), the total number of campers impacted would be less than 2,500, a very small proportion of the total 2.2 million annual visitors to KNP (0.1%).

Surveys of users of Lobs Hole indicate that some users will choose to relocate to other places in KNP with others going outside the park. For those who are visiting the site because of a family connection to the area, the impact will be higher. Although the family history remains (and it is well documented) the physical site will not be able to be accessed until the completion of Exploratory Works. Some of those with a family connection to the area indicated in survey responses that if they cannot visit Lobs Hole they will not go anywhere else.

### ii Displacement

The closure of the Lobs Hole area will result in some displacement of users to other areas. Survey results indicate that some users will choose to recreate outside KNP (eg at the coast), some users will choose not to camp at all, and some users are likely to go elsewhere in the park, which will in turn impact on those areas with increased demand for campsites, fishing, bushwalking and driving experiences in other precincts. The places most commonly nominated by users as alternative locations were Three Mile Dam, Yarrangobilly and Blowering.

### iii Demand from workers

As previously stated, it is expected that there will be about 37 workers off-swing at any one point in time during Exploratory Works. It is expected that a percentage of these off-swing workers are likely to stay within the local region and take advantage of the recreational opportunities the region provides, including camping within the KNP.

The maximum number of workers that would utilise this accommodation is 37 assuming all workers stay within the region between swings, but realistically this is likely to be lower. It has been conservatively assumed that 24 workers (65% of the total workforce) that do not come from the local area or region would stay within the local region between swings.

Even assuming that all workers off-swing recreate within the KNP, this level of demand will have a negligible impact on existing recreational users. As previously stated it is estimated that there are 2.2 million annual visitors to KNP.

#### iv Long-term impacts

While the closure of access to Lobs Hole will have an immediate impact on recreational users, its reopening (on completion of the Exploratory Works or Snowy 2.0) is likely to impact the visitor experience at the site in the long-term and alter the visitor mix. Improved access will change the character of the remote experience that is valued by some current users, decreasing the appeal of the site for these visitors. At the same time, the easier access is likely to increase the appeal of the site for new visitors. The expected result is an overall increase of visitors to the area and a change to the visitor mix.

Given the improved access, returning the area to the current standard with no facilities and informal camping is considered to be impractical.

### 6.4.3 Talbingo Reservoir

#### i Immediate impacts

It is anticipated that the works at Talbingo Reservoir will only result in minor restrictions or exclusions for recreational users of Talbingo Reservoir. Recreational demand and marine construction movements are relatively minor and wide-spaced given the size of the reservoir. The main restrictions on recreational use of the reservoir during Exploratory Works would be:

- short-term restricted public access to the public boat ramp near the reservoir wall during construction of the Talbingo barge ramp during the Exploratory Works;
- temporary closure of the whole of the spillway area during the construction of the Talbingo barge ramp;
- restricted public access to the northern part of the spillway area for the duration of the Exploratory Works and Main Works;
- restricted public access to the existing access road on the northern side of the spillway for part or all of the Exploration Works and Main Works - if required to maintain public access to the southern part of the spillway foreshore, a road along the southern side of the spillway would be constructed for public use;
- relocation of the swimming enclosure at the spillway to the southern end of the spillway;
- the requirement for appropriate pedestrian, land vehicles and watercraft controls when a barge is loading or unloading at the Talbingo barge ramp - this will include the application of normal inland waters boating and navigation regulations;
- closure of the informal boat launching ramp near Middle Bay;
- restricted public boat access to the Yarrangobilly Arm upstream of the low water barge turning basin to prevent interactions with barge operations and to prevent members of the public making landfall in barge ramp area of the Lobs Hole construction areas; and
- restricted public boat traffic close to subaqueous excavated rock placement areas, including in the vicinity of any silt curtains.

These measures will maintain access to the southern part of the spillway foreshore for public recreational use for the duration of the Exploration Works and Snowy 2.0 if it proceeds.

## ii      Amenity impacts

There may be some amenity impacts on users of Talbingo Reservoir from the construction and operation of the ramps and operation of the barges, including noise and visual impact. Surveys indicate that the scenery at the reservoir is highly valued by users.

The results of the noise and visual assessments undertaken for Exploratory Works indicates that noise and visual impacts are likely to be low.

## iii      Displacement

Some users may find that the restrictions and amenity impacts are enough to persuade them to go elsewhere for fishing or water sports, although this is considered unlikely as a result of Exploratory Works. Should this be the case, increased use of Blowering Dam and Tantangara Reservoir is probable.

## iv      Long-term impacts

The long-term impacts at Talbingo Reservoir will depend on whether the ramps remain at the spillway and Middle Bay after the completion of the Exploratory Works (and Snowy 2.0 if it proceeds). There is the potential for the improved infrastructure to provide the opportunity for increased recreational use of the precinct.

### 6.4.4      Other recreational users impacts

There will be some indirect impact on other recreational users as a result of the Exploratory Works such as increased traffic, noise and dust.

Increased traffic on the Snowy Mountains Highway and the Link Road may have an impact on the journeys of some park users, in particular, during the winter months when there is a significant increase in traffic accessing the Selwyn Snowy Resort at peak times (8.00 to 10.00 am and 3.00 to 5.00 pm on Saturdays, Sundays and school holidays).

Increased traffic on Murray Jackson Drive is also expected however because of the existing standard of the road and minor traffic levels it is not expected that this will have a significant impact on recreational users.

Outside winter, roadside rest areas and campgrounds including Three Mile Dam and other sites along the Snowy Mountains Highway may experience impacts from dust and noise.

The results of the noise, air quality and traffic assessments undertaken for Exploratory Works conclude that Exploratory Works are unlikely to have significant noise, air quality and traffic impacts on the local environment, including on recreational users.

### 6.4.5      Summary

Based on the information currently available and the assumptions provided, the unmitigated impacts of Exploratory Works are considered to be low to high for with regards to recreational users (predominantly low for users of Talbingo Reservoir, and high for users of Lobs Hole) - see Table 6.11.

**Table 6.11 Summary table of recreational users impacts**

Impact	Project influencing factors	Timing/ duration	Affected/ interested groups	Unmitigated <sup>1</sup> technical impact	Stakeholder perceived impact	Unmitigated impact
<b>Lobs Hole</b>						
Immediate - general public	Closure of recreational area	34 months	Recreational users	High	High	High
Immediate - family connection	Closure of recreational area	34 months	Descendants of past residents	High	High	High
Displacement	Closure of recreational area	34 months	Recreational users	Low	Medium	Low
Demand from workers	Construction workforce	34 months	Recreational users	Low	Low	Low
Long-term	Changed character of area	Ongoing	Recreational users and descendants of past residents	Medium	Low	Medium
<b>Talbingo Reservoir</b>						
Immediate	Construction works and barge operations	34 months	Recreational users	Low	Low	Low
Amenity	Construction works and barge operations	34 months	Recreational users	Low	Low	Low
Displacement	Construction works and barge operations	34 months	Recreational users	Low	Low	Low
Long-term	Changed character of area	Ongoing	Recreational users	Low	Low	Low
<b>Other recreational users</b>						
Traffic	Increased traffic on roads	34 months	Recreational users	Low	Medium	Medium
Amenity	Traffic, noise, air quality and visual impacts	34 months	Recreational users	Low	Low	Low

*Note: 1 = unmitigated technical impact indicates the impact from Exploratory Works without implementation of avoidance, mitigation or management strategies.*

## 6.5 Environmental and economic impacts

### 6.5.1 Introduction

The technical studies that accompany the Exploratory Works EIS address environmental impacts of the project. However, social consequences may also result from particular environmental impacts from projects. These include:

- consequences from impacts on water people use;
- levels of dust and noise to which people may be exposed;
- increased traffic on roads;
- impacts on fish people catch;
- impacts on heritage; and
- visual impacts.

The social consequences of the economic benefits of a project also need to be considered.

In this section, the identified impacts of Exploratory Works associated with relevant environmental and economic assessments undertaken for Exploratory Works are summarised.

### 6.5.2 Groundwater

Groundwater modelling predicts localised water table drawdown in the vicinity of the tunnel alignment, primarily around the portal where the exploratory tunnel intercepts shallow geological material that is more permeable than the deeper rock in which the majority of the tunnel will be excavated.

No users of groundwater (ie owners of bores) are expected to be impacted by Exploratory Works.

The overall impact of groundwater impacts is considered to be low.

**Table 6.12** Summary table of groundwater impacts

Impact	Project influencing factors	Timing/duration	Affected/interested groups	Unmitigated <sup>1</sup> technical impact	Stakeholder perceived impact	Unmitigated impact
Groundwater impacts	Tunnel construction	28 months	NA	Low	Low	Low

*Note:* 1 = unmitigated technical impact indicates the impact from Exploratory Works without implementation of avoidance, mitigation or management strategies.



### 6.5.3 Surface water

Potential impacts to the surface water environment are due to ground disturbance, construction activities, and water management. Potential impacts include:

- water quality impacts associated with sediment-laden runoff (including fine or dispersive sediments) from construction areas, unsealed access roads, rock emplacement areas, accommodation camp and portal construction pad into Yarrangobilly River, Wallaces Creek and other local waterways;
- contamination of stormwater runoff due to construction activities (including accidental spills) resulting in downstream impacts if not appropriately captured and managed;
- changes to flow regime from new infrastructure primarily bridges, the accommodation camp, and rock emplacement areas;
- increased runoff volumes due to failure of road embankments, water management systems and other infrastructure during flood events;
- increased erosion of landforms and waterways associated with uncontrolled runoff and changes to flow regimes;
- uncontrolled discharge of process water into the stormwater system due to inadequate system design or stormwater ingress into the process water system;
- receiving water impacts due to discharge of process water or extraction of water;
- water quality impacts associated with the discharge of process and waste water to Talbingo Reservoir; and
- potential for acid rock drainage seeping from rock emplacement areas into the Yarrangobilly River.

Notwithstanding the above, no users of surface waters, including recreational users of Talbingo Reservoir, are expected to be impacted by Exploratory Works.

**Table 6.13** Summary table of surface water impacts

Impact	Project influencing factors	Timing/duration	Affected/interested groups	Unmitigated <sup>1</sup> technical impact	Stakeholder perceived impact	Unmitigated impact
Surface water impacts	Project life	34 months	Recreational users	Medium	Medium	Medium

Note: 1 = unmitigated technical impact indicates the impact from Exploratory Works without implementation of avoidance, mitigation or management strategies.

### 6.5.4 Aquatic ecology

There would be disturbance to key fish habitat (KFH) due to barge access construction and associated dredging, and emplacement of excavated rock within Talbingo Reservoir. However, the areas of disturbance would be a small proportion of the entire reservoir. There is unlikely to be any net-loss of this habitat and associated impacts to species, including threatened species, that use this habitat are likely to be minimal in extent and temporary.

Construction and dredging works may result in disturbances to fish species due to reduced water quality and noise if they are present in the reservoir. These would be localised and temporary and both species would be able to actively avoid disturbed areas.

No substantial or ongoing impacts to KFH and fish species are expected.

No impacts to recreational users such as fishers on Talbingo Reservoir are expected to be impacted by Exploratory Works.

**Table 6.14 Summary table of aquatic ecology impacts**

Impact	Project influencing factors	Timing/duration	Affected/interested groups	Unmitigated <sup>1</sup> technical impact	Stakeholder perceived impact	Unmitigated impact
Aquatic ecology impacts	Project life	34 months	Broad community	Low	Low	Low

Note: 1 = unmitigated technical impact indicates the impact from Exploratory Works without implementation of avoidance, mitigation or management strategies.

### 6.5.5 Aboriginal heritage

Twenty one Aboriginal object locales would be disturbed by the Exploratory Works:

- seven which are of moderate to high local significance;
- three which are moderate local significance; and
- 12 which are of low local significance.

These objects have been historically disturbed with most Aboriginal object locales already impacted and not considered to be of sufficient significance to warrant avoidance measures.

**Table 6.15 Summary table of Aboriginal heritage impacts**

Impact	Project influencing factors	Timing/duration	Affected/interested groups	Unmitigated <sup>1</sup> technical impact	Stakeholder perceived impact	Unmitigated impact
Aboriginal heritage impacts	Project life	34 months	Broad community RAPs	Low	Low	Low

Note: 1 = unmitigated technical impact indicates the impact from Exploratory Works without implementation of avoidance, mitigation or management strategies.

### 6.5.6 Historic heritage

Direct impacts will occur to 59 items of historic heritage, of which five are of local significance, and the remaining 54 have not been assigned a level of significance. The majority of identified items are assessed to be of insufficient value to warrant any sort of formal heritage listing. None of the recorded heritage items are assessed to be of potential state significance.

**Table 6.16** Summary table of historic heritage impacts

Impact	Project influencing factors	Timing/duration	Affected/interested groups	Unmitigated <sup>1</sup> technical impact	Stakeholder perceived impact	Unmitigated impact
Historic heritage impacts	Project life	34 months	Broad community Recreational users and descendants of past residents	Low	Low	Low

Note: 1 = unmitigated technical impact indicates the impact from Exploratory Works without implementation of avoidance, mitigation or management strategies.

### 6.5.7 Noise and vibration

Assessment results indicate that construction noise levels satisfy noise management levels (NMLs) at all assessment locations with the exception of one residence at Talbingo (R2) where a 2 dB and 5 dB exceedance is predicted for the out of hours period during calm and adverse weather conditions, respectively. The predicted exceedance at location R2 is generated by Spillway Road construction activities. Road construction for this activity is scheduled to occur for six weeks. The time spent in this zone and therefore the duration of noise levels above the NMLs will therefore be less.

Construction vibration is expected to meet all vibration limits at all locations.

The nearest residential assessment locations potentially affected by project related traffic are located on Miles Franklin Drive, Talbingo and Snowy Mountains Highway to the east of the project area. Road traffic noise levels are predicted to satisfy relevant road traffic noise criteria.

**Table 6.17** Summary table of noise and vibration impacts

Impact	Project influencing factors	Timing/duration	Affected/interested groups	Unmitigated <sup>1</sup> technical impact	Stakeholder perceived impact	Unmitigated impact
Noise and vibration impacts	Project life	34 months	Broad community Recreational users	Low	Low	Low

Note: 1 = unmitigated technical impact indicates the impact from Exploratory Works without implementation of avoidance, mitigation or management strategies.

### 6.5.8 Air quality

The main air quality impact for the Exploratory Works is airborne particulate matter (ie dust) from the handling and transport of excavated material. A computer-based air dispersion model was used to predict ground-level concentrations and deposition levels due to the identified emission sources, and the model predictions have been compared with relevant air quality criteria. The model predictions showed that fine particulates (PM<sub>10</sub>, PM<sub>2.5</sub>), total suspended particles (TSP) and deposited dust levels would not exceed relevant assessment criteria at the nearest sensitive receptor (that is, the accommodation camp).

No air quality impacts are predicted at residences at Talbingo.

**Table 6.18** Summary table of air quality impacts

Impact	Project influencing factors	Timing/duration	Affected/interested groups	Unmitigated <sup>1</sup> technical impact	Stakeholder perceived impact	Unmitigated impact
Air quality impacts	Project life	34 months	Broad community Recreational users	Low	Low	Low

Note: 1 = unmitigated technical impact indicates the impact from Exploratory Works without implementation of avoidance, mitigation or management strategies.

### 6.5.9 Visual

Other than the construction and operational activities associated with the barge ramps which would be viewed from Talbingo Reservoir, the Exploratory Works will not be visible from any key public viewpoints.

A viewshed analysis based on an indicative 6 m high point within the site of the accommodation facility (likely to higher than the highest point of the camp) indicates that the only feasible locations the accommodation camp can be viewed are from Lobs Hole itself.

A viewshed analysis based on an indicative 9 m high point within the site of the construction compound at the portal location indicates that the only feasible locations the compound can be viewed are from the location of the compound itself.

**Table 6.19** Summary table of visual impacts

Impact	Project influencing factors	Timing/duration	Affected/interested groups	Unmitigated <sup>1</sup> technical impact	Stakeholder perceived impact	Unmitigated impact
Visual impacts	Project life	34 months	Recreational users	Low	Low	Low

Note: 1 = unmitigated technical impact indicates the impact from Exploratory Works without implementation of avoidance, mitigation or management strategies.

### 6.5.10 Traffic

Exploratory Works is unlikely to have an impact on the function and performance of roads within the local area.

Snowy Mountains Highway is expected to remain at the existing highest performance level of service A. Link Road is expected to remain at the existing performance level of service C throughout Exploratory Works. Construction vehicle movements along Miles Franklin Drive will only be undertaken to deliver oversized equipment and materials. This is expected to be an occasional occurrence that will not impact the operational performance of the road.

Lobs Hole Ravine Road and roads within Lobs Hole will be closed to the public for the duration of Exploratory Works.

**Table 6.20**      **Summary table of traffic impacts**

Impact	Project influencing factors	Timing/duration	Affected/interested groups	Unmitigated <sup>1</sup> technical impact	Stakeholder perceived impact	Unmitigated impact
Traffic impacts	Project life	34 months	Broad community Recreational users	Low	Medium	Medium

*Note:*      1 = unmitigated technical impact indicates the impact from Exploratory Works without implementation of avoidance, mitigation or management strategies.

### 6.5.11 Economics

The economic assessment indicates that Exploratory Works will have a positive economic impact in the local area and region. It states that the total costs of Exploratory Works are estimated at \$280 million (M). In terms of impacts on the regional economy, it states that the economic impact of the additional wage expenditure in the economy would be:

- \$2.92 M in annual direct and indirect regional output;
- \$1.72 M in annual direct and indirect value-added;
- \$0.65 M in annual direct and indirect income; and
- 14 direct and indirect jobs.

**Table 6.21**      **Summary table of economic impacts**

Impact	Project influencing factors	Timing/duration	Affected/interested groups	Unmitigated <sup>1</sup> technical impact	Stakeholder perceived impact	Unmitigated impact
Economic impacts	Project life	34 months	Broad community	Medium (positive)	High (positive)	High (positive)

*Note:*      1 = unmitigated technical impact indicates the impact from Exploratory Works without implementation of avoidance, mitigation or management strategies.





## 7 Mitigation and management

### 7.1 Introduction

Having identified and assessed the potential social impacts relating to Exploratory Works, this chapter describes the mitigation and management measures for the project. Impacts identified are plotted to afford prioritisation of mitigation and management measures. Mitigation and management measures from other technical studies are referenced where required as their implementation is often critical for minimising social impact. The EIS and relevant technical assessment should be referred to for the full details of mitigation and management strategies.

The development of effective mitigation and management measures for Exploratory Works has also been informed by consultation with key stakeholders with interest in specific issues/impacts, particularly NPWS in relation to potential recreational users impacts. Outcomes arising from this consultation have been incorporated in the development of the mitigation and management measures proposed in this chapter.

A summary of the proposed mitigation and management measures is contained in Table 7.2.

### 7.2 Social risks

Often community perceptions of risk may be quite different to an expert's assessment of risk, and can be driven by individual fears, aspirations, differing levels of information and/or local knowledge/experience of particular impacts. The approach adopted in this assessment methodology is consistent with Sandman's risk equation ( $\text{risk} = \text{hazard} + \text{outrage}$ ) (Sandman, 1993), and reflects an integration of expert and local knowledge. The integration of the outcomes of the technical (environmental and social) risk assessment, undertaken by specialists/technical experts, with community perceptions of risk affords a more integrated, and socially responsive risk assessment approach (Coakes Consulting 2012).

First, the unmitigated impacts of Exploratory Works are assessed in terms of technical risk (X-axis) (ie high, medium or low). Second, the stakeholder perceived impact risk (ie high, medium or low) is assessed (Y-axis) based on findings from consultation undertaken as part of the scoping phase of the SA.

The impact plotting exercise allows impacts requiring mitigation and management to be prioritised. For example, those risks/impacts to be first addressed should include those that fall in the top right hand quadrant (high perceived community risk/impact, high technical risk/impact) as well as those that fall within the bottom right quadrant (high technical risk/impact) and top left hand quadrant (high perceived community risk/impact).

**Table 7.1 Social risks of Exploratory Works**

Stakeholder perceived risk	High	<ul style="list-style-type: none"> <li>• NIL</li> </ul>	<ul style="list-style-type: none"> <li>• Economic impacts (positive)</li> </ul>	<ul style="list-style-type: none"> <li>• Lobs Hole - immediate closure on general public and family connection</li> </ul>
	Medium	<ul style="list-style-type: none"> <li>• Population change (positive)</li> <li>• Long-term housing</li> <li>• Short-term accommodation</li> <li>• Lobs Hole - displacement</li> <li>• Traffic impacts on recreational users</li> <li>• General traffic impacts</li> </ul>	<ul style="list-style-type: none"> <li>• Surface water impacts</li> </ul>	<ul style="list-style-type: none"> <li>• NIL</li> </ul>
	Low	<ul style="list-style-type: none"> <li>• Increased demand on SLPs</li> <li>• Lobs Hole - demand from workers</li> <li>• Talbingo Reservoir - immediate impacts, amenity impacts displacement and long-term impacts</li> <li>• Amenity impacts to recreational users</li> <li>• Groundwater impacts</li> <li>• Aquatic ecology impacts</li> <li>• Aboriginal heritage impacts</li> <li>• Historic heritage impacts</li> <li>• Noise and vibration impacts</li> <li>• Air quality impacts</li> <li>• Visual impacts</li> </ul>	<ul style="list-style-type: none"> <li>• Lobs Hole - long-term impacts</li> </ul>	<ul style="list-style-type: none"> <li>• NIL</li> </ul>
		Low	Medium	High
		Technical risk		

As Table 7.1 illustrates, the only impacts requiring prioritisation for mitigation and management measures due to either their high technical and/or community rating include the immediate impacts of the closure of Lobs Hole to recreational users, including descendants of residents of the area and maximising the positive economic benefits of Exploratory Works.

Management is also required in relation to:

- population change (positive);
- long-term housing;
- short-term accommodation (positive);
- the displacement of recreational users at Lobs Hole;

- long-term impacts for recreational users at Lobs Hole;
- traffic impacts on recreational users, as well as general traffic impacts; and
- surface water impacts.

## 7.3 Mitigation and management measures

### 7.3.1 Recreation users

#### i Lobs Hole

Recommended mitigation and management measures for recreation users of Lobs Hole are provided in the recreational users assessment (see Appendix C). It states:

To address the higher levels of visitation that are likely to occur as a result of the improved access, it is recommended that a master plan be developed and implemented for the Lobs Hole Ravine area. The master plan would need to be prepared and approved so that it can be implemented at the completion of works at Lobs Hole Ravine; either following Exploratory Works should Snowy 2.0 not proceed past these works; or after Snowy 2.0.

The master plan should consider issues such as:

- Vehicle access and potential vehicle conflict – from both directions and potential upgrading of the northern access
- Changing user dynamics and use of the area (from current use)
- Planning for camping in a flexible and scalable approach addressing different user types into the future, e.g. individuals, groups, tents and camper trailers/caravans
- Provision of designated camping sites as well as ‘general camp sites’
- Consideration for collection of camping fees
- Provision of toilets (type to be determined)
- Provision of a day use area
- Provision of interpretation for Snowy 2.0 and KNP values – natural, aboriginal and cultural heritage in the Ravine
- Weed and feral animal control.

Work on the rehabilitation of the site and the installation of visitor infrastructure would commence before the conclusion of the Exploratory Works (or Snowy 2.0) to enable visitor use of the area to recommence as soon as possible.

The completion and implementation of a master plan has the potential to result in a positive impact from the Exploratory Works (or Snowy 2.0) in the long-term for the site for some park users as the area will have improved access and will be likely to have increased facilities, toilets, interpretative materials etc. However, the user group may change and some previous (current) users will seek alternative areas for their more remote activities.

To address the impacts on those who are currently visiting the site for a remote camping experience accessed by 4WD, it is recommended that alternative sites for the provision of a similar experience for these users be considered as the impacts of the upgraded access on Lobs Hole Ravine will be permanent. Other locations in the park that offer the same or a similar combination of challenging access, few crowds, a remote site and waterside camping near fishing are limited. Perkins Flat, Broken Cart and Tumut Ponds all offer remote camping by water but are all much smaller sites and do not have the capacity of Lobs Hold Ravine, and are already well utilised at peak periods such as Easter. Amendments to the POM may need to be considered at potential sites that could offer a comparable experience but are located on management trails that do not currently allow public access. Replication of the existing experience would not require a significant investment in infrastructure given that there is currently no infrastructure at Lobs Hole Ravine, although there may be some increased cost for road maintenance.

It is also recommended that site master planning be undertaken for busier areas potentially affected by displacement of Lobs Hole Ravine users (Three Mile Dam, Yarrangobilly Village, Eucumbene River, Blowering campgrounds) and increased demand from Exploratory Works workers to determine whether they will need any expansion, and how the current visitor experiences in those places will be maintained.

Snowy Hydro proposes to enter into a heads of agreement with NPWS which will form the basis of a voluntary planning agreement (VPA) or similar between the two parties which will:

- broadly set out the measures proposed to mitigate impacts to recreational users of KNP; and
- nominate the monetary contributions required to fund the mitigation and management measures.

## ii Traffic impacts

Recommended traffic related mitigation and management measures for recreation users include:

- consideration of exclusion windows for heavy traffic on weekends between 7.30 am and 9.30 am during the ski season and each day during the July school holidays;
- minimising trucking movements during winter; and
- maximise use of barges for transport of heavy plant and machinery.

### 7.3.2 Maximising economic benefits

The results of engagement with the community, including SLPs, indicate overwhelming support for Snowy 2.0 and Exploratory Works. The results also indicate that maximising the economic benefits of Snowy 2.0, including Exploratory Works, within local communities is important or extremely important.

Accordingly, a key matter to be addressed in relation to Exploratory Works is to ensure that opportunities are created for residents of the local area and region to work on or provide services to the project.

Snowy Hydro has already established a business directory for Snowy 2.0 (the Snowy 2.0 Business Directory) which is an online form used to capture details of businesses interested in working on the project. Snowy Hydro intends to use this database to specifically target local businesses in the engagement process.



Snowy Hydro would also engage with the contractor(s) for Exploratory Works to ensure that its approach to employment embodies the following principles where possible:

- a preference for local employment;
- encouraging local contractors to tender for work; and
- use of local businesses.

In order to achieve this outcome, Snowy Hydro in consultation with the contractor(s) for Exploratory Works, proposes to:

- provide advance information about the approach to workforce sourcing, recruitment policies of local people and work arrangements;
- work with recruitment, education and training providers in the local area to encourage the provision (in advance of project commencement) of future employment and training opportunities for skills that would be directly and indirectly generated by Snowy 2.0, including Exploratory Works; and
- participate, as appropriate, in business groups, events or programs, and/or provide training programs directly relevant to project needs or broader industry skills (including programs specifically designed to assist local companies to comply with likely pre-qualification and contractual requirements).

The provision of these activities would be supported by the development of a local employment and business policy. The intent of this policy is to provide relevant commitments by Snowy Hydro and the contractor(s) in potential areas including:

- product and service procurement;
- equitable or contracted procurement;
- pre-qualification assistance;
- employment advertising and resourcing;
- training assistance or participation; and
- service referrals.

### 7.3.3 Housing and accommodation

#### i Long-term housing

To avoid impacts to the long-term housing market within the local area, Snowy Hydro proposes to develop an accommodation camp for Exploratory Works which will accommodate all workers while on-swing.

Residual risks around long-term housing are perceived stakeholder concerns regarding the supply of quality housing and land within the local area, particularly Cooma, to meet the demand generated by Snowy 2.0. The assessed technical impact is low for Exploratory Works.

To address the perceived impacts, Snowy Hydro will track and monitor the demand for long-term housing in the local region by regularly consultation with workers (of Exploratory Works), local real estate agents and the Snowy Monaro Regional and Snowy Valleys councils.

The monitoring program will be prepared before construction starts and will be reviewed periodically to capture any relevant changes in the project and in the community. Monitoring would be undertaken every three months starting from the commencement of construction activities.

The results of the consultation should be reported back to DPE and the councils.

Commencing this process of consultation and reporting at the start of Exploratory Works will assist in developing a process for monitoring housing demand ahead of the commencement of the broader Snowy 2.0 should it proceed beyond Exploratory Works.

## ii Short-term accommodation

To avoid impacts on the availability of short-term accommodation during winter in the local area (ie Adaminaby), an education campaign would be undertaken encouraging workers remaining in the area between swings to avoid using local accommodation during weekends and holiday periods.

### 7.3.4 Surface water

A range of mitigation and management measures are contained within the surface water assessment that accompanies the EIS and are not repeated here.

## 7.4 Summary

Table 7.2 provides a summary of the proposed mitigation and management measures described above.

**Table 7.2 Summary of proposed mitigation and management measures**

Impacts/risks	Reference #	Measures
Impacts to long-term housing demand	SEC01	<p>Develop and implement a program to track and monitor the demand for long-term housing in the local region by regularly consulting with workers, local real estate agents and the Snowy Monaro Regional and Snowy Valleys councils.</p> <p>The monitoring program will be prepared before construction starts and will be reviewed periodically to capture any relevant changes in the project and in the community. Monitoring would be undertaken every three months starting from the commencement of construction.</p> <p>The results of the consultation would be reported back to DPE and the councils.</p>
Costs incurred to NPWS to implement recreational user impact mitigation measures	SEC02	<p>Snowy Hydro propose to enter into a heads of agreement with NPWS which will form the basis of a VPA or similar between the two parties which will broadly set out the measures proposed to mitigate impacts to recreational users of KNP, and nominate the monetary contributions required to fund the mitigation and management measures.</p>
Higher levels of visitation to Lobs Hole post Exploratory Works due to improved access	SEC03	<p>Master plan to be developed before the completion of works at Lobs Hole. Master plan to consider issues such as vehicle access and potential vehicle conflict, changing user dynamics and use of the area, planning for future camping groups and types, provision of amenities, weed and feral animal control.</p> <p>Work on the rehabilitation of the site and the installation of visitor infrastructure would commence before the conclusion of the Exploratory Works (or Snowy 2.0) to enable visitor use of the area to recommence as soon as possible.</p>

**Table 7.2**      **Summary of proposed mitigation and management measures**

Impacts/risks	Reference #	Measures
Loss of remote camping experience accessed by 4WD	SEC04	KNP PoM to be amended to consider potential sites that could offer a comparable experience to Lobs Hole Ravine such as those located on management trails that do not currently allow public access.
Increased visitation to other camping areas during Exploratory Works	SEC05	Site master planning be undertaken for busier areas, potentially affected by displacement of Lobs Hole Ravine users (Three Mile Dam, Yarrangobilly Village, Eucumbene River, Blowering campgrounds) and increased demand from Exploratory Works workers, to determine whether they will need any expansion, and how the current visitor experiences in those places will be maintained.
Restricted access to Talbingo Reservoir for recreational users	SEC06	Restrictions to access to Talbingo Reservoir at the spillway end for recreational users should be timed to avoid the peak visitor use periods (ie 7 am-9 am on weekends and school holidays between October and April).
Impact of increased traffic in KNP on recreational users	SEC07	Traffic management arrangements will be put in place to minimise the amenity and safety risks for recreational users during periods of high traffic flow.
Maximising economic benefits	SEC08	<p>Snowy Hydro would engage with the contractor(s) for Exploratory Works to ensure that its approach to employment embodies the following principles where possible:</p> <ul style="list-style-type: none"> <li>• a preference for local employment;</li> <li>• encouraging local contractors to tender for work; and</li> <li>• use of local businesses.</li> </ul> <p>In order to achieve this outcome, Snowy Hydro in consultation with the contractor(s) for Exploratory Works, proposes to:</p> <ul style="list-style-type: none"> <li>• provide advance information about the approach to workforce sourcing, recruitment policies of local people and work arrangements;</li> <li>• work with recruitment, education and training providers in the local area to encourage the provision (in advance of project commencement) of future employment and training opportunities for skills that would be directly and indirectly generated by Snowy 2.0, including Exploratory Works; and</li> <li>• participate, as appropriate, in business groups, events or programs, and/or provide training programs directly relevant to project needs or broader industry skills (including programs specifically designed to assist local companies to comply with likely pre-qualification and contractual requirements).</li> </ul> <p>The provision of these activities would be supported by the development of a local employment and business policy.</p>

## 7.5 Residual social impacts

The following table summarises the key mitigation and management measures for consideration in the management of the above impacts and considers the residual or mitigated social risks after application of each of the key mitigation and management measures.

**Table 7.3**      **Residual/mitigated social impacts of Exploratory Works**

Social impact/risk	Unmitigated technical	Stakeholder perceived impact	Unmitigated impact	Proposed mitigation and management measure	Residual/mitigated social impact
Population change	Low	Medium (positive)	Medium	<ul style="list-style-type: none"> <li>Regularly consult with workers, real estate agents and councils to monitor demand for long-term housing and land.</li> </ul>	Low
Long-term housing	Low	Medium	Medium	<ul style="list-style-type: none"> <li>As above.</li> </ul>	Low
Short-term accommodation	Low	Medium (positive)	Medium	-	Low
Increased demand on SLPs	Low	Low	Low	-	Low
<b>Lobs Hole</b>					
Immediate - general public	High	High	High	<ul style="list-style-type: none"> <li>Site master planning be undertaken for busier areas, potentially affected by displacement of Lobs Hole Ravine users (Three Mile Dam, Yarrangobilly Village, Eucumbene River, Blowering campgrounds) and increased demand from Exploratory Works workers, to determine whether they will need any expansion, and how the current visitor experiences in those places will be maintained.</li> </ul>	Low
Immediate - family connection	High	High	High	<ul style="list-style-type: none"> <li>As above.</li> <li>Masterplan to consider inclusion of interpretive material outlining Aboriginal and European history.</li> </ul>	Low
Displacement	Low	Medium	Medium	<ul style="list-style-type: none"> <li>As above.</li> </ul>	Low
Demand from workers	Low	Low	Low	-	Low
Long-term	Medium	Low	Medium	<ul style="list-style-type: none"> <li>As above.</li> </ul>	Low

**Table 7.3** Residual/mitigated social impacts of Exploratory Works

Social impact/risk	Unmitigated technical	Stakeholder perceived impact	Unmitigated impact	Proposed mitigation and management measure	Residual/mitigated social impact
<b>Talbingo Reservoir</b>					
Immediate	Low	Low	Low	-	Low
Amenity	Low	Low	Low	-	Low
Displacement	Low	Low	Low	-	Low
Long-term	Low	Low	Low	-	Low
<b>Other recreational users</b>					
Traffic	Low	Medium	Medium	<ul style="list-style-type: none"> <li>Traffic management arrangements will be put in place to minimise the amenity and safety risks for recreational users during periods of high traffic flow.</li> </ul>	Low
Amenity	Low	Low	Low	-	Low
<b>Environmental impacts</b>					
Groundwater	Low	Low	Low	-	Low
Surface water	Medium	Medium	Medium	<ul style="list-style-type: none"> <li>Implement mitigation and management measures contained in surface water assessment.</li> </ul>	Low
Aquatic ecology	Low	Low	Low	-	Low
Aboriginal heritage	Low	Low	Low	-	Low
Historic heritage	Low	Low	Low	-	Low
Noise and vibration	Low	Low	Low	-	Low
Air quality	Low	Low	Low	-	Low
Visual	Low	Low	Low	-	Low
Traffic	Low	Medium	Medium	<ul style="list-style-type: none"> <li>Implement mitigation and management measures contained in traffic assessment</li> </ul>	Low



**Table 7.3**      **Residual/mitigated social impacts of Exploratory Works**

Social impact/risk	Unmitigated technical	Stakeholder perceived impact	Unmitigated impact	Proposed mitigation and management measure	Residual/mitigated social impact
Economic	Medium (positive)	High (positive)	High (positive)	<ul style="list-style-type: none"> <li>• Contractor(s) to ensure that the their approach to employment embodies the following principles where possible: <ul style="list-style-type: none"> <li>– a preference for local employment;</li> <li>– encouraging local contractors to tender for work; and</li> <li>– use of local businesses.</li> </ul> </li> <li>• Provide advance information on workforce sourcing and recruitment.</li> <li>• Work with local recruitment, education and training providers.</li> <li>• Participate in business groups, events or programs, and/or provide training programs directly relevant to project needs or broader industry skills.</li> </ul> <p>Development of a local employment and business policy.</p>	Low

## 8 Conclusion

This SA undertaken throughout 2017 and 2018 has involved a series of phases including profiling, scoping of issues and opportunities (through stakeholder engagement), assessment of impacts and opportunities (through review, community dialogue and feedback mechanisms), development of mitigation and management measures, and finally, reporting and development of an ongoing monitoring framework. Throughout this detailed SA process the assessment of impacts has involved the integration of community and technical knowledge.

Identified residual impacts of relevance to this SA include:

- issues associated with impacts to recreational users of the KNP, particularly users of Lobs Hole where access and use will be closed to the public during a period of 34 months (or longer should Snowy 2.0 proceed beyond Exploratory Works);
- the need to develop a local employment and business policy to maximise the benefits of Exploratory Works to the local area; including requiring that the contractor(s) engaged to undertake the project embody the following principles in relation to employment:
  - a preference for local employment;
  - encouraging local contractors to tender for work; and
  - use of local businesses.
- potential issues with the supply and demand of housing and local services in those communities that may be impacted by the Exploratory Works, suggesting a need for an ongoing monitoring program.

The local employment and business policy should include commitments by Snowy Hydro and the contractor(s) to:

- product and service procurement;
- equitable or contracted procurement;
- pre-qualification assistance;
- employment advertising and resourcing;
- training assistance or participation; and
- service referrals.

Snowy Hydro will continue to engage with stakeholders as the approval process for Exploratory Works progresses, and as the plans for Snowy 2.0 are developed.

With the implementation of recommended mitigation and management measures, Exploratory Works is unlikely to have any significant negative social impacts. Conversely, if approved, the Exploratory Works has the potential to positively contribute to the local area through the provision of over 200 construction jobs. Exploratory Works will also result in investment in the local area and region, and the state of NSW more broadly.



## Glossary

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ABS	Australian Bureau of Statistics
ACHA	Aboriginal cultural heritage assessment
APPs	Australia Privacy Principles
CBP	Concrete batching plant
Census	Population and housing census
CSSI	Critical State Significant Infrastructure
DIDO	Drive-in/drive-out
DPE	NSW Department of Planning and Environment
EIS	Environmental Impact Statement
EMM	EMM Consulting Pty Ltd
EP&A Act	NSW <i>Environmental Planning and Assessment Act 1979</i>
EPA	NSW Environment Protection Authority
FIFO	Fly-in/fly-out
FSL	Full supply level
GP	General practitioner
GWh	Gigawatt hours
IAP2	International Association for Public Participation
IER	Index of Economic Resources
IEO	Index of Education and Occupation
IRSAD	Index of Relative Socio-Economic Advantage and Disadvantage
IRSD	Index of Relative Socio-Economic Disadvantage
IAIA	International Association for Impact Assessment
km	Kilometre
KFH	Key fish habitat
KNP	Kosciuszko National Park
LGA	Local government area
m	Metres
m <sup>2</sup>	square metre
m <sup>3</sup>	cubic metre
M	Million
MAT	Main access tunnel
MW	Megawatts
MOL	Minimum operating level

MOU	Memorandum of understanding
NCC	Nature Conservation Council
NPA	National Parks Association
NEM	National Electricity Market
NPWS	NSW National Parks and Wildlife Service
NMLs	Noise management levels
OAIC	Office of the Australian Information Commissioner
OEH	NSW Office of Environment and Heritage
RAPs	Registered Aboriginal Parties
SA	Social assessment
SEARs	Secretary's Environmental Assessment Requirements
SEIFA	Socio-Economic Indexes for Areas
SIMP	Social impact management plan
SLP	Service level provider
SA1	Statistical Areas Level 1
STP	Sewerage treatment plant
SRD SEPP	<i>State Environmental Planning Policy (State and Regional Development) 2011</i>
SSC	State suburbs
TV	Television
TEC	Total Environment Centre
TSP	Total suspended particles
UCL	Urban Centre and Localities
VPA	Voluntary planning agreement



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## Appendix A

### Community information booklets

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# **SNOWY 2.0**

## Community Information Booklet

**snowy**hydro

# MESSAGE FROM THE CEO



Since the first sod was turned for the Snowy Scheme in 1949, we have been a proud member of the Snowy Mountains community. As we embark on our next major scheme expansion, we want to keep you informed of the project's progress and seek your feedback.

We've commenced a feasibility study that will look at how to design and construct Snowy 2.0 as well as analyse the economics of the project. Like any of our business ventures, Snowy 2.0 will need to meet our stringent investment hurdles before it can proceed. The feasibility study is due to be released in December 2017.

At Snowy we see the Kosciusko National Park as our backyard and we have a long proven track record of responsible environmental management.

Most of Snowy 2.0 will be deep underground to minimise the environmental impacts of the project both during construction and our ongoing operations. The feasibility study and the EIS will carefully consider the environmental, social and economic impacts of the project.

We will also ensure that the economic benefits and regional development opportunities created by Snowy 2.0 are shared across the region. This is a very exciting time for the Snowy Mountains; the original scheme is iconic and the Snowy 2.0 project will be our and the next generation's legacy.

I hope you take some time to read and consider the information is in this booklet. I look forward to hearing your feedback on this nation building project and thank you in advance for being part of our community consultation.

Paul Broad  
CEO

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# WHAT THIS BOOKLET IS ABOUT

Snowy 2.0 is a pumped hydro project with the potential to provide storage for large scale, reliable renewable energy to Australia at a time when energy security and climate change are at the forefront of public policy. We are currently undertaking a study of the feasibility of Snowy 2.0. This study will inform a decision about whether to proceed with the project or not. Like any investment decision made by Snowy Hydro, the Snowy 2.0 project will need to be commercially viable and meet our high standards for safety & environment before it can go ahead. At this stage, we are optimistic about the prospects of this project proceeding.

We are keen to understand the opinions and concerns of the broader Snowy community about the Snowy 2.0 project at this early stage. Given we are still at feasibility stage, your feedback will be based on the preliminary information available. There are some questions on the final pages of this booklet and we would appreciate it if you could complete them. The feedback we receive will be taken into account during the next steps of planning and consultation.

If you do provide us with feedback, we may collect certain personal information about you as part of that feedback. If we do so, we will treat your personal information in accordance with the Privacy Statement contained at the end of this booklet and our Privacy Policy on our website.

# SNOWY HYDRO'S HERITAGE AND WHO WE ARE TODAY

The Snowy Mountains Hydro-electric Scheme is a result of visionary decision making, exceptional design and hard work, producing benefits that last for generations. The Snowy Scheme currently consists of nine power stations (including pumped storage at Tumut 3 power station and Jindabyne Pumps), 16 dams, 145 km of tunnels and 80kms of aqueducts collecting, storing and releasing water to users downstream and generating electricity on the way.

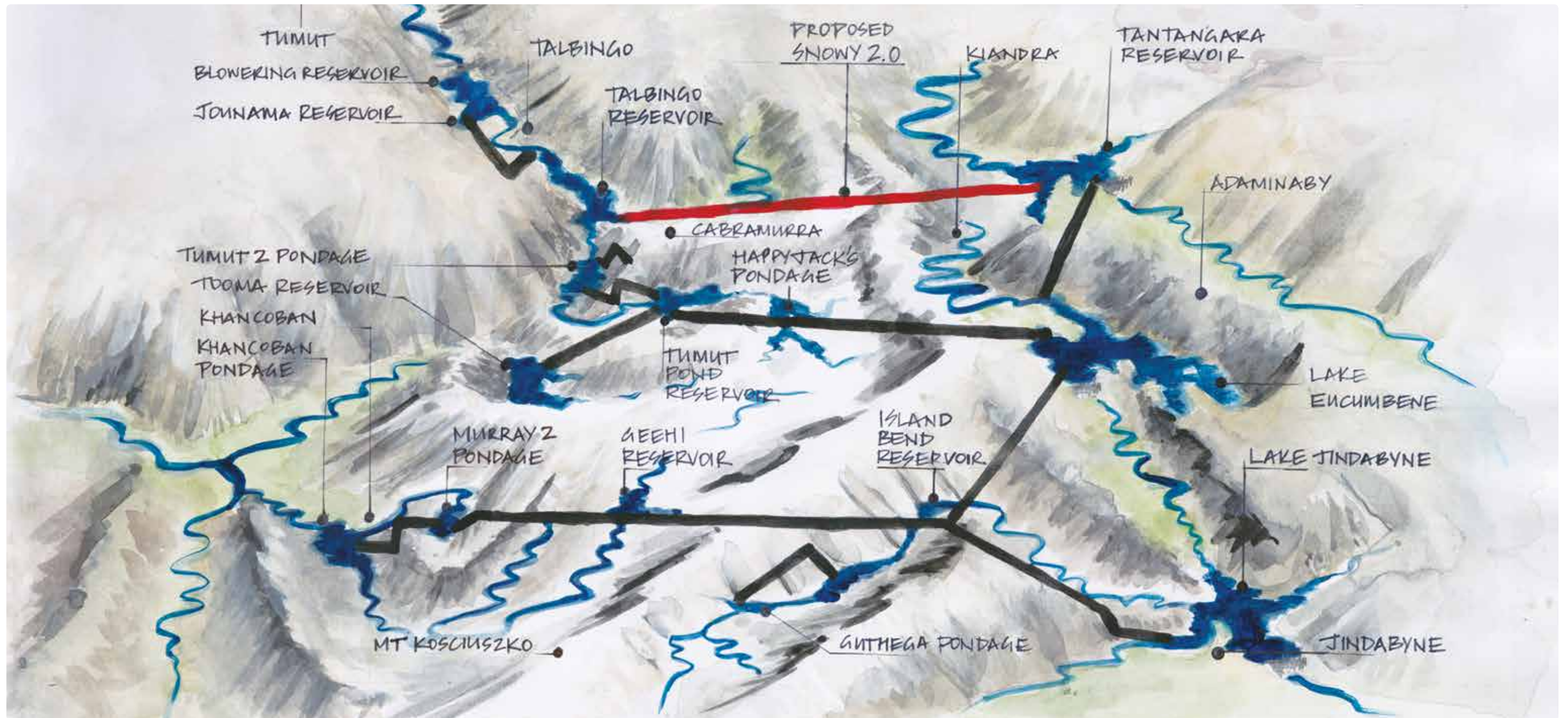
Today we supply retail electricity and gas to homes and businesses across the country through our retail brands Red Energy and Lumo Energy. We use our reliable, fast start generation and vast water storages to provide energy when demand is high, and we also offer insurance products that provide security of supply to other market participants. In these three key ways, Snowy Hydro is able to help bring reliability and security to electricity supplies in Eastern Australia.

Snowy Hydro is an integral part of our Snowy Mountains communities, supporting a diverse range of community activities & businesses and directly employing over 400 people who live across the region. We are responsible for managing significant areas of land outside and within Kosciuszko National Park (KNP), and we have a strong track record of environmental management over many decades. We work collaboratively and effectively with other land managers and the National Parks and Wildlife Service (NPWS).

Our history and recent track record of performance provide a solid foundation for continued diversification and growth of our business for the benefit of future generations.







The Snowy Mountain Scheme showing the proposed Snowy 2.0



# WHY DO WE NEED SNOWY 2.0?

The water stored in Snowy Hydro's reservoirs is effectively a battery of stored energy that is used to generate power when needed. In fact, the Scheme is one of Australia's largest battery storages and Snowy 2.0 will supercharge this.

As Australia reduces its carbon emissions through large-scale wind and solar farms, we need an efficient way of storing the energy produced by these renewable technologies when that energy is not needed. For wind energy, the peak of electricity production occurs overnight. For solar energy, the peak of production occurs in the middle of the day. However, public demand peaks in the morning and in the evening.

This means that it will be increasingly difficult to balance the cycles of energy supply and demand, especially during extreme demand periods such as heat waves.

If built, Snowy 2.0 would significantly enhance its capability to pump and store water at times where there is an oversupply of energy. We can then utilise that water to generate electricity at times when it is needed most.

Snowy 2.0 will be able to store up to 350,000 megawatt hours of energy which - at full capacity - could power 3 million homes for a week. Like our existing power stations, the new turbines would be fast start, meaning we can feed electricity into the network within minutes.

In terms of capacity, cost, location and longevity, there is currently no other technology or storage option that comes close to Snowy 2.0. Snowy 2.0 is strategically located to service the two main load centres of Sydney and Melbourne. The project will also support existing and proposed new solar and wind generation developments in western NSW and Victoria, which can supply Snowy 2.0 with 'off-peak' power for pumping.

If it goes ahead, the Snowy 2.0 project will enhance our ability to provide customers and the energy grid with reliable power generation at critical times. And, just like the original Scheme, flexibility for change and capacity to cope with future demands on the system.

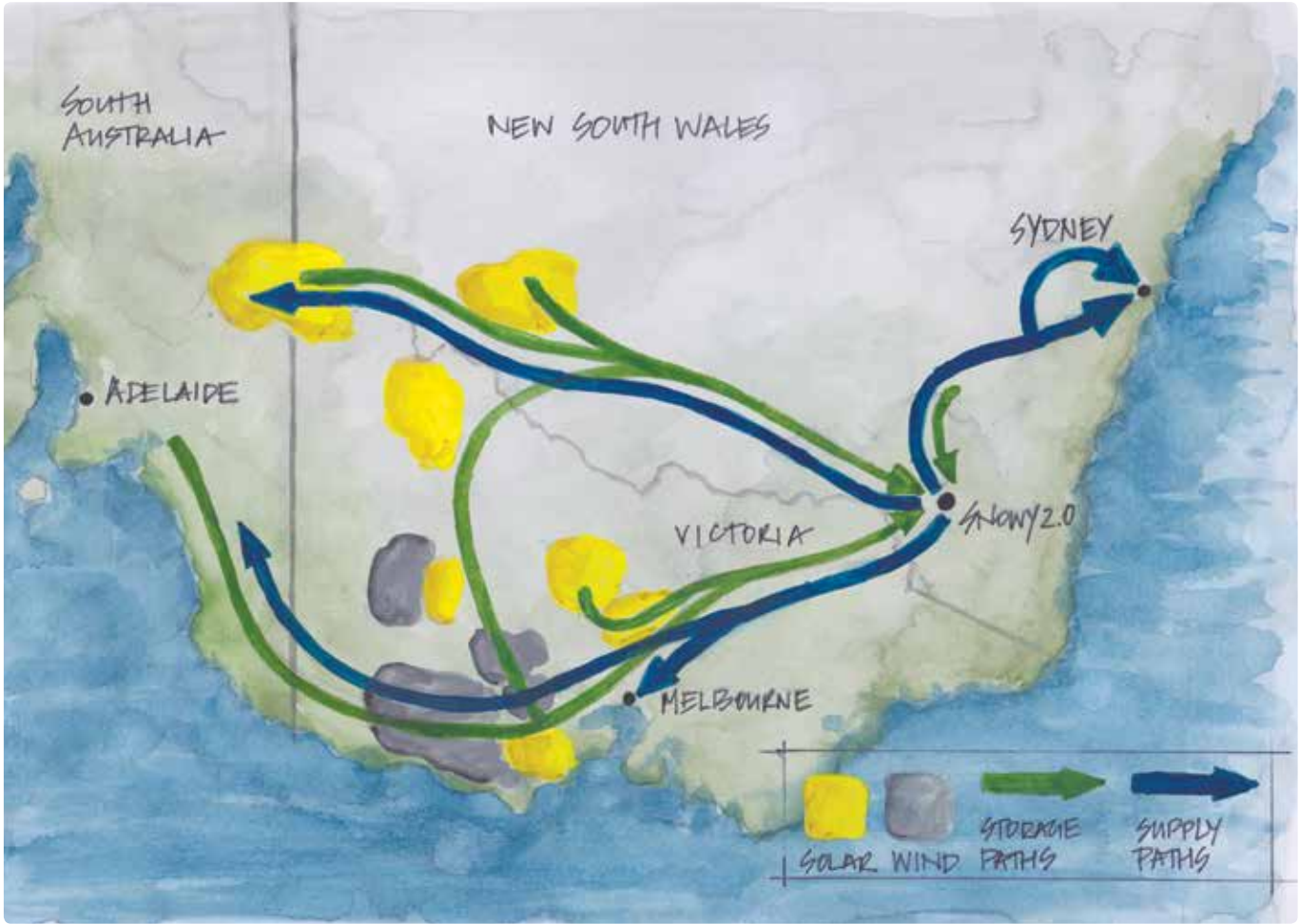


Illustration showing existing and proposed solar/wind energy development and how they would relate to Snowy 2.0. This also shows how Snowy 2.0 connects to the main load centers north and south.

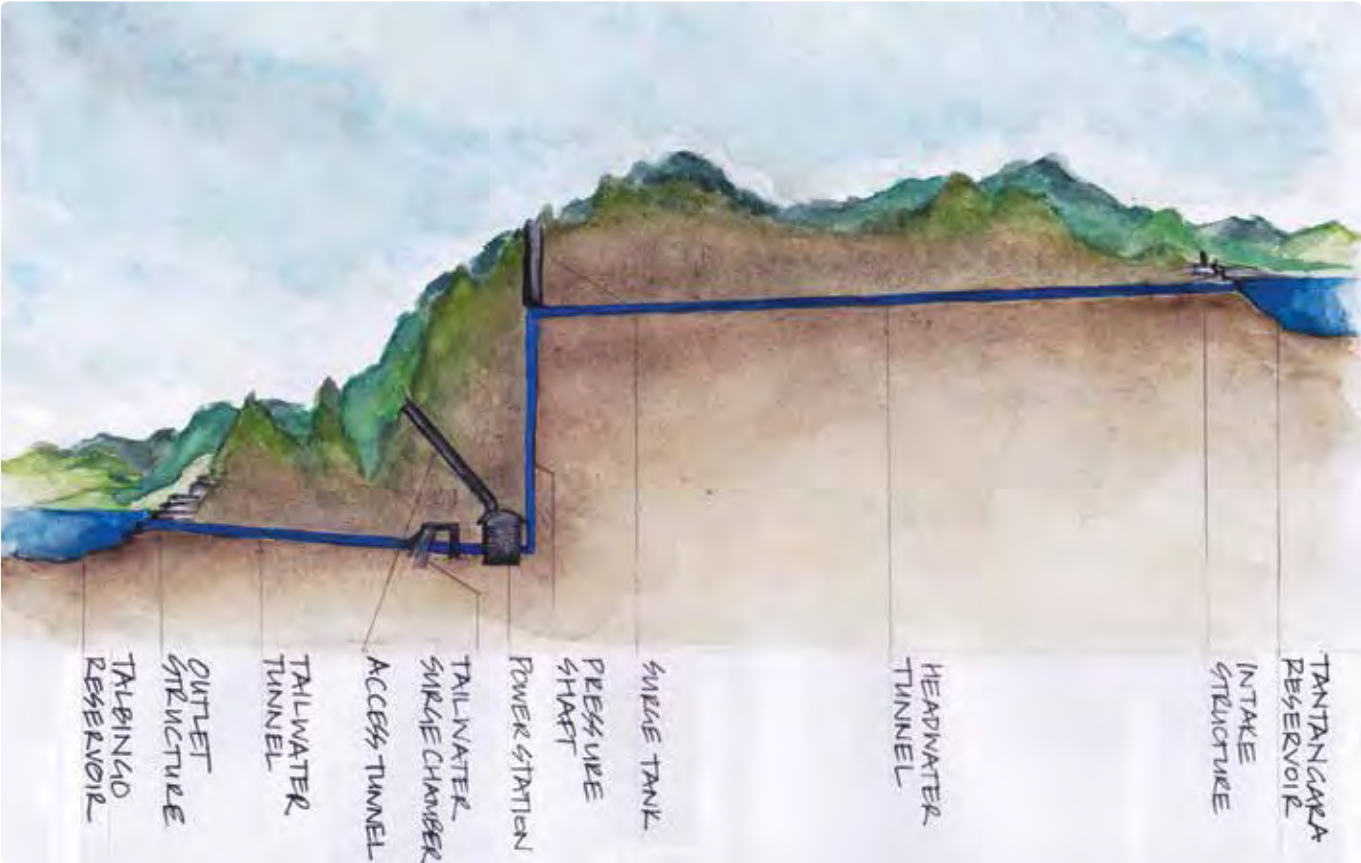
# ABOUT SNOWY 2.0

Snowy 2.0 is currently in initial design stages and all the information below is provided based on the current feasibility study design parameters. There may be changes as the feasibility analysis of the design and construction process progresses.

If Snowy 2.0 goes ahead, a new underground hydroelectric power and pump station would be built between the existing Tantangara (1,230m) and Talbingo (544m) reservoirs, connected by a series of new tunnels. Interestingly the linking of these two reservoirs formed part of the original design of the Scheme, however it was not constructed in the 1960s as the business case didn't add up (in the past there was very little intermittent and variable renewable energy so there was no need like there is now for large-scale storage options).

By linking the two existing reservoirs via underground tunnels, Snowy 2.0 will allow water to be pumped from the lower reservoir (Talbingo) and stored in the upper reservoir (Tantangara). Pumping would be done when demand for energy is low and there is an excess of available power, likely from renewable sources.

Snowy 2.0 would generate around 2,000 MW of electricity, and have a very long design life consistent with the rest of the Scheme's existing assets which are going strong almost 70 years after construction.



Cross-section of the Snowy 2.0 project



**CONSTRUCTION**  
**SUMMARY**

Construction of Snowy 2.0 will be undertaken by a specialist construction company who will be responsible for all aspects of the build including staffing. The overall project will be overseen by Snowy Hydro. The project will involve underground excavation and tunnelling works between Tantangara and Talbingo reservoirs to depths of up to 800m. It will also involve surface works in several locations including at the intake-outlet structures, surge shaft, cable

and ventilation portal sites. A number of supporting works will also be required such as establishing or upgrading access tracks and roads and electricity connections to construction sites. Accommodation will be provided for construction workers in temporary camps close to the work sites.



Artist's impression of the Talbingo intake structure

(Birds-eye-view)

**TUNNELLING AND**  
**UNDERGROUND EXCAVATION**

The main construction activity would be underground excavation of a series of tunnels and the main power/pump station cavern between Talbingo & Tantangara reservoirs. The base design for the tunnel water way includes an intake/outlet structure at both Tantangara and Talbingo (see illustrations).

The cavern for the power station containing hydroelectric turbines and pumps would be excavated approximately 800m underground.

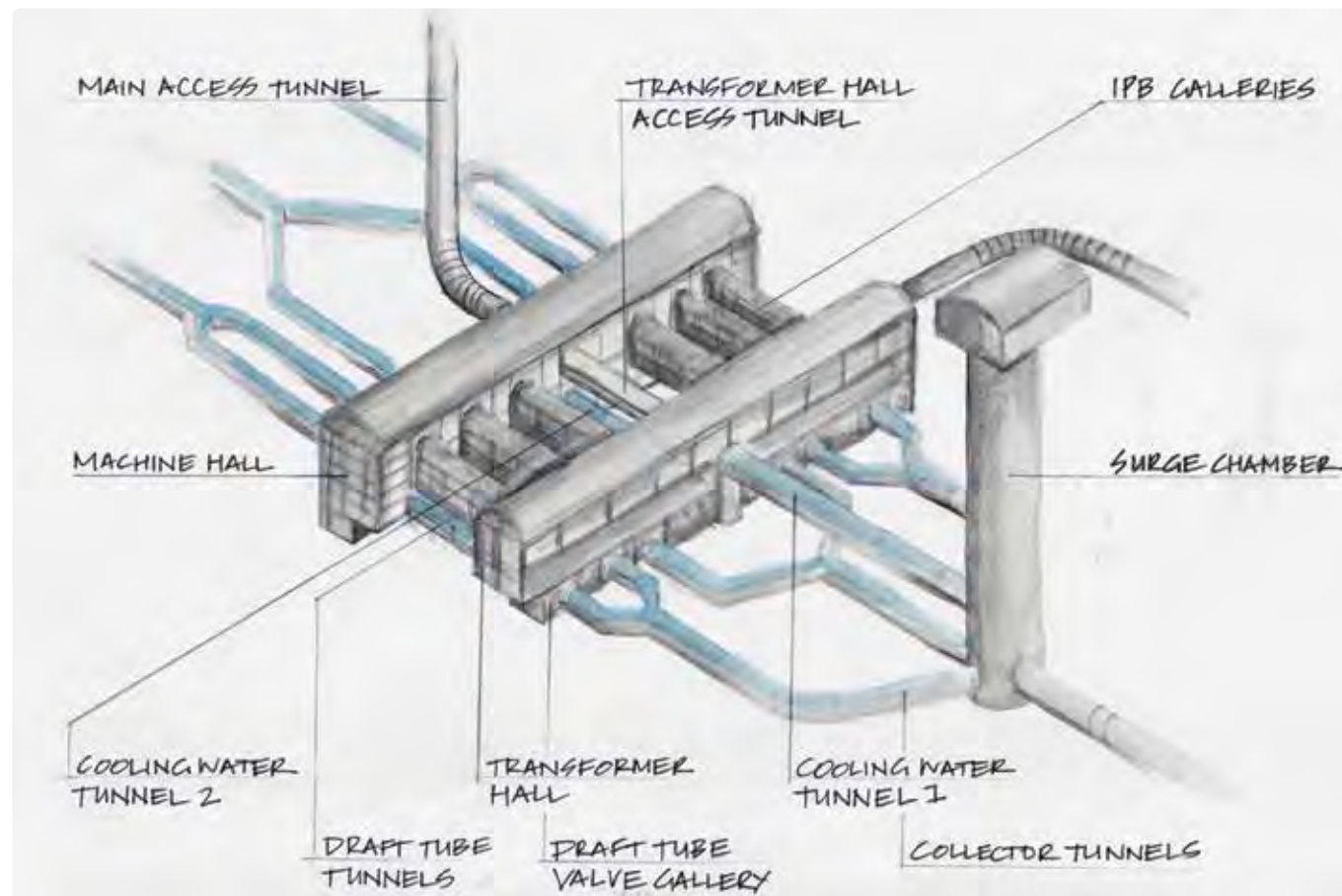
At present the dimensions of the cavern are being determined but estimated to be 200m long x 50m wide x 30m high.

It is currently estimated that up to 7 million cubic metres (m<sup>3</sup>) of rock could be excavated during construction. The final placement of this rock is yet to be determined. The first principle is to identify beneficial uses for the material coming out of the tunnels and cavern such as road base and quarry remediation. This depends on the type of rock we find.



Artist's impression of Tantangara outlet structure

(Birds-eye-view)



Conceptual design of Snowy 2.0 powerhouse

## ELECTRICAL AND MECHANICAL

Installation of the mechanical and electrical components are another major aspect of construction and will be carried out once the excavation works are completed.

A decision about the number and type of turbines is yet to be finalised. It will enable a high degree of operational flexibility and also allow for efficient provision of system services.

One of the more significant activities of this phase of construction will be the transportation and installation of the transformers which are expected to weigh more than 150 tonnes each.

The estimated timeframe for construction is currently being assessed through the feasibility study.



Transformer on power station access road in 1968

## ROADWORKS

Access tracks and roads would be required within KNP for construction and some would remain for future operation of the facility. We are consulting with NPWS with the aim of locating access via existing road/tracks inline with KNP management objectives wherever possible. Where new access is required, we are aiming to avoid areas with high conservation values.

It is possible that access for recreational visitors to some areas of KNP, e.g. around Tantangara reservoir may be temporarily affected during construction. We will work closely with NPWS to manage access to popular recreational sites, providing alternate access where possible and restoring access promptly following construction where it has been affected.



One of the original Snowy Scheme construction camps in the 1960s

## CONSTRUCTION ACCOMMODATION

Like the early Scheme construction days, accommodation will be provided for workers in self contained temporary camps close to work sites for productivity and safety reasons. The number of people to be employed will be determined by the construction contractor. Current estimates range from 1,000 to 2,000 workers spread across at least three locations. Given the remote location of each site (over 50km from nearest towns) and the probability of being isolated during snow, these accommodation camps will be safe, comfortable and self reliant with basic services.

## REHABILITATION

Following construction, land that has been disturbed or affected will be rehabilitated to ensure a safe and stable environment and in line with our development approval requirements.



## COMMUNITY & SOCIAL ASPECTS

### WORKFORCE

It has been estimated that Snowy 2.0 could create up to 5,000 jobs across the region over the construction period. This estimate will be further refined in the next stages of feasibility and planning but may be made up of the following:

- The contractor workforce will grow from a small base in year one to an estimated 1,000 – 2,000 at the peak across different locations, and reduce as the main tunnelling and underground works are completed.
- Snowy Hydro would require a team of technical specialists (engineers, project managers, safety, environment and procurement professionals).
- The construction period could generate up to an additional 3,000 jobs in the region (known as flow-on jobs) to support the construction workforce and activities.

We will work with local councils and NSW Government agencies to ensure that the long term benefits of our project are maximised and any impacts on services are identified and appropriately managed.

### INFRASTRUCTURE

As part of the feasibility and design processes, an assessment of the condition of roads and other key pieces of infrastructure will be undertaken. Snowy Hydro is a long term member of the community and takes its responsibility for addressing the impacts of its activities very seriously. This commitment to our local communities will continue regardless of the outcome of the Snowy 2.0 feasibility study.

## OPERATIONS

### OPERATIONAL CONTROL

Like the rest of the Scheme, the day to day operation of Snowy 2.0 would be controlled remotely from the Snowy Mountains Control Centre (SMCC) which is based in our Cooma office. This would be driven by the demands of the electricity system, so that when system stability is required or supply is not meeting demand, the Power station can be brought online within minutes.

### MAINTENANCE

Effective maintenance of all Scheme assets is a high priority at Snowy Hydro, which is why we can guarantee reliable fast start operation. Regular monitoring and measurement of all electrical, mechanical and civil assets would be maintained to these same high standards. Day to day operations of the Snowy 2.0 pumped storage and generation facility is likely to involve a small team of maintenance and operations staff.

## A WORD ABOUT TRANSMISSION

Transmission approvals, construction and operation would be undertaken by a third party outside of Snowy 2.0.

Snowy 2.0 will be connected to the national grid via a cable yard and switchyard to the high voltage network. This will allow inbound power for pumping (or charging the battery seen as green in the diagram on page 9) as well as getting the power to the national grid when it is needed (see blue line in the diagram).

## WATER

Snowy Hydro operates under a stringent water licence that allows us to capture, store and divert water in order to generate electricity before releasing downstream. The Scheme was designed to cope with large variability of inflows and we have proven experience in effectively managing extreme wet and dry conditions over the last 70 years.

The water you see in all of our storages (including Tantangara and Talbingo) has already been secured and allocated to owners downstream including irrigators, town supplies and for environmental flows. While there is some flexibility around the short term timing of water releases, each water year we must release a predetermined volume of water downstream. This is a legally binding obligation set out in the Snowy Water Licence and will not change if Snowy 2.0 proceeds.

## DAM LEVELS

Snowy Hydro will continue to operate Tantangara and Talbingo reservoirs within existing Scheme operational and regulatory requirements, including the established operating

target storage levels. This means that the maximum and minimum operating levels of the two reservoirs will not change due to Snowy 2.0. Whilst these levels will not change, it is possible that there will be increased frequency of water level changes as water is cycled between Tantangara and Talbingo reservoirs.

## REGULATORY

Once built, Snowy 2.0 would operate within the same regulatory framework as the rest of the Snowy Scheme. This framework has been in place since 2002 and is proven to be an effective way of regulating use and occupation of our activities in 6,400 hectares of the KNP to date.



Jounama Reservoir

# FEASIBILITY AND APPROVAL PROCESSES

The decision whether to proceed with the project will occur in stages. A feasibility study to understand the commercial, engineering and environmental aspects of the Snowy 2.0 project is currently underway.

Feasibility study outcomes will provide the information required to make a preliminary decision about whether to proceed further with detailed construction designs and planning approvals. A final decision about whether to invest in Snowy 2.0 will be made later next year.

Two main approvals are likely to be required for the Snowy 2.0 project to proceed. These are approvals under the NSW Environmental Planning and Assessment Act 1979 (EP&A Act) and the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).

An Environmental Impact Statement (EIS) will be prepared to support the applications for these approvals which will take into full consideration the potential environmental, social and economic impacts of the project and how to manage these.

Due to the timeframes involved in the project, Snowy Hydro has started work on the approval process prior to completion of the feasibility study. Should the feasibility study conclude that Snowy 2.0 is not feasible from an engineering perspective, the approval process will be suspended. A decision to proceed with Snowy 2.0 or not will also be made after the outcomes of the approval process are known.

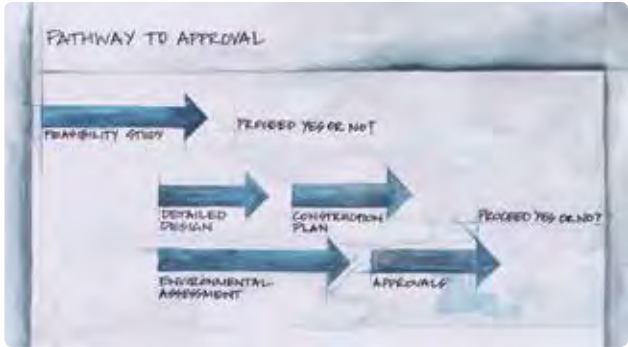


Diagram of approval process

# COMMUNITY ENGAGEMENT PROCESS

Irrespective of whether Snowy 2.0 proceeds or not, Snowy Hydro is and will continue to be part of our local community. As such, Snowy Hydro is committed to engaging with community stakeholders about Snowy 2.0 and getting your views about our project.

The company will utilise a range of opportunities to engage with the community and answer questions and seek feedback about Snowy 2.0 including:

- community information (or drop-in sessions) being arranged in local towns
- face-to-face meetings
- newsletters
- Snowy Hydro website
- local media

## HOW TO HAVE YOUR SAY

We value your comments and perspectives and encourage you to provide feedback in the following ways. Please note you may choose to provide your feedback anonymously.

- Complete the survey (following page) and return to us at:  
Snowy 2.0 Community Relations,  
PO Box 332, Cooma NSW 2630
- Visit the website:  
[www.snowyhydro.com.au/our-scheme/snowy20](http://www.snowyhydro.com.au/our-scheme/snowy20)
- Send an email:  
[community@snowyhydro.com.au](mailto:community@snowyhydro.com.au)

## Privacy Collection Statement

We are committed to respecting your privacy and complying with all of our privacy obligations under the Privacy Act 1988 (Cth), including the Australian Privacy Principles.

If you provide us with feedback on the proposed Snowy 2.0 project, we may collect certain personal information from you as part of that feedback such as your name, email address, contact details and your opinions about the Snowy 2.0 project. We will use your feedback (which may contain your personal information) to better understand the options and concerns of the broader Snowy community with respect to the Snowy 2.0 project and to provide you with updates on the Snowy 2.0 project (if you have requested to receive updates). If you provide us with feedback on an anonymous basis, we will ensure that your feedback does not contain any personal identifiers.

Any personal information collected, stored, used and disclosed by us will be treated in accordance with the Privacy Act 1988 (Cth) and our Privacy Policy. Our Privacy Policy includes details on disclosures we may make to our related companies, service providers, government and regulatory authorities and professional advisers, how you may access and correct your personal information, and how complaints may be made and will be handled. For more information on our privacy practices, please contact our Privacy Officer at The Privacy Officer, Snowy Hydro Limited, GPO Box 4351, Sydney NSW 2001 or by calling 02 9278 1888 and asking to speak with the Privacy Officer.

## FEEDBACK SURVEY

Where do you live? (your closest town)

Email address (for project updates)

If Snowy 2.0 goes ahead, how important are the following issues for you? (Please circle a dot)

Extremely  
unimportant



Extremely  
important

## Reliability in the electricity network

• • • • •

Flora and fauna of the Kosciuszko National Park

• • • • •

## Recreational experiences within Kosciuszko National Park

• • • • •

## Maximising economic benefits to our communities

• • • • •

## Minimising impacts on the community during construction

■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■

What benefits/positives can you see coming out of Snowy 2.0 if it goes ahead?

Are there any aspects of Snowy 2.0 that concern you?

If you visit and use the Tantangara/Talbingo areas of KNP, please also go online and complete our park visitor survey at [www.snowyhydro.com.au/our-scheme/snowy20](http://www.snowyhydro.com.au/our-scheme/snowy20)

## NOTES

**Disclaimer:** This booklet is for general use only and we give no warranty or representation regarding the booklet's accuracy, completeness, reliability or suitability for any particular purpose. We completely exclude all liability to any person for loss or damage of any kind (however caused, including but not limited to by negligence) arising whether directly or indirectly from or relating in any way to the content in this booklet and use of that content, whether in whole or in part.

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# SNOWY 2.0

## Feasibility Study Summary

**snowy**hydro



## THE MODERN SNOWY HYDRO

Snowy Hydro is a dynamic energy company supplying electricity to more than one million homes and businesses. Since the days of our pioneering past, Snowy Hydro has grown into the fourth largest player in the energy market.

Snowy Hydro not only operates the mighty Snowy Scheme (nine power stations including pumped storage at Tumut 3 Power Station and Jindabyne Pumping Station), it also operates gas and diesel peaking assets in New South Wales, Victoria and South Australia. We have a total generation capacity of 5,500 megawatts (MW) and offer energy insurance and other products that provide supply security and price certainty to customers in the energy market.

Snowy Hydro also owns the electricity and gas retail companies Red Energy and Lumo Energy, and the utility connections business, Direct Connect.

Snowy Hydro is a proud member and supporter of the Snowy Mountains community, and a major employer with more than 400 staff across the region.

In March 2017, Snowy Hydro announced its proposal to carry out a feasibility study into the expansion of pumped hydro-electric storage in the Snowy Scheme, also known as the Snowy 2.0 project (Project). Snowy 2.0 is a pumped hydro project that will increase the Snowy Scheme's generation capacity by up to 2,000 MW, and at full capacity, will provide about 350,000 megawatt hours of energy storage.



## WHY DID WE UNDERTAKE THE SNOWY 2.0 STUDY?

Snowy Hydro is an integral part of the National Electricity Market (NEM). Our reliable, fast start capability means we underpin the security and reliability of the system. At times of peak demand, we keep the lights on.

The NEM is changing at a rapid rate and the time is now right for Snowy 2.0. This is what led to Snowy Hydro undertaking this feasibility study.

**Snowy 2.0 has significant benefits for consumers. By pairing new dispatchable renewable generation with large scale energy storage, Snowy 2.0 will make renewables reliable and lower future energy prices. Snowy 2.0, along with the existing Snowy Scheme, will underpin an orderly transition from coal to renewables and help Australia meet its global climate change targets.**

An independent economic analysis was commissioned for the feasibility study and conducted by leading experts Marsden Jacobs Associates (MJA). MJA's extensive modelling confirms Snowy 2.0's scale, strategic location and longevity make it by far the cheapest and best option to decarbonise.

MJA's analysis shows that if Snowy 2.0 is not built, batteries and gas peakers would need to be installed, at more than double the cost.

The first power generated from Snowy 2.0 is expected in 2024 and will underpin the reliability and stability of the NEM for generations to come. The need for large-scale storage will only increase and in the future Snowy Hydro could look to replicate Snowy 2.0 to create up to 8,000MW of pumped-hydro storage at this site.

The project will progress to final investment decision (FID) in late 2018.

**The feasibility study demonstrates the key benefits of Snowy 2.0 which include:**

- ♦ **System security and reliability** - Snowy 2.0's dispatchable energy generation can respond within minutes to changing market needs.
- ♦ **Lower energy prices** - putting downward pressure on future energy prices. Wholesale energy costs will be lower with Snowy 2.0 in the market than without.
- ♦ **Scale and central location** - power from Snowy 2.0 will reach all NEM users including the major load centres of Sydney and Melbourne directly and South Australia indirectly.
- ♦ **Supporting renewables** - Snowy 2.0 will enable a low emissions future at least cost by underpinning the stability of the NEM as more and more intermittent renewables enter the market to meet global targets.

**The feasibility study also demonstrates that Snowy 2.0:**

- ♦ Is technically feasible - that is, it can be physically built and we have a base case design, construction schedule and costing.
- ♦ Is financially feasible - it will generate returns that meet Snowy Hydro's stringent investment hurdles.
- ♦ Can be funded internally by Snowy Hydro, and we are looking at a range of financing options.
- ♦ Will not have any impact on downstream water users and doesn't change the water release obligations under Snowy Hydro's water licence.
- ♦ Will go through well established and robust planning and environmental approval processes.

The feasibility study is available on the Snowy Hydro website: [snowyhydro.com.au](https://snowyhydro.com.au)

## SNOWY 2.0 ENSURES FUTURE ENERGY SECURITY

The supply of electricity in the future will be increasingly generated by intermittent renewable sources and coal generation will continue to retire. The characteristics of intermittent renewables means that supply doesn't always match demand, especially when the wind isn't blowing or the sun isn't shining.

As the benchmark pumped-hydro storage project in Australia, Snowy 2.0, backed by the mighty Snowy Hydro, will serve the market and consumers by providing dispatchable generation to address supply volatility, as well as fast-start capability and large-scale storage to address intermittency issues.

The high degree of urgency with which Snowy Hydro is progressing the Project reflects the rate of change being experienced across the NEM. Factors that support the

development of Snowy 2.0 include the need for improved system stability, achieving emissions targets (even in the absence of any carbon tax), the limited ability of coal-fired plant to accommodate the intermittency of renewables, and the constraints imposed by gas supply infrastructure.

The NEM will need significant large-scale storage.<sup>1</sup> If Snowy 2.0 is not built, the NEM will find other solutions, however when compared to the alternatives (including battery storage and building gas peaking plants) Snowy 2.0 is by far the cheapest option.

This type of pumped-hydro expansion was part of the original design of the Snowy Scheme and has been looked at periodically over recent decades. At those times the Project was not justified and did not meet Snowy Hydro's investment hurdles because large amounts of coal fired generation was available at lower prices.



<sup>1</sup> It is noted that demand management has a role to play but any feasible trajectory for demand management cannot meet the market's requirements without major disruption to businesses and consumers.

## WHAT IS THE SNOWY 2.0 PROJECT?

Snowy 2.0 is a pumped-hydro expansion of the Snowy Scheme which will supercharge existing generation and large-scale storage capabilities.

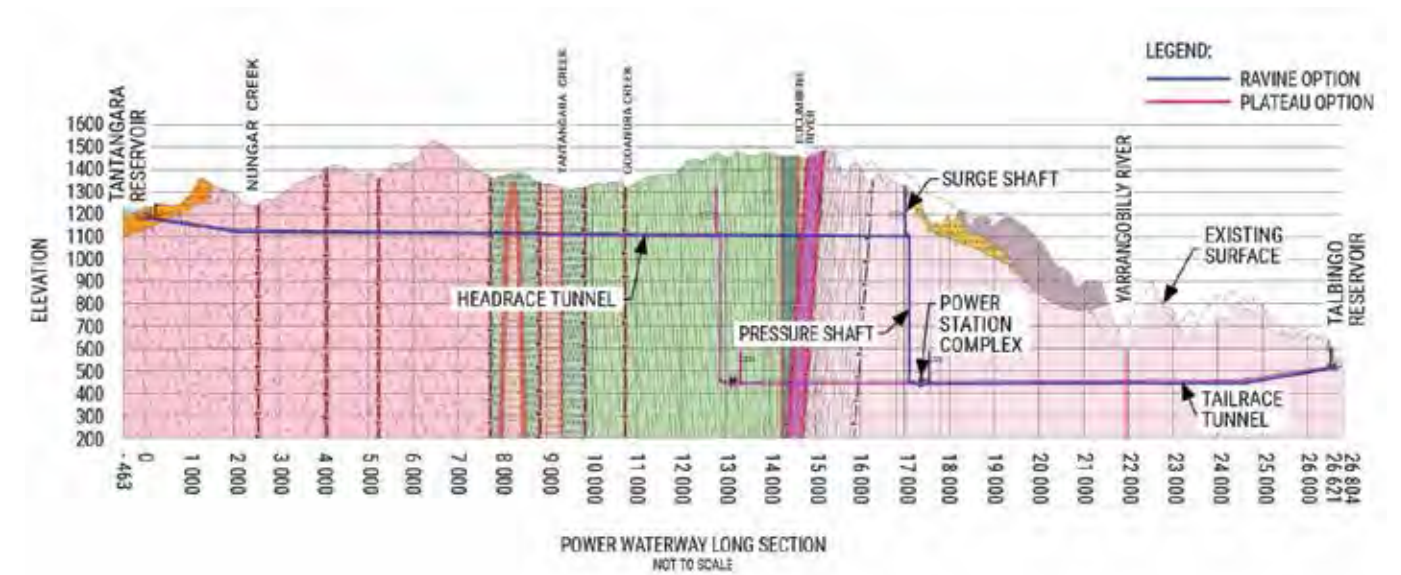
Pumped hydro works like a conventional hydro-electric scheme, but instead of releasing the water after energy has been generated, a pumped hydro scheme "recycles" or pumps water back to the upper reservoir to be used again.

The ability to pump and store water means Snowy 2.0 acts like a giant battery by absorbing, storing and dispatching energy. Snowy 2.0 will pump water using electricity at times of low demand and store it in the upper reservoir. Then, when energy is needed most, the stored water will be used to generate and dispatch electricity within minutes.

Pumping water at times of low demand means that Snowy 2.0 will have water ready to use for energy generation at times when consumers need it most.

**If the wind is blowing in the middle of the night when consumers are asleep, Snowy 2.0 can absorb the wind energy through pumping and store the water in the upper reservoir. When households wake up and the demand for energy soars, Snowy 2.0 can quickly generate and dispatch energy across the grid.**

Snowy 2.0 will link the two existing reservoirs of Tantangara and Talbingo through underground tunnels and there will be a new underground power station in between with pumping capabilities.



Full Project cross-section with geological features. Five major underground rock mass groups, three major fault zones and five rivers and creeks affect the dam-to-dam alignment.



## ✓ THE PROJECT IS TECHNICALLY FEASIBLE

Snowy 2.0 is technically feasible and there is a solid base case design. We engaged in an early contractor consultation process, that formally involved world leading civil construction and mechanical and electrical equipment companies, in the Project's design and refinement of the fit out for the power station and waterway complex.

For some aspects of the Project there are several technical options that are still being considered - this is appropriate at the current stage of the Project's development lifecycle. The final design will be refined as the Project progresses from feasibility stage to FID.

**There is no doubt that Snowy 2.0 is an ambitious and challenging Project. Characteristics including high head (elevation differential between reservoirs), long waterways, fixed and variable speed units and the large underground excavation have required careful consideration.**

As with the original Snowy Scheme, the engineering and construction of Snowy 2.0 will ensure it stands the test of time.

## 🔍 SNOWY 2.0 PROJECT SPECIFICATIONS

Physical works to be undertaken include intake and outlet structures, an underground network of tunnels, pressure shafts, surge chambers, the machine and transformer halls and supporting works such as access roads.

### ENGINEERING AND CONSTRUCTION

Intake and outlet structures will be built at both Tantangara and Talbingo Reservoirs. About 27 kilometres of tunnels will be constructed to link the two reservoirs. They are nine metres in diameter and mostly concrete lined to ensure longevity and low maintenance.

The power station complex will be located almost 1 kilometre underground. Two main caverns will be constructed:

- ✦ Machine Hall - approx. 190m (long) x 55m (high) x 30m (wide)
- ✦ Transformer Hall - approx. 180m (long) x 29m (high) x 20m (wide)

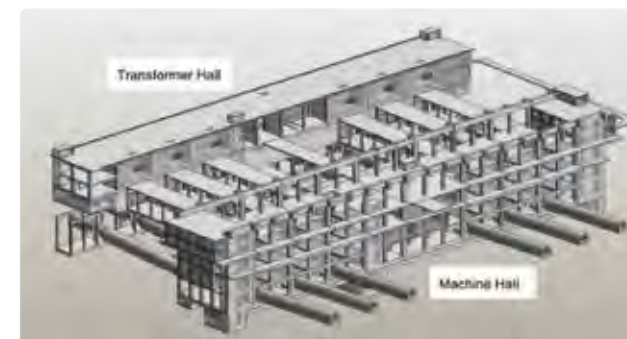
Six galleries run between the two halls and carry cables that connect the generators with the transformers. To reinforce the structure, rock bolts of 15 to 20 metres in length will be drilled into the rock at the top and sides of each cavern.

A mix of tunnel boring machines as well as drill and blast techniques will be used for the tunnelling and excavation.

### MECHANICAL SPECIFICATIONS

The power station will consist of six reversible Francis pump-turbine and motor-generator units that can generate 2,000 MW.

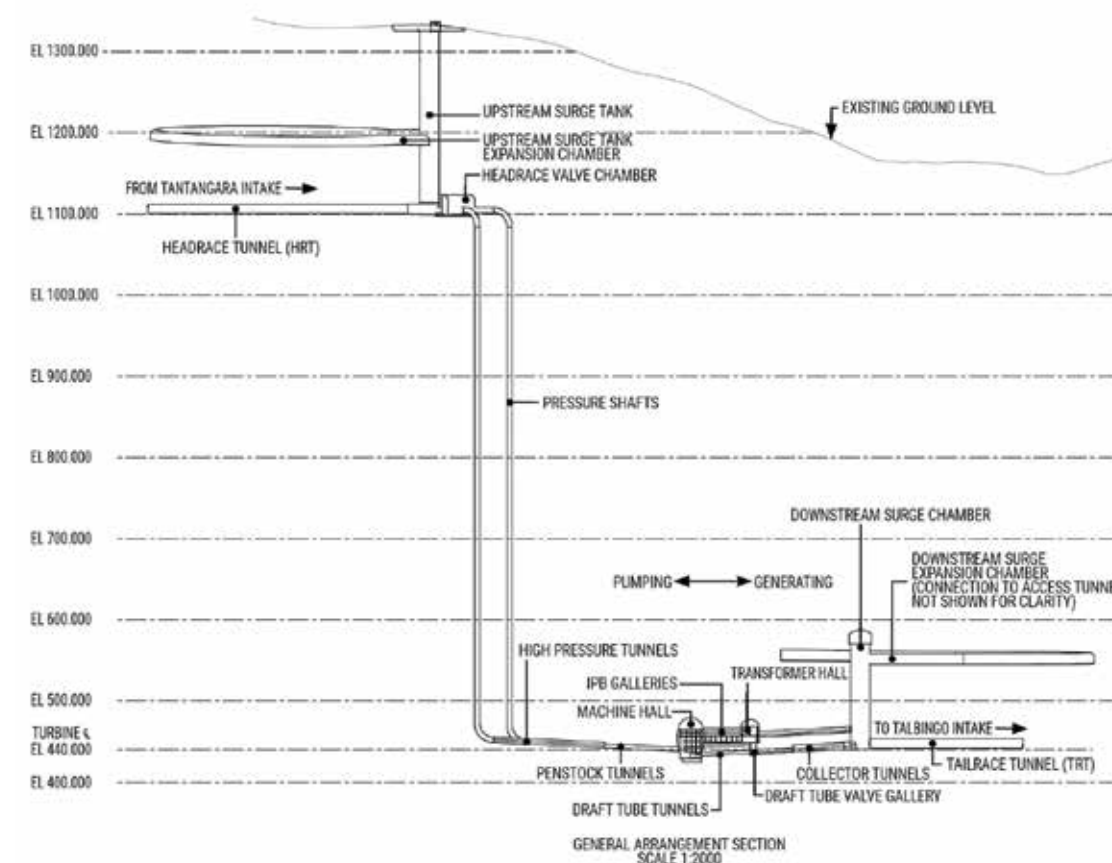
Three units will be synchronous (fixed) speed and three will be variable speed. The units will be arranged in the power station in alternating order and in pairs will share a pressure shaft and penstock (the tunnel that feeds water into the units).



Underground Power Station in 3D



Computer graphics model showing Tantangara intake structure



Major power waterway components



## THE PROJECT IS FINANCIALLY VIABLE - THE INVESTMENT CASE

Snowy 2.0 will generate a return on investment that meets Snowy Hydro's stringent investment hurdles. The funding strategy for Snowy 2.0 is based on internal financing by Snowy Hydro.

The detailed financial evaluation and commercial conclusions are confidential to Snowy Hydro.

The benefits to Snowy Hydro have been modelled under a range of scenarios and future NEM outcomes. The financial benefits that have been modelled are conservative and are likely to understate the potential earnings that could be realised by Snowy 2.0



## PROJECT COSTINGS AND CONSTRUCTION SCHEDULE

Snowy Hydro engaged consultants Turner and Townsend to provide a fully integrated cost estimate and Project schedule. Costs were refined with the assistance of tier-one civil, mechanical and electrical companies which were part of the early contractor consultation process.

The first power generated from Snowy 2.0 is expected in 2024. The base case schedule for the completed Project is about seven years from FID.

The capital cost estimate will be further refined as the Project moves to FID but the current estimate is between \$3.8 - \$4.5 billion. The costs take into account the need for extensive reinforcement of the Project's structures due to the challenging geological conditions that were uncovered during the geotechnical drilling program.



## GEOLOGY OF THE SNOWY 2.0 SITE

As part of the study, Snowy Hydro commenced an extensive geotechnical drilling program to collect information about the geology across the Project route and at key sites.

The geological, geotechnical and hydrogeological conditions vary significantly along the alignment of Snowy 2.0 which placed different constraints on the base case design. The mountainous terrain and difficult underground geology has contributed significantly to the Project costs and construction schedule.



Geology of the Snowy 2.0 alignment



## JOBS, SOCIAL AND COMMUNITY IMPACTS

### JOBS

It's estimated that Snowy 2.0 will create up to 5,000 direct and indirect jobs across the region over the construction period. A workforce plan will be developed as the Project progresses to FID and a lead civil works contractor is appointed. The Project workforce will grow from a small base in year one, to an estimated 1,000 – 2,000 at peak times across different locations across the region.

**Businesses interested in getting involved with the Project can register their interest by emailing:**  
[shlprocurement@snowyhydro.com.au](mailto:shlprocurement@snowyhydro.com.au)

Snowy Hydro is working with local councils, NSW Government agencies and the local community to ensure that the long term benefits of the Project are maximised and any impacts on services are identified and appropriately managed.

### RECREATIONAL USE OF THE PARK

Snowy Hydro is very aware of the recreational usage of the Kosciuszko National Park (Park) by tourists and locals alike. While we will do everything possible to minimise disturbances and impacts on recreational areas, due to the nature of the works being undertaken during construction and for safety reasons, public access will be restricted in some areas while works are underway.



## PLANNING AND ENVIRONMENTAL APPROVALS

Snowy 2.0 will go through a comprehensive, well established and transparent planning and environmental approvals process. The Park is our backyard. We take our duty to operate the Scheme in an environmentally responsible way very seriously and have a proven track record over many decades.

Only once the relevant approvals are in place can construction of the Project commence. To ensure the environmental impacts of the Project are fully and adequately considered throughout the study and beyond, Snowy Hydro engaged an expert environmental consultancy firm to undertake a thorough impact assessment.

In New South Wales, we have submitted an application to have the Project declared as Critical State Significant Infrastructure (CSSI) under the Environmental Planning and Assessment Act 1979 (NSW). If the Project is declared as CSSI, Snowy Hydro will prepare a comprehensive Environmental Impact Statement (EIS) that will thoroughly address the environmental, social and economic impacts of the Project. This EIS will be available for the public to review and make submissions.

In addition to NSW state planning approvals, it is likely that the Project will require approval from the Commonwealth government under the Environment Protection and Biodiversity Conservation Act 1999 (Cth).



## ENVIRONMENTAL CONSIDERATIONS

### THE ENVIRONMENT

Based on the proposed construction methodology and operational characteristics of the Project, a range of potential environmental impacts are likely to be associated with the works.

These impacts will be the subject of further and thorough investigation during the EIS phase and appropriate mitigation measures will be developed to reduce any potential impacts.

Although the Project is expected to provide broad scale environmental benefits through its long term displacement of more carbon intensive generation, at the localised level there will be impacts from surface works.

The key environmental aspects and their potential impacts include the following:

- ✦ Establishment of construction work areas that may restrict the access of recreational users and temporarily impact the amenity of the Park
- ✦ Establishment of surface earthworks that require the clearing of vegetation, may damage critical habitat and fauna, and may spread weeds
- ✦ Underground excavation that may cause changes in groundwater levels
- ✦ Spoil disposal that may impact surface waters and terrestrial environments
- ✦ Inter-catchment water transfers that may spread pest species of fish



There is potential to positively offset any unavoidable local impacts for the benefit of the environment across the Park. A range of potential offset and contribution options are being discussed, in particular with National Parks and Wildlife Services. The objective is to identify opportunities for habitat improvement and catchment health works with a direct positive benefit to the Park's biodiversity and ecological processes.

### SNOWY WATER LICENCE

The Snowy Scheme operates under a strict water licence issued by the NSW Government. Snowy 2.0 will not in any way impact on Snowy Hydro's continued compliance with the water licence.

**There will be no change to its water release obligations from both the Murray and Tumut developments, and no change to environmental release obligations. Therefore, Snowy 2.0 will not have any impact on downstream water users or environmental flows.**

Snowy 2.0 will also further drought proof the Snowy Scheme. This is because in a pumped hydro system, water is 'recycled' between the two storages so the same water can be used to generate power, more than once. It will also provide Snowy Hydro with more options to manage inflows and water shortages in times of drought.



## TRANSMISSION

Transmission augmentation is required to get Snowy 2.0's power into New South Wales and Victoria and indirectly into South Australia. The proposed upgrades to the grid will be part of the shared transmission network that other renewable energy projects will also connect to as they come online.

Snowy Hydro (as a generator) does not own or operate the shared grid, which is the responsibility of the transmission network operators. In addition, because the grid is shared with other energy companies who have open access to connect to it, there is a regulatory framework in place to fund the cost to upgrade the shared transmission network.

Therefore, the cost associated with the transmission network upgrades has not been, and cannot be included, in the Project's costs. However, what will be funded by the Project is the cost of the lines that are required to connect Snowy 2.0 to the shared network, which are connection assets to be used solely by Snowy Hydro.

Due to the critical role that Snowy 2.0 will play in ensuring the security and reliability of energy supply in the NEM, Snowy Hydro will continue to work with the Government, network operators and the Australian Energy Market Operator (AEMO) to resolve the issue of transmission augmentation prior to FID. This includes ensuring that the necessary upgrades to the transmission lines are included in AEMO's integrated grid plan that provides the planning umbrella for the future NEM.



Illustration showing existing and proposed solar/wind energy development and how they would relate to Snowy 2.0. This also shows how Snowy 2.0 connects to the main load centres north and south.  
Source: AEMO Victorian Annual Planning Report 2017 and TransGrid Transmission Annual Report 2017.

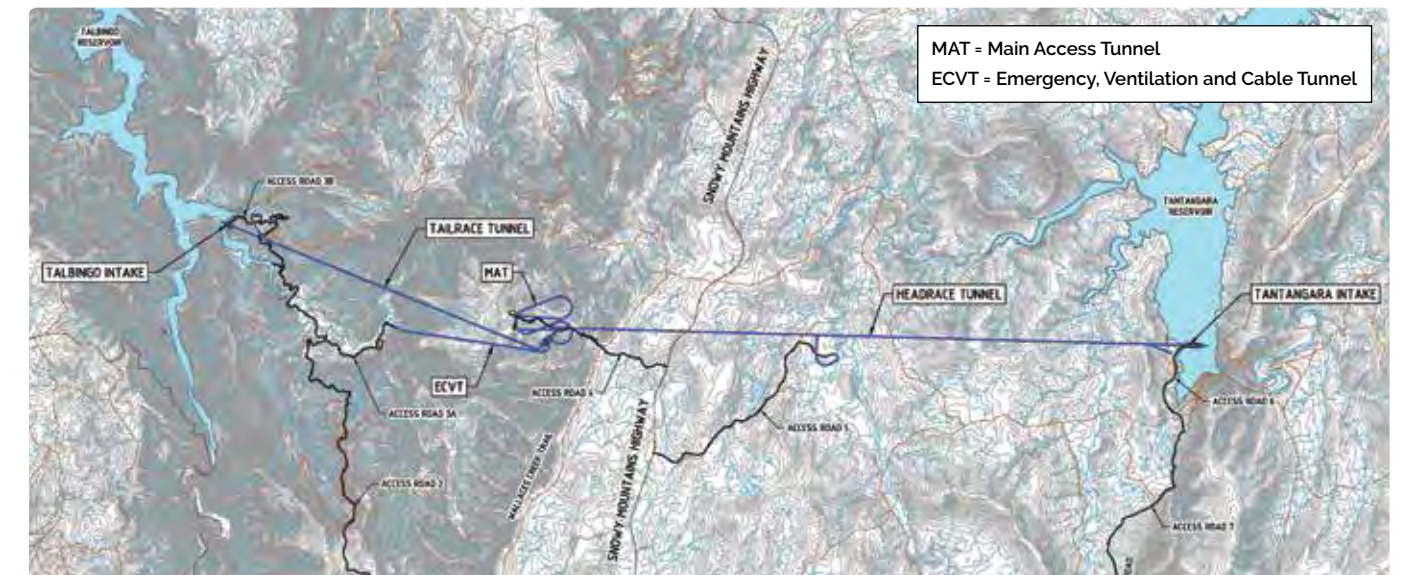
## WHAT ARE THE NEXT STEPS?

The Snowy 2.0 feasibility study has been carefully considered by Snowy Hydro's independent Board of Directors. The Board's decision is to progress the Project from feasibility stage and undertake further work and Project refinements so a final investment decision can be made.

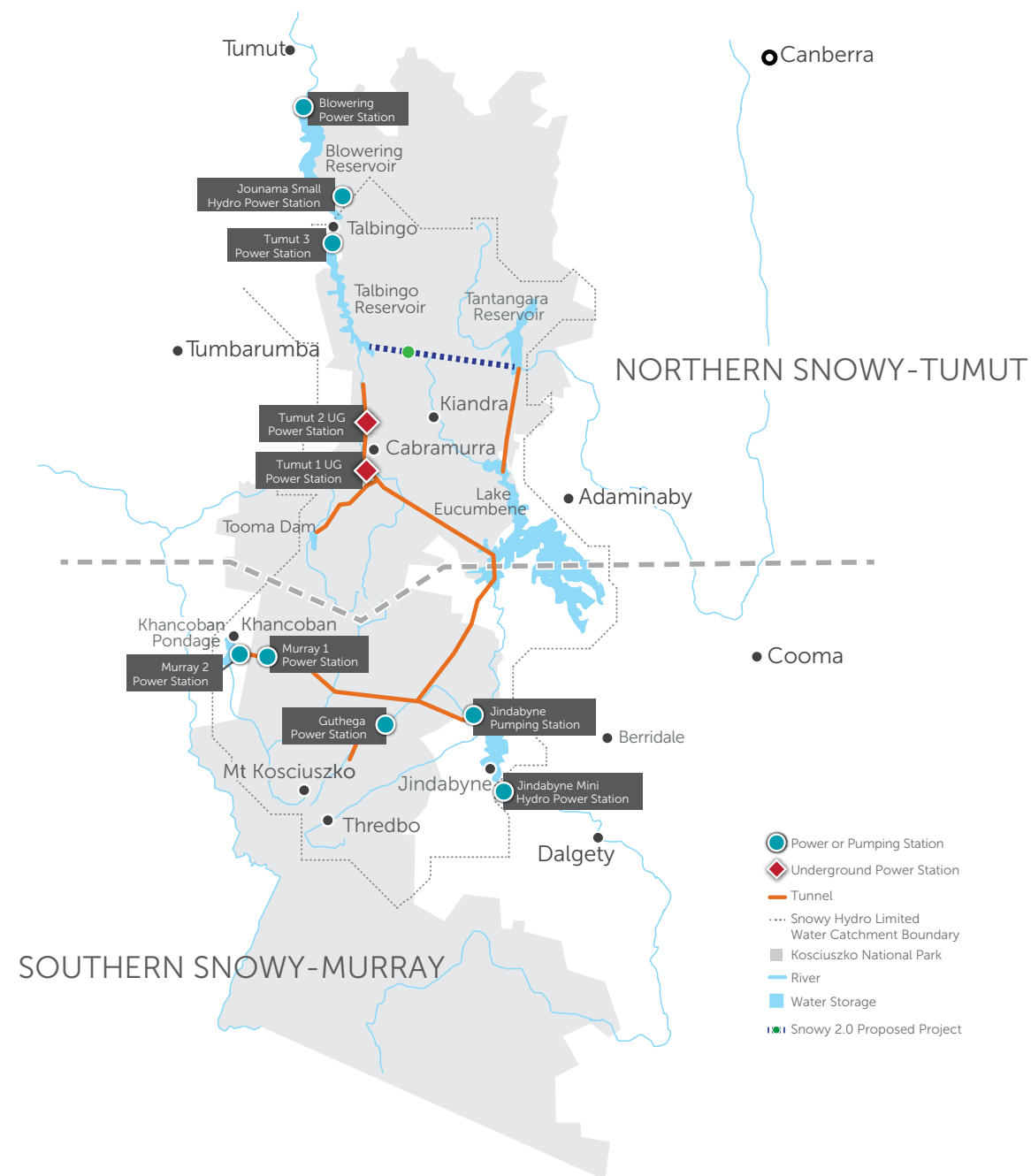
The final investment decision is expected to be made in late 2018, subject to the approval of our shareholders.

## SNOWY 2.0 FAST FACTS

- Public benefits:** the large scale and central location of this Project will underpin an orderly transition from coal to renewables by ensuring the security and reliability of the NEM and lowering future energy prices, and will support the growth of renewables.
- Energy generation:** 2,000 MW generation capacity.
- Large-scale storage:** 350,000 megawatt hours of large-scale storage.
- Capacity:** Snowy 2.0 could run for over seven days continuously or 15 days at times of peak demand without 'recharging'.
- Timeframe:** the first power generated from Snowy 2.0 is expected in 2024. The base case construction schedule for the completed project is about seven years from FID.
- Project costs:** cost estimate is between \$3.8 - \$4.5 billion.



Overall base case plan of the Project



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**snowy**2.0

# Exploratory Works

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Community Information Booklet

April/May 2018



# INTRODUCTION

Snowy 2.0 is a pumped-hydro expansion of the Snowy Scheme which will supercharge existing generation and large-scale storage capabilities. It will increase the Snowy Scheme's generation capacity by up to 2,000 megawatt (MW), and provide energy storage of 350,000 MW hours.

Snowy 2.0 will link the two existing reservoirs of Tantangara and Talbingo through underground tunnels and there will be a new underground power station, about 850 metres (m) underground, in between with pumping capabilities.

As the benchmark pumped-hydro storage project in Australia, Snowy 2.0 will serve the market and consumers by providing large scale storage and generation to put downward pressure on energy prices and ensure system security and reliability as we move towards a low-emissions future.

In 2017, Snowy Hydro carried out a feasibility study into Snowy 2.0. The feasibility study confirmed the project is technically feasible by identifying a base-case project design, and that the project will be a solid investment for Snowy Hydro who will fund the capital costs. Snowy Hydro's independent Board of Directors carefully considered the feasibility study and approved the project to progress to a final investment decision in late 2018.

On 7 March 2018, the NSW Minister for Planning declared Snowy 2.0 to be Critical State Significant Infrastructure (CSSI). The declaration reflects the critical role that the Snowy 2.0 project will play in providing reliable energy and large-scale storage to NSW as we transition to a low emissions economy.

The CSSI declaration does not give final approval for the project. It is a framework that sets out the robust environmental assessment and approval process that Snowy 2.0 needs to go through before the project can proceed. Approval for Snowy 2.0 will be sought in phases.

**This first phase seeks approval for a program of exploratory works that will be undertaken in the Lobs Hole area of Kosciuszko National Park (KNP). These works will consist of excavation of a tunnel to the location of the proposed power station cavern, along with associated infrastructure.**

This booklet provides a description of the exploratory works and outlines the approval process required. It also sets out information on the overall Snowy 2.0 project and feedback from of a survey of local communities undertaken last year during the Snowy 2.0 feasibility study.

# WHY SNOWY 2.0

In the future, the supply of electricity will be increasingly generated by intermittent renewable sources as coal generation continues to retire. The characteristics of intermittent renewables mean that supply doesn't always match demand, especially when the wind isn't blowing or the sun isn't shining.

The ability to pump and store water means Snowy 2.0 acts like a giant battery by absorbing, storing and dispatching energy. Snowy 2.0 will pump water using electricity at times of low demand (for instance if the wind is blowing in the middle of the night) and store it in the upper reservoir. Then, when energy is needed most, the stored water will be used to generate and dispatch electricity within minutes.

Factors that support the development of Snowy 2.0 include the need for improved system stability, achieving emissions targets (even in the absence of any carbon tax), the limited ability of coal-fired plant to accommodate the intermittency of renewables, and the constraints imposed by gas supply infrastructure. Going forward the National Electricity Market will need significant large-scale storage and when Snowy 2.0 is compared to the alternatives (including battery storage and building gas peaking plants) Snowy 2.0 is by far the cheapest option.

For more information on Snowy 2.0, including a short 3 minute video on the project visit [snowyhydro.com.au/our-scheme/snowy20](https://snowyhydro.com.au/our-scheme/snowy20)



Snowy Hydro power station



# EXPLORATORY WORKS

## OVERVIEW

The underground power station for Snowy 2.0 consists of multiple large caverns, approximately 850 m below ground level. The largest cavern (for the machine hall) is likely to be about 190m long, 30 m wide and 55 m high. The underground cavern complex is one of, if not the most, challenging areas for the design of Snowy 2.0.

Given this, the purpose of the exploratory works for Snowy 2.0 is to gain a greater understanding of the underground geological conditions at the proposed location of the power station. An access tunnel would be excavated to the top of the cavern complex to enable horizontal investigation probes to be drilled, allowing further investigation of the rock conditions, ground temperature and stress conditions to confirm the suitability of the site for the underground power station.

The exploratory works would involve:

- The establishment of an exploratory tunnel, construction pad and portal at Lobs Hole,
- The establishment of a construction compound and supporting infrastructure,
- The upgrade and establishment of roads to provide access to the proposed construction areas,
- Establishment of barge access infrastructure on Talbingo reservoir,
- Excavated rock management.

Snowy Hydro acknowledges that this work will impact on visitors and recreational users in the Lobs Hole area of KNP. We are working hard to minimise these impacts wherever possible. While most of these impacts will not be permanent the company recognises there will be some disruptions. We are committed to minimising any disruptions and firmly believe that the social, economic and other benefits of the Snowy 2.0 project will outweigh any impacts in the long run.

## ACCESS TUNNEL

The exploratory tunnel to the site of the proposed underground power station would be between 3 kilometres (km) and 4 km in length. It would be dome shaped with dimensions 8 m high by 8 m wide, and constructed using drill and blast methods in the same way that the original Snowy Scheme was constructed.

The portal to the exploratory tunnel would be located near the Yarrangobilly River, about 1 km east of Lobs Hole.

A construction pad would be established at the entrance or portal with a footprint of between 10,000 and 16,000 square metres.

The exploratory tunnel is intended to ultimately form the main access tunnel for the main project giving us access to the underground power station during the operations of Snowy 2.0.



Regional location of Snowy 2.0 exploratory works



Example of a drill and blasted tunnel at Tumut 2 power station



### CONSTRUCTION COMPOUND

A construction compound is proposed at Lobs Hole that would provide all supporting infrastructure for the exploratory works. The compound would include facilities like an accommodation camp, project office, workshops, concrete batching plant, fuel farm, laydown areas for equipment, water treatment plant, and sewage treatment plant. It would also contain areas for the placement of rock excavated during the construction of the exploratory tunnel.

The accommodation camp would house all the workers required for exploratory works (between 50 to 150 workers). The camp would be fully serviced and contain a mess hall and laundry.

During construction, the Lobs Hole area would not be safe for public access and would be temporarily closed to the public. After construction, Lobs Hole will be rehabilitated and returned to its current use.



Aerial shot of Lobs Hole

### EXCAVATED ROCK MANAGEMENT

It is estimated that approximately 500,000 to 750,000 cubic metres of rock would be excavated during the exploratory works. This excavated rock is expected to be temporarily stored in the construction compound area at Lobs Hole.

Final excavated rock placement and management will be determined following the scientific and technical investigations being conducted for the project and will be addressed in the Environmental Impact Statement for the main project. Options being considered include beneficial reuse, as well as placement outside KNP or within Scheme reservoirs.

### SITE ACCESS WORKS

Access to the work areas will be provided via both vehicle and barge. Vehicle access would be provided via Lobs Hole Ravine Road for movement of personnel and light equipment. Barge access would be provided via Talbingo Reservoir for the transport of bulky and heavy equipment.

Upgrades to roads and tracks in the area, including Lobs Hole Ravine Road, would be required to facilitate access, including some road widening, gravel pavement overlay and provision of guideposts.

Barge access will require the provision of wharf facilities on Talbingo Reservoir both near the dam wall and near Lobs Hole.

For safety reasons, public usage of Lobs Hole Ravine Road would be restricted and returned to public use after construction.



Aerial shot of Lobs Hole Ravine Road

### CONSTRUCTION SCHEDULE

Exploratory works are expected to be completed within 18 to 30 months. Road and access works are expected to be completed within six months of commencement which is targeted for late 2018 or early 2019.

A timetable for the construction of the main project will be provided in a future editions of the community information booklet.



# PLANNING AND ENVIRONMENTAL APPROVAL PROCESS

## NSW APPROVALS

As stated earlier, the NSW Minister for Planning has declared Snowy 2.0 to be CSSI under the provisions of the NSW Environmental Planning and Assessment Act 1979.

Snowy Hydro will prepare an Environmental Impact Statement (EIS) for the exploratory works in accordance with requirements from the NSW Department of Planning and Environment (DPE). This EIS will include detailed assessments of all potential environmental and socioeconomic impacts including potential impacts on biodiversity, heritage, surface and groundwater, park users and local communities.

The EIS will be placed on public exhibition by DPE for a minimum of 28 days. This provides the community with the opportunity to review the EIS and make a written submission to DPE for consideration. After reviewing submissions, Snowy Hydro will prepare a report that responds to the relevant issues raised.

The EIS and final reports will be considered by DPE when making an assessment and recommendation as to whether the exploratory works should proceed or not. Approval from the NSW Minister for Planning is required before Snowy Hydro can commence with the exploratory works.

## COMMONWEALTH APPROVALS

A separate approval for exploratory works may be required from the Commonwealth Minister for the Environment and Energy under the Commonwealth Environment Biodiversity and Conservation Act 1999 (EPBC Act).



Scheme reservoir

# COMMUNITY FEEDBACK

In November 2017, during the preparation of the feasibility study, Snowy Hydro undertook a survey of community attitudes towards Snowy 2.0.

Both the survey results and also feedback received at community consultation sessions have generally been positive about Snowy 2.0.

Those surveyed identified reliability and affordability of electricity supply as well as facilitating increased renewable energy supplies as the main benefits of the project. Employment opportunities and economic benefits were also highlighted as key positives for local communities.

In addition to these and other benefits that were mentioned, survey respondents also highlighted impacts to the environment and access to KNP as concerns.

This feedback is a vital part of the EIS process and we will continue to work with our local communities to address their concerns and to maximise the opportunities and benefits of Snowy 2.0. Further results of the survey will be provided in the EIS.



Community consultation 'drop-in' session at Tumut, November 2017

## HOW TO HAVE YOUR SAY

We value your comments and encourage you to complete the community feedback survey.

To complete the survey or to find out more about Snowy 2.0 you can:

- 🔥 Complete the survey online at [snowyhydro.com.au](https://snowyhydro.com.au) or
- 🔥 Fill out the survey on the following page and return to us at:

## Snowy 2.0 Community Relations

**PO Box 332, Cooma NSW 2630**

Or to find out more:

- 🔥 Visit Snowy Hydro's website at [snowyhydro.com.au](https://www.snowyhydro.com.au) or  
📧 Email your enquiry to [community@snowyhydro.com.au](mailto:community@snowyhydro.com.au)



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## FEEDBACK SURVEY

Where do you live? (your closest town)

Email address (for project updates)

If Snowy 2.0 goes ahead, how important are the following issues for you? (Please circle a dot)

Extremely  
unimportant

Extremely important

## Reliability in the electricity network

1 10

## Flora and fauna of KNP

• • • • •

Recreational experiences within Kosciuszko National Park

• • • • •

Maximising economic benefits to our communities

|        |        |        |        |        |        |        |        |        |        |

### Minimising impacts on the community during construction

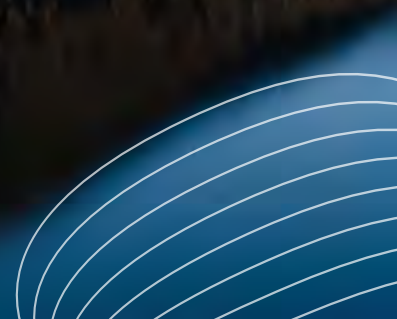
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What benefits/positives can you see coming out of Snowy 2.0 if it goes ahead?

Are there any aspects of Snowy 2.0 that concern you?

If you visit and use the Tantangara/Talbingo areas of KNP, please also go online and complete our park visitor survey at [snowyhydro.com.au/our-scheme/snowy20](https://www.snowyhydro.com.au/our-scheme/snowy20)









## Appendix B

### Community survey results

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# **Snowy 2.0 EIS Community Survey**

Round One - November/December 2017

## **Introduction**

In November 2017 Snowy Hydro undertook a round of community consultation sessions regarding the proposed "Snowy 2.0" pumped hydro project. The sessions aimed to: connect with communities proximate to the Snowy 2.0 project area; provide information about the project; provide factual information about the project;; obtain feedback about public perceptions of the project.; The results of sessions will also be used in the social impact assessment that is being undertaken as part of the Snowy 2.0 EIS and approval process.

During the community consultation sessions a survey was undertaken to obtain feedback about Snowy 2.0 and about recreational usage of the project area within Kosciuszko National Park (KNP). The survey was available in hard copy at the sessions and also on the Snowy Hydro website,

## **What we did**

A series of community consultation sessions were held for local communities in Adaminaby, Cooma, Talbingo and Tumut where members of the public were able to drop in and speak to Snowy Hydro staff about Snowy 2.0, to ask questions and give their feedback. The aims of the sessions were to: (a) inform people about the feasibility study being undertaken for Snowy 2.0 and decision making process; (b) describe what a pumped hydro project is and could look like; and (c) obtain feedback from the community about what is 'front of mind' at this early stage.

The sessions were advertised in the local newspaper and on the local radio. Twelve SHL staff attended and facilitated the sessions. They were open from midday until 6pm to allow for visitors at both lunchtime and after work. Two day sessions were held in Adaminaby, Talbingo and Tumut, and three days in Cooma.

An information booklet was produced which gave an overview of Snowy Hydro today, what Snowy 2.0 is and why we need it, the feasibility study, the design and what Snowy 2.0 might look like if the project goes ahead, and the approval process. Information was also available for the public to view on a number of pull-up banners that contained a summary of the above information.

The survey was included in the booklet and also printed as a separate handout. Members of the public were encouraged to fill out and return the survey or to go online to complete it on the Snowy Hydro website. At the time of writing, 70 respondents have completed the survey, the results of which are detailed below.

## **Who we spoke to**

A total of 279 visitors dropped into the community consultation sessions across the four communities, this comprised of 30 in Talbingo, 45 in Adaminaby, 102 in Cooma and 103 in Tumut.

On average attendees stayed and interacted with Snowy staff for 20-30 minutes.



Snowy Hydro has also been engaging with other key stakeholders on request - both individuals and groups such as the local councils and NPWS staff.

## Method

The survey contained a combination of quantitative and qualitative questions and included a section about Snowy 2.0 perceptions as well as a section about recreational use of KNP within and surrounding the project area.

As previously stated, the survey was available in hard copy at the community consultation sessions and is also available on the Snowy Hydro website. Responses have been classified according to a number of key themes and issues regarding the Snowy 2.0 project.

## Snowy 2.0 Community Survey Questions

### Snowy 2.0 Feedback Survey

If Snowy 2.0 goes ahead, how important are the following issues for you?

(scale from Extremely unimportant to Extremely important)

- Reliability in the electricity network
- Flora and fauna of the Kosciuszko National Park
- Recreational Experiences within Kosciuszko National Park
- Maximising benefits to our communities
- Minimising impacts on the community during construction

What benefits/positives can you see coming out of Snowy 2.0 if it goes ahead? (open text question)

Are there any aspects of Snowy 2.0 that concern you? (open text question)

### Park User Survey - Kosciuszko National Park (northern region)

What areas do you visit in the northern region of KNP? (tick box)

Ravine/Lobs Hole area, Bullocks Hill/Gooandra area, Tantangara north ( Currango area), Tantangara south (Nungar area), Other.....

What activities do you undertake within the KNP? (tick box)

Camping, fishing, horse riding, bushwalking, other...

What areas do you fish? (tick box)

Tantangara dam, Murrumbidgee River, Talbingo dam, Yarrangobilly River, other...

What roads and tracks do you use when visiting KNP? (tick box)

Tantangara Road, Long Plain Road, Lobs Hole Ravine Road, other...

If you camp within KNP, what campgrounds do you visit? (tick box)

Wares Yards, Old Snowy Campsite, Tantangara Dam, Bullocks Hill, Lobs Hole Ravine, other...

In the northern region of KNP is there a place that is particularly special to you? (open text question)

Do you have any other comments about recreational activities in KNP? (open text question)

## Results

### Question by question summary

If Snowy 2.0 goes ahead, how important are the following issues for you?

### **1. Reliability in the electricity network**

Extremely unimportant - 8.00%

Unimportant - 1.33%

Neutral - 1.33%

Important - 16.00%

**Extremely important - 70.67%**

No response - 2.67%

A large majority of respondents saw reliability of electricity to be important or extremely important (86.67%), reflecting the level of concern about electricity reliability and affordability across the local area, and the national electricity market.

### **2. Flora and fauna of the KNPk**

Extremely unimportant - 1.33%

Unimportant - 9.33%

Neutral - 14.67%

Important - 26.67%

**Extremely important - 45.33%**

No response - 2.67%

Whilst the majority of respondents felt that flora and fauna of the KNP were important or extremely important (72%), it is also interesting to note that 25.33% of respondents were either neutral or thought that impacts on flora and fauna are unimportant.

### **3. Recreational experiences within KNP**

Extremely unimportant - 4.00%

Unimportant - 6.67%

Neutral - 12.00%

Important - 37.33%

**Extremely important - 37.33%**

No response - 2.67%

Almost 75% of respondents are concerned about recreational experiences within KNP. Snowy Hydro is already working with NPWS to manage access to recreational activities within the park - particularly around campgrounds, fishing and lake access.

### **4. Maximising economic benefits to local communities (Snowy Mountains region)**

Extremely unimportant - 5.33%

Unimportant - 2.67%

Neutral - 12.00%

Important - 17.33%

**Extremely important - 58.67%**

No response - 4.00%

More than 75% of respondents are keen for Snowy 2.0 to maximise economic benefits to local communities. This finding was very much reinforced by the one-on-one conversations with

session attendees - with a very strong interest regarding employment and business opportunities for locals as a result of Snowy 2.0.

## **5. Minimising impacts on local communities during construction (Snowy mountains region)**

Extremely unimportant - 8.00%  
Unimportant - 10.67%  
Neutral - 14.67%  
**Important - 34.67%**  
Extremely important - 28.00%  
No response - 4.00%

Interestingly concern about impacts on local communities during construction of Snowy 2.0 was the only question that did not have the highest response percentage as "extremely important". And while concern was still the majority with 62.86% indicating that impacts during construction were important to them, there was also 32.86% of respondents who indicated that impacts during construction either didn't concern them or were unimportant. This could be seen as an indication of the positive but also realistic attitude that local communities have towards Snowy 2.0, reflecting a willingness to put up with some "short term pain for the long term gain".

## **6. What benefits/positives can you see coming out of Snowy 2.0 if it goes ahead?**

The answers to this open ended question were classified according to key themes that have been identified as part of Snowy 2.0t. The results are summarised below:

Reliability / affordability of supply - 26.6%  
Employment opportunities - 21.28%  
Economic benefits - 17.02%  
Renewable / clean energy - 19.15%  
Tourism impacts - 6.38%  
Other themes included environment (1.06%), access to KNP (1.06%), opportunities for contractors (1.06%)

The interest in employment opportunities and economic benefits by over 40% of respondents is consistent with the level of interest expressed in face to face discussions with attendees at the community consultation sessions.

## **7. Are there any aspects of Snowy 2.0 that concern you?**

The answers to this open ended question were classified according to key themes that have been identified as part of Snowy 2.0. The results are summarised below:

Environmental concerns - 31.92%  
Access to KNP - 8.51%  
Cost of the project - 8.51%  
Water levels or flows - 4.26%  
Spoil management - 4.26%  
Tourism impacts - 4.26%

## **Park User Survey**

60% of the survey respondents (or 45 people) visit the KNP for recreational activities. A summary of their park usage responses are below:

**What areas do you visit within the northern area of KNP?**

Lobs Hole Ravine - 20.72%  
Bullocks Hill/Gooandra area - 13.51%  
Tantangara north (Currango area) - 23.42%  
Tantagara south (Nungar area) - 21.62%  
Other - 15.32%

Areas mentioned in the "other" section include: Blowering Dam, Blue Water Holes, Long Plain, Yarrangobilly, Three Mile Dam, Landers Falls area,

**What activities do you undertake within the northern area of KNP?**

Camping - 28.13%  
Fishing - 21.88%  
Horse Riding - 6.52%  
Bushwalking - 28.13%  
Other - 11.46%

Activities mentioned in the "other" section include: Bike riding & caving

**What areas do you fish?**

Tantangara Dam - 18.68%  
Murrumbidgee River - 15.38%  
Yarrangobilly River - 15.38%  
Talbingo Dam - 15.38%  
Other - 15.38%

Areas mentioned in the "other" section include: Lake Eucumbene, O'Hara's Rest, Jounama, Blowering, Tumut River, Sue City & Long Plain creeks

**What roads and tracks do you use when visiting KNP?**

Tantangara Road - 26.47%  
Long Plain Road - 31.37%  
Lobs Hole Ravine Road - 23.53%  
Other - 15.69%

Roads or tracks mentioned in the "other" section include: Port Phillip fire trail, Prossers trail, "all of them", "all over", "lots of them", Pockets Saddle Road

**What campgrounds do you visit within KNP?**

Wares Yards - 4.62%  
Old Snowy Campsite - 9.23%  
Tantangara Dam - 23.08%  
Bullocks Hill - 4.62%  
Lobs Hole Ravine - 15.38%  
Other - 13.85%  
(no response - 16.6%)

Campgrounds mentioned in the "other" section include: Rocky Plain, Three Mile Dam, Denison, Blue Waterholes, Jounama, Rules Point & Yans Trail,

**In the northern area of KNP is there a place that is particularly special to you?**

Places mentioned in this question include: Long Plain, Lobs Hole, Kiandra, Yarrangobilly, Cabramurra, Three Mile Dam, Rules Point, Sue City, Tantangara, Blue Water Holes, Murrumbidgee River, Currango and Nungar. There were also several answers that summed it up by saying "all of it".

These responses are indicative of special the entire project area is to many locals.

**Do you have any other comments about recreational activities in KNP?**

Respondent comments included:

- Redfin & carp concerns
- Request for toilets at Tantangara Dam
- "While this project is bound to interfere with public facility during construction, it is well worth it. I think blackberries pose a much larger problem for recreational users of the park than you blokes will. You might take a mattock with you and scratch a few out while you're up there :)"
- "The speed limit for all vehicles including log trucks should be reduced to 80kph for the safety of all including wildlife.
- Parks should carry out a patrol daily on the Snowy Mountains Highway to check injured wildlife and remove"
- The growth in mountain biking in the region



## Appendix C

### Recreational users assessment

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# Snowy 2.0 Exploratory Works

Recreational User Impacts Assessment

Final Report | 10 July 2018



# Contents

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4	Conclusion	57

## Acknowledgements

The Snowy 2.0 Exploratory Works Recreational User Impacts Assessment report as been prepared by TRC Tourism Pty Ltd For EMM and Snowy Hydro.

## Disclaimer

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# 1 Introduction

## 1.1 The project

Snowy Hydro Limited (Snowy Hydro) proposes to develop Snowy 2.0, a large scale pumped hydro-electric storage and generation project which would increase hydro-electric capacity within the existing Snowy Mountains Hydro-electric Scheme (Snowy Scheme). This would be achieved by establishing a new underground hydro-electric power station that would increase the generation capacity of the Snowy Scheme by almost 50%, providing an additional 2,000 megawatts (MW) generating capacity, and providing approximately 350,000 megawatt hours (MWh) of storage available to the National Electricity Market (NEM) at any one time, which is critical to ensuring system security as Australia transitions to a decarbonised NEM. Snowy 2.0 will link the existing Tantangara and Talbingo reservoirs within the Snowy Scheme through a series of underground tunnels and hydro-electric power station.

Snowy 2.0 has been declared to be State significant infrastructure and critical State significant infrastructure (CSSI) by the NSW Minister for Planning under the provisions of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) and is defined in Clause 9 of Schedule 5 of the *State Environmental Planning Policy (State and Regional Development) 2011* (SRD SEPP). Separate applications and environmental impact statements (EIS) for different phases of Snowy 2.0 are being submitted under Part 5, Division 5.2 of the EP&A Act. This technical assessment has been prepared to support an EIS for Exploratory Works to undertake investigative works to gather important technical and environmental information for the main Snowy 2.0 project. The main project will be subject of a separate application and EIS next year.

The purpose of Exploratory Works for Snowy 2.0 is primarily to gain a greater understanding of the conditions at the proposed location of the power station, approximately 850 metres (m) below ground level. Understanding factors such as rock conditions (such as stress conditions) and ground temperature is essential to inform decisions about the precise location of the power station cavern and confirm the cavern construction methods.

Exploratory Works comprises:

- an exploratory tunnel to the site of the underground power station for Snowy 2.0;
- horizontal and other test drilling, investigations and analysis in situ at the proposed cavern location and associated areas, and around the portal construction pad, access roads and excavated rock management areas all within the disturbance footprint;
- a portal construction pad for the exploratory tunnel;
- an accommodation camp for the Exploratory Works construction workforce;
- road works and upgrades providing access and haulage routes during Exploratory Works;
- barge access infrastructure, to enable access and transport by barge on Talbingo reservoir;
- excavated rock management, including subaqueous placement within Talbingo Reservoir;
- services infrastructure such as diesel-generated power, water and communications; and



- post-construction revegetation and rehabilitation, management and monitoring.

## 1.2 Purpose of this report

This Recreational User Impacts Assessment supports the EIS for the Exploratory Works. It documents the recreational user impacts assessment methods and results, the initiatives built into the project design to avoid and minimise associated impacts, and the mitigation and management measures proposed to address any residual impacts not able to be avoided.

## 1.3 Location of Exploratory Works

Snowy 2.0 and Exploratory Works are within the Australian Alps, in southern NSW. The regional location of Exploratory Works is shown on Figure 1.1. Snowy 2.0 is within both the Snowy Valleys and Snowy Monaro Regional local government areas (LGAs), however Exploratory Works is entirely within the Snowy Valleys LGA. The majority of Snowy 2.0 and Exploratory Works are within Kosciuszko National Park (KNP). The area in which Exploratory Works will be undertaken is referred to herein as the project area, and includes all of the surface and subsurface elements further discussed in Section 2.1.

Exploratory Works is predominantly in the Ravine region of the KNP. This region is between Talbingo Reservoir to the north-west and the Snowy Mountains Highway to the east, which connects Adaminaby and Cooma in the south-east to Talbingo and Tumut to the north-west of the KNP. Talbingo Reservoir is an existing reservoir that forms part of the Snowy Scheme. The reservoir, approximately 50 kilometres (km) north-west of Adaminaby and approximately 30 km east-north-east of Tumbarumba, is popular for recreational activities such as boating, fishing, water skiing and canoeing.

The nearest large towns to Exploratory Works are Cooma and Tumut. Cooma is approximately one hour and forty five minutes drive (95 km) south-east of Lobs Hole. Tumut is approximately half an hour (45 km) north of Talbingo. There are several communities and townships near the project area including Talbingo, Tumbarumba, Batlow, Cabramurra and Adaminaby. Talbingo and Cabramurra were built for the original Snowy Scheme workers and their families. Adaminaby was relocated to alongside the Snowy Mountains Highway from its original location (now known as Old Adaminaby) in 1957 due to the construction of Lake Eucumbene. Talbingo and Adaminaby provide a base for users of the Selwyn Snow Resort in winter. Cabramurra was modernised and rebuilt in the early 1970s and is owned and operated by Snowy Hydro. It is still used to accommodate Snowy Scheme employees and contractors. Properties within Talbingo are now predominantly privately owned. Snowy Hydro now only owns 21 properties within the town.

Other attractions and places of interest in the vicinity of the project area include Selwyn Snow Resort, the Yarrangobilly Caves complex and Kiandra. Kiandra has special significance as the first place in Australia where recreational skiing was undertaken and is also an old gold rush town.

The project area is shown on Figure 1.2 and comprises:

- **Lobs Hole:** Lobs Hole will accommodate the excavated rock emplacement areas, an accommodation camp as well as associated infrastructure, roads and laydown areas close to the portal of the exploratory tunnel and portal construction pad at a site east of the Yarrangobilly River;
- **Talbingo Reservoir:** installation of barge access infrastructure near the existing Talbingo Spillway, at the northern end of the Talbingo Reservoir, and also at Middle Bay, at the southern end of the reservoir, near the Lobs Hole facilities, and installation of a submarine cable from the Tumut 3 power station to Middle Bay, providing communications to the portal construction pad and accommodation camp. A program of subaqueous rock placement is also proposed;

- **Mine Trail Road** will be upgraded and extended to allow the transport of excavated rock from the exploratory tunnel to sites at Lobs Hole that will be used to manage excavated material, as well as for the transport of machinery and construction equipment and for the use of general construction traffic; and
- several sections of **Lobs Hole Ravine Road** will be upgraded in a manner that protects the identified environmental constraints present near the current alignment.

The project is described in more detail in Chapter 2.

## 1.4 Proponent

Snowy Hydro is the proponent for Snowy 2.0 and the Exploratory Works. Snowy Hydro is an integrated energy business – generating energy, providing price risk management products for wholesale customers and delivering energy to homes and businesses. Snowy Hydro is the fourth largest energy retailer in the NEM and is Australia’s leading provider of peak, renewable energy.

## 1.5 Assessment guidelines and requirements

This Recreational Users Impacts Assessment has been prepared in accordance with the Secretary’s Environmental Assessment Requirements (SEARs) for Exploratory Works, issued on 17 May 2018, and revised on 20 June 2018, as well as relevant governmental assessment requirements, guidelines and policies, and in consultation with the relevant government agencies.

The SEARs must be addressed in the EIS. Table 1.1 lists the matters relevant to this assessment and where they are addressed in this report.

TABLE 1.1 RELEVANT MATTERS RAISED IN SEAR

Relevant matters raised in SEARs	
Requirement	Section addressed
Nil	

To inform preparation of the SEARs, the Department of Planning and Environment (DPE) invited relevant government agencies to advise on matters to be addressed in the EIS. These matters were taken into account by the Secretary for DPE when preparing the SEARs.

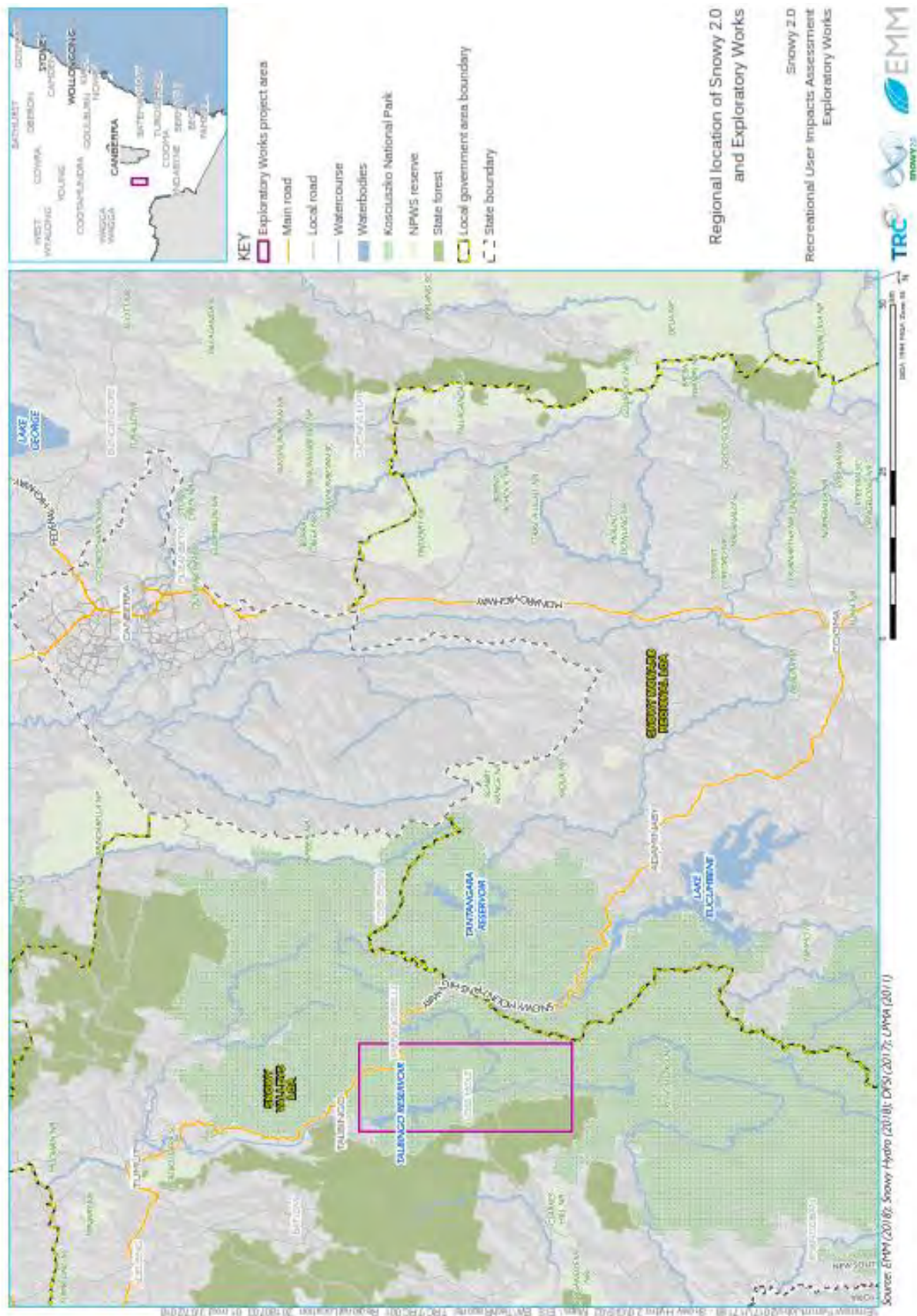
### 1.5.1 Other relevant reports

This Recreational User Impacts Assessment has been prepared with reference to other technical reports that were prepared as part of the Exploratory Works EIS. The other relevant reports referenced in this assessment are listed below.

- Subaqueous excavated rock placement assessment (RHDHV 2018) – Appendix E of the EIS;
- Noise and vibration impact assessment (EMM 2018) – Appendix N of the EIS; and
- Traffic and Transport Assessment Report (SCT 2018) – Appendix X of the EIS.

FIGURE 1.1. REGIONAL LOCATION OF SNOWY 2.0 AND EXPLORATORY WORKS

FIGURE 1.1. REGIONAL LOCATION OF SNOWY 2.0 AND EXPLORATORY WORKS



## 2 Project Description

### 2.1 Overview

Exploratory Works comprises construction associated with geotechnical exploration for the underground power station for Snowy 2.0. The Exploratory Works elements are shown on Figure 2.1 and involve:

- establishment of an exploratory tunnel to the site of the underground power station for Snowy 2.0;
- horizontal and other test drilling, investigations and analysis in situ at the proposed cavern location and associated areas, and around the portal construction pad, access roads and excavated rock management areas all within the disturbance footprint;
- establishment of a portal construction pad for the exploratory tunnel;
- establishment of an accommodation camp for the Exploratory Works construction workforce;
- road works and upgrades providing access and haulage routes during Exploratory Works;
- establishment of barge access infrastructure, to enable access and transport by barge on Talbingo reservoir;
- excavated rock management, including subaqueous placement within Talbingo Reservoir;
- establishment of services infrastructure such as diesel-generated power, water and communications; and
- post-construction revegetation and rehabilitation, management and monitoring.



FIGURE 2.1 EXPLORATORY WORKS ELEMENTS



Source: EMM (2018); Snowy Hydro (2018); SMEC (2018); Robert Bird (2018); DFSI (2017); LPMMA (2011)

#### KEY

- Exploratory tunnel
- - Access road upgrade
- - Access road extension
- Communications cable
- Main road
- Local road
- Major watercourse
- On land rock management
- Subaqueous excavated rock placement
- Disturbance footprint
- Avoidance footprint

0 2.5 5 km  
GDA 1994 MGA Zone 56  
Exploratory Works project area

Snowy 2.0  
Recreational User Impacts Assessment  
Exploratory Works





## 2.2 Exploratory tunnel

An exploratory tunnel of approximately 3.1 km is proposed to provide early access to the location of the largest cavern for the underground power station. This will enable exploratory drilling and help optimise the location of the cavern which, in turn, will optimise the design of Snowy 2.0.

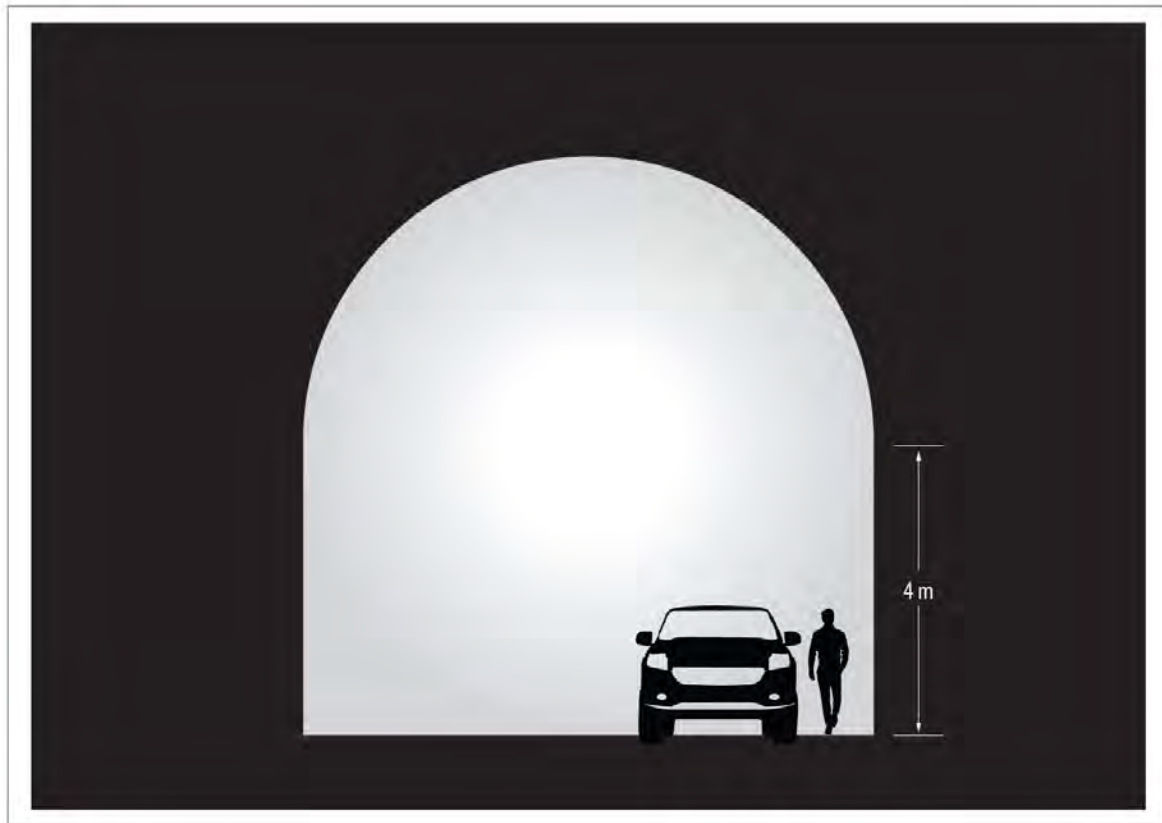
The exploratory tunnel is proposed in the north east section of Lobs Hole and will extend in an east-west direction with the portal construction pad to be outside the western end of the tunnel at a site east of the Yarrangobilly River, as shown on Figure 2.2.

The location of the proposed exploratory tunnel and portal construction pad is shown in Figure 2.2 The exploratory tunnel will be excavated by drill and blast methods and have an 8 x 8 m D-Shaped cross section, as shown on Figure 2.3.

FIGURE 2.2 EXPLORATORY TUNNEL LOCATION



FIGURE 2.3 EXPLORATORY TUNNEL CROSS SECTION



The drill and blast excavation process will be repeated cyclically throughout the tunnelling works, involving:

- marking up and drilling blast holes in a predetermined pattern in the working face of the tunnel;
- loading the blast holes with explosives, attaching detonators and connecting the holes into a blast sequence, and detonating the blast;
- ventilating the tunnel to remove blast fumes and dust;
- removing blasted rock;
- scaling and wash down of the tunnel roof and walls to remove loosened pieces of rock;
- geological mapping of the exposed rock faces and classification of the conditions to determine suitable ground support systems for installation;
- installing ground support; and
- advancing construction ventilation ducting and other utilities including power, water, compressed air and communications.

The exploratory tunnel will be shotcrete-lined with permanent anchor support, and incorporate a groundwater management system. The exploratory tunnel shape and dimensions are designed to allow two-lane traffic for the removal of excavated material, along with additional space for ventilation and drainage of groundwater inflows. Groundwater intersected during tunnelling will be contained and transferred to the portal for treatment and management. Areas identified during forward probing with the potential for high groundwater flows may require management through a detailed grouting program or similar.

The tunnel portal will be established at the western end of the exploratory tunnel and provide access and utilities to the exploratory tunnel during construction. The portal will house power, communications,

ventilation and water infrastructure. The portal will also provide a safe and stable entrance to the exploratory tunnel.

It is anticipated that the exploratory tunnel will be adapted for multiple functions during construction of the subsequent stages of the Snowy 2.0 project. The exploratory tunnel will also eventually be utilized to form the main access tunnel (MAT) to the underground power station during the operational phase of Snowy 2.0, should it proceed.

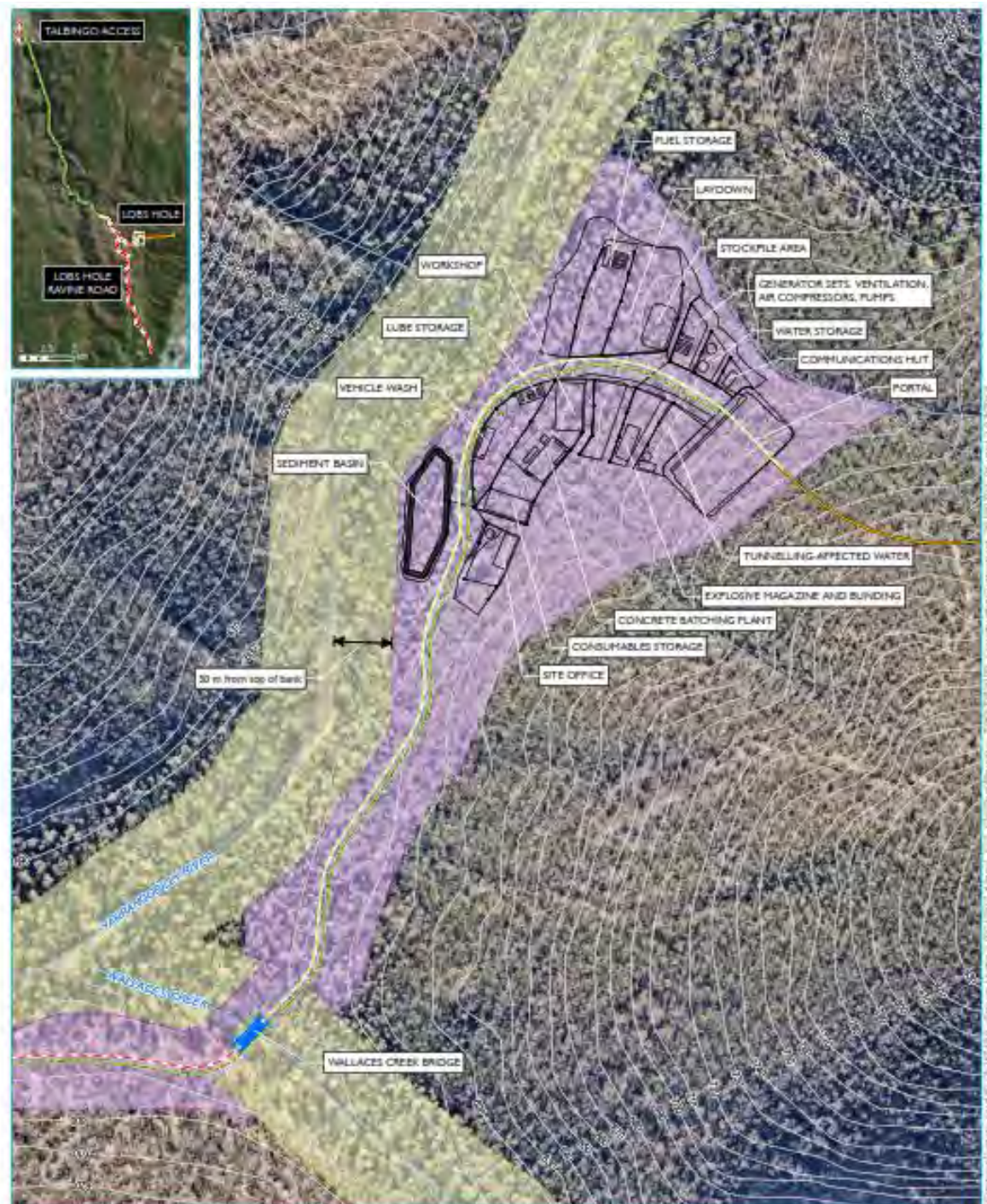
### **2.3 Portal construction pad**

A portal construction pad for the exploratory tunnel will provide a secure area for construction activities. Infrastructure at the portal construction pad, shown in Figure 2.4, will primarily support tunnelling activities and include a concrete batching plant and associated stockpiles, site offices, maintenance workshops, construction support infrastructure, car parking, equipment laydown areas. Stockpile areas will allow for around two to three months supply of concrete aggregate and sand for the concrete batching plant to ensure that the construction schedule for the proposed access road works do not interfere with the exploratory tunnel excavation schedule. A temporary excavated rock stockpile area is also required to stockpile material excavated during tunnel construction prior to its transfer to the larger excavated material emplacement areas.

The portal construction pad will be at the western end of the exploratory tunnel. The portal construction pad will be excavated to provide a level construction area with a near vertical face for the construction of the portal and tunnelling. The area required for the portal construction pad is approximately 100,000 m<sup>2</sup>.



FIGURE 2.4 CONCEPTUAL LAYOUT - PORTAL CONSTRUCTION PAD



Sources: EMM (2018); Snowy Hydro (2018); NearMap (2018); SHEC (2018); Roben Bird (2018); DFSI (2017)

#### KEY

- Access road upgrade
- - - Access road extension
- Permanent bridge
- Portal construction pad conceptual layout
- Exploratory tunnel
- Communications cable
- Watercourse
- Contour (10m)
- Disturbance footprint
- Avoidance footprint

Conceptual layout – portal construction pad

Snowy 2.0  
Recreational User Impacts Assessment  
Exploratory Works





## 2.4 Excavated rock management

It is estimated that approximately 750,000 m<sup>3</sup> of bulked materials will be excavated, mostly from the exploratory tunnel and portal construction pad with additional quantities from road upgrade works. Subject to geochemical testing of the rock material, excavated rock will be placed either on land or subaqueously within Talbingo Reservoir.

### 2.4.1 On land placement

Excavated materials will be placed in one of two rock emplacement areas at Lobs Hole as shown on Figure 2.5.

The strategy for excavated rock management is for excavated material to be emplaced at two areas with the final placement of excavated material to be determined at a later date.

Consultation with NPWS throughout the design process has identified an opportunity for the eastern emplacement area to form a permanent landform that enables greater recreational use of Lobs Hole following the completion of Snowy 2.0's construction. It is envisaged that the excavated rock emplacement area will provide, in the long term, a relatively flat final landform suitable for camping and basic recreational facilities to be confirmed in consultation with NPWS.

The eastern emplacement area has a capacity of up to 600,000 m<sup>3</sup> of material. It will be approximately 25 m maximum depth and will be benched down to the northern edge of the emplacement which is setback 50 m from the Yarrangobilly River.

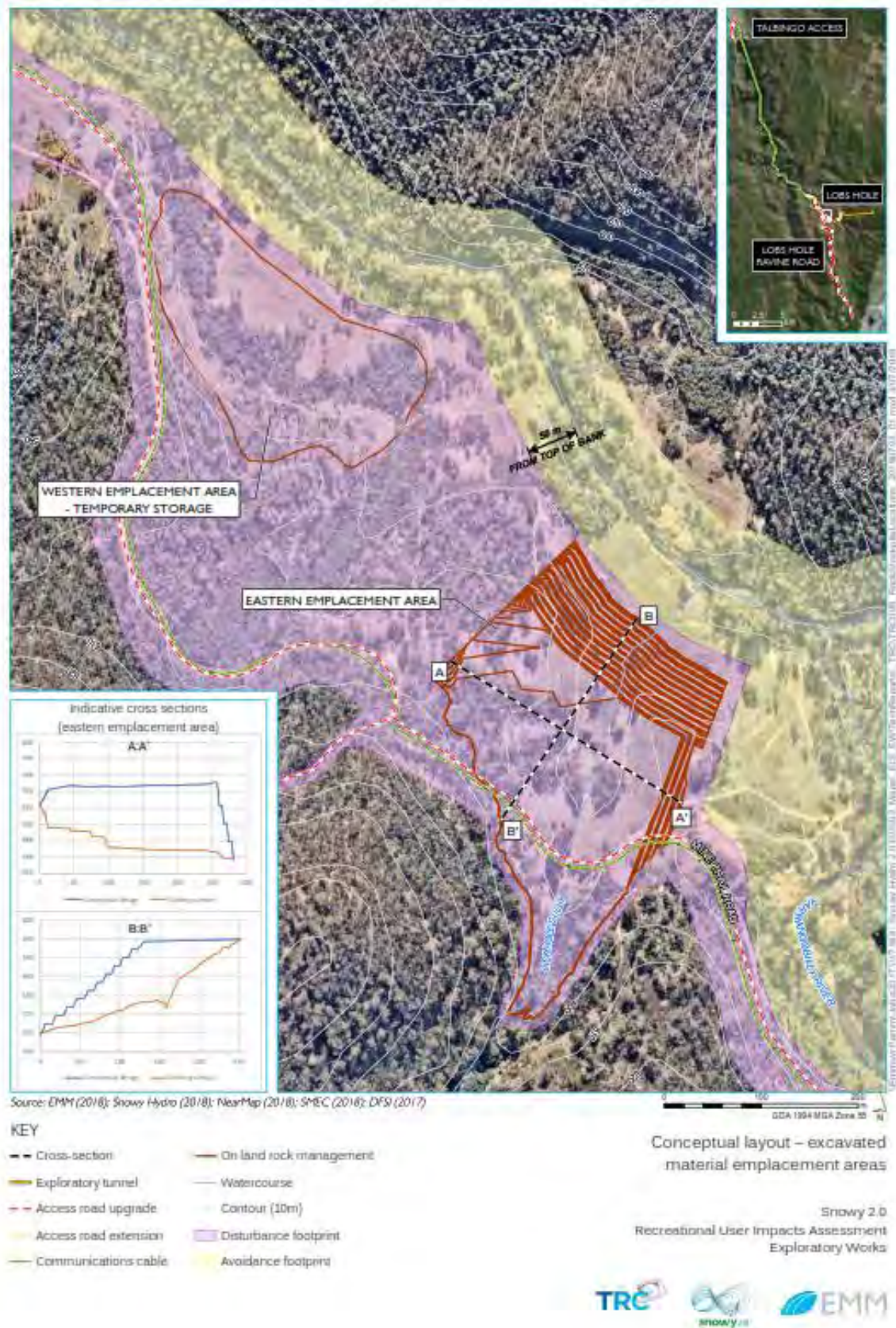
The western emplacement area will be used to store excavated material should it not be able to be placed within the eastern emplacement area. It is envisaged this emplacement area will be used to store excavated materials suitable for re-use within the construction of Exploratory Works or for use by NPWS in KNP maintenance activities. All remaining material placed in this emplacement area will be removed following the completion of Exploratory Works.

The guiding principles for the design, construction method and management of emplacement areas undertaken for Exploratory Works have been as follows:

- reducing potential for acid rock drainage from the excavated rock emplacement area entering the Yarrangobilly River or forming groundwater recharge;
- avoid known environmental constraints; and
- manage existing surface water flows from Lick Hole Gully.

The design and management of the emplacement areas have not yet been finalised due to the need for further investigations to determine the likely geochemical characteristics of the excavated material. Following further investigation and prior to construction of Exploratory Works a management plan will be prepared and implemented.

FIGURE 2.5 CONCEPTUAL LAYOUT - EXCAVATED ROCK EMPLACEMENT AREAS



### 2.4.2 Subaqueous placement

An initial program for the placement of excavated rock within Talbingo Reservoir also forms part of Exploratory Works. The program will be implemented in an appropriate section of Talbingo Reservoir in accordance with a detailed management plan based on an engineering method informed through the materials' geochemistry and reservoir's characteristics. The purpose of the program is to confirm the suitability of the emplacement method for future excavated rock material from the construction of Snowy 2.0, should it proceed.

The rock for subaqueous placement will be taken from the excavated rock emplacement areas as described above. Testing of the rock would be conducted during excavation to assess geochemical properties. Any rock assessed as unsuitable for subaqueous placement based on the prior geochemical and leachability testing would be separately stockpiled and not used in the program. Suitable (ie non-reactive material) would be transported and loaded to barge, for placement at the deposition area. Suitable placement locations have been identified for Exploratory Works and are shown indicatively on Figure 2.6.

All placement within the reservoir would occur within silt curtains and would be subject to a detailed monitoring regime including survey monitoring of pre-placement and post-placement bathymetry, water quality monitoring during placement, and monitoring of aquatic ecology and the recolonisation of benthic species and fish species to the placement area following the placement program. The management, mitigation and monitoring measures would be refined following the ongoing investigations.

## 2.5 Accommodation camp

An accommodation camp is proposed to provide accommodation and supporting services for workers in close proximity to the exploratory tunnel. The accommodation camp layout is shown on Figure 2.7 and includes ensuite rooms surrounding central facilities including a kitchen, tavern, gym, admin office, laundry, maintenance building, sewage and water treatment plants and parking that will service the Exploratory Works workforce. The accommodation camp access road will connect to the north side of Lobs Hole Road at Lobs Hole. The conceptual layout of the accommodation camp is shown on Figure 2.7.

## 2.6 Road and access provisions

Existing road and access will need to be upgraded to a suitable standard to:

- provide for the transport of excavated rock material between the exploratory tunnel and the excavated rock emplacement areas;
- accommodate the transport of oversized loads as required; and
- facilitate the safe movement of plant, equipment, materials and construction staff to the portal construction pad.

Given the topographic constraints of the area, the standard of the existing roads and the environmental values associated with KNP, the option of barging larger and oversized loads to the site is available. This is discussed further at Section 2.7.

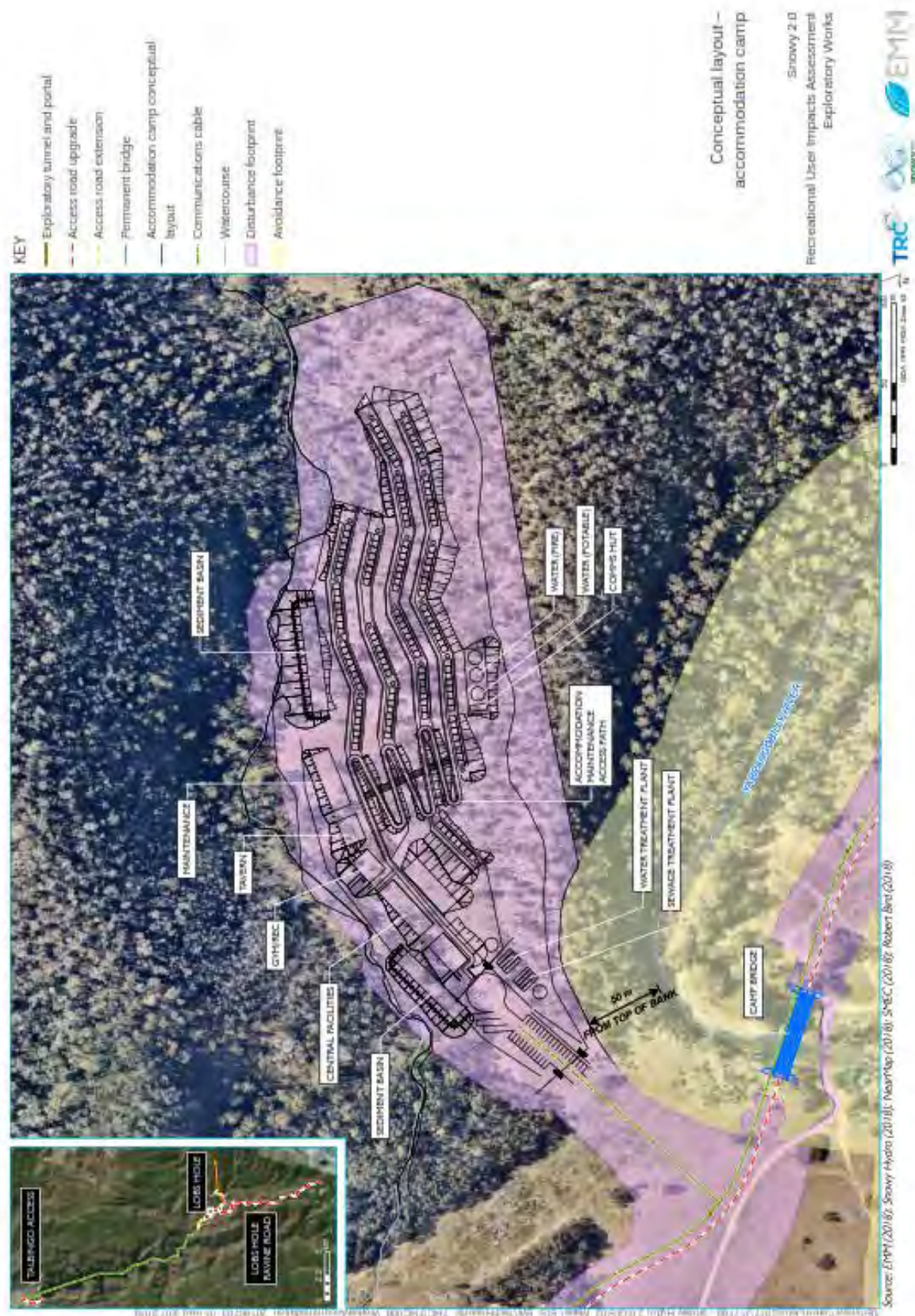


FIGURE 2.6 INDICATIVE LOCATION FOR SUBAQUEOUS ROCK PLACEMENT IN TALBINGO RESERVOIR





FIGURE 2.7 CONCEPTUAL LAYOUT - ACCOMMODATION CAMP





### 2.6.1 Access road works

The access road upgrades will be designed based on access for a truck and dog trailer. The proposed road works are shown in Figure 2.8 and described in Table 2.1. It is expected that the majority of materials and equipment will travel along the Snowy Mountains Highway, Link Road and Lobs Hole Ravine Road, with some required to travel on Miles Franklin Drive via Talbingo to Talbingo Dam Wall Reservoir and be transferred via a barge to site. The primary haul routes for construction material on site are provided in Figure 2.9. Where existing roads are replaced by new access roads or road upgrades, the existing roads will be removed and rehabilitated in line with the rehabilitation strategy for Exploratory Works.

TABLE 2.1 ACCESS ROAD WORKS SUMMARY

Roadwork area	Overview
Upper Lobs Hole Ravine Road upgrade	Minor upgrades to 7.5 km section of existing road. Only single lane access will be provided. No cut and fill earthworks or vegetation clearing will be undertaken.
Lower Lobs Hole Ravine Road upgrade	Upgrades to 6 km section of existing road involving cut and fill earthworks in some sections. Only single lane access will be provided.
Lobs Hole Road upgrade	Upgrade to 7.3 km section of existing road providing two-way access.
Mine Trail Road upgrade	Upgrade to 2.2 km section of existing track to two-way access.
Mine Trail Road extension	Establishment of a new two-way road providing access to the exploratory tunnel portal.
Middle Bay Road	Establishment of a new two-way road to the proposed Middle Bay barge ramp.
Spillway Road	Upgrade of a 3 km section of existing road to provide two-way access to the proposed Spillway barge ramp.

While no cut and fill earthworks or vegetation clearing is proposed along Upper Lobs Hole Ravine Road, a laydown area is proposed within and adjacent to the existing transmission line easement. This area will be used to store materials required for the road works to the lower section of Lobs Hole Ravine Road.

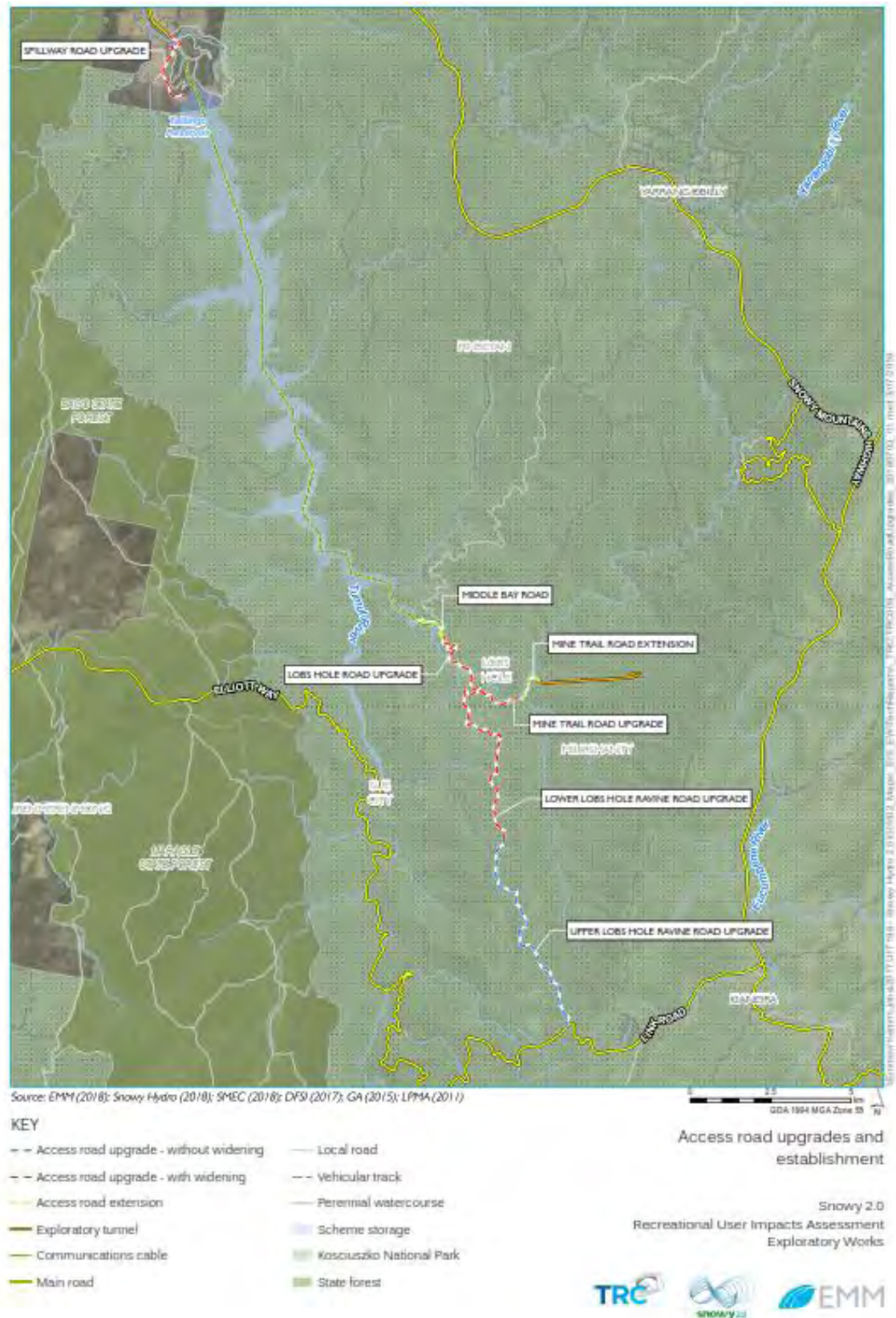
### 2.6.2 Watercourse crossings

Bridge construction will be required at two locations for the Exploratory Works as described in Table 2.2. The locations of these bridge works are shown in Figure 2.9.

TABLE 2.2 WATERCOURSE CROSSING SUMMARY

Bridge works area	Overview
Camp bridge	An existing crossing on Yarrangobilly River will be used as a temporary crossing while a new permanent bridge is built as part of Lobs Hole Road upgrade. The existing crossing will require the crossing level to be raised with rocks to facilitate vehicle passage. The rocks used to raise the crossing level will be removed and the crossing no longer used once the permanent bridge has been constructed. The new bridge (Camp Bridge) will be a permanent crossing and used for both Exploratory Works and Snowy 2.0 main works, should it proceed.
Wallaces Creek bridge	Establishment of a new permanent bridge at Wallaces Creek as part of the Mine Trail Road extension. Establishment of this bridge will require an initial temporary pre-fabricated 'Bailey bridge' to be constructed, which will be removed before the end of Exploratory Works.

FIGURE 2.8 ACCESS ROAD UPGRADES AND ESTABLISHMENT





**KEY**

- Access road upgrade
- Road cut infrastructure
- Thermoplastic bridge
- Exploratory tunnel
- Rural construction pad and accommodation camp conceptual layout
- Communications radio
- Excavated rock haul route
- Water column
- On-land rock management
- Middle Bay barge access
- Displacement troughs
- Assistance troughs

**Excavated material haul route**

**Snowy 2.0**  
Recreational User Impacts Assessment  
Exploratory Works

Source: EMU (2018), Snowy Hydro (2018), SNC (2018), Robert Bird (2018), SNC (2018)

The design for permanent bridges at both crossings will consist of steel girders with a composite deck. This is the most common type of permanent bridge constructed in and around the existing Snowy Scheme. Lightweight steel girders are easy to transport and will therefore allow for efficiencies in the construction schedule and permit the use of smaller-scale lifting equipment at the construction site.

## 2.7 Barge access infrastructure

To provide an alternative to road access, a barge option is proposed, not only for bulky and heavy equipment but for materials and also in case of emergency. During Exploratory Works, barges will be loaded at the northern barge ramp (Talbingo barge ramp), travel about 18 km along Talbingo Reservoir and be unloaded at the southern barge ramp (Middle Bay barge ramp) before returning to the north. Some loads may also be transported in the reverse direction.

Barge access infrastructure will comprise two dedicated barge ramps at Middle Bay and Talbingo Spillway, with a slope of approximately 1 vertical to 10 horizontal (1V: 10H) at each location. A navigation channel is also required adjacent to the Middle Bay barge ramp. Construction will involve:

- geophysical and geotechnical investigation of the barge access area to inform detailed design;
- site establishment and excavation of barge access area;
- installation of precast concrete panels at the ramp location;
- installation of bollards for mooring lines; and
- minor dredging to allow barge access at the reservoir minimum operating level.

To facilitate construction, laydown areas are proposed adjacent to the Middle Bay barge ramp and adjacent to the water inlet pipeline. Laydown will also be used within the footprint of the Talbingo barge ramp.

Dredged material will be placed as part of the subaqueous placement program or within one of the designated on land rock **emplacement areas**. The infrastructure proposed for the Talbingo Spillway barge ramp and Middle Bay barge ramp is provided in Figure 2.10.

## 2.8 Services and infrastructure

The Exploratory Works will require additional power and communication infrastructure. Water services are also needed and include a water services pipeline and water and waste water (sewage) treatment facilities. A summary of services required is provided at Table 2.3.



FIGURE 2.10 BARGE ACCESS LOCATIONS





Services infrastructure	Description
	diesel generators, with fuel storage provided at the portal construction pad.
Communication	Communication will be provided via fibre optic link. The fibre optic service has been designed to incorporate a submarine cable from Tumut 3 power station across Talbingo Reservoir to Middle Bay, and then via a buried conduit within the access roads to the accommodation camp and the portal construction pad.
Water and waste water (sewage)	<p>A water services pipeline is proposed for the supply and discharge of water for the Exploratory Works which will pump water between Talbingo Reservoir and the exploratory tunnel portal, portal construction pad and accommodation camp.</p> <p>A package water treatment plant is proposed at the accommodation camp to provide potable water to the accommodation camp and portal construction pad facilities and will be treated to a standard that complies with the Australian Drinking Water Guidelines. The accommodation camp water supply will be pumped via the water pipeline from Talbingo Reservoir at Middle Bay.</p> <p>A package waste water (sewage) treatment plant (STP) is proposed at the accommodation camp for the Exploratory Works waste water. The STP will produce effluent quality comparable to standard for inland treatment facilities in the region (e.g. Cabramurra). Following treatment waste water will be discharged to Talbingo reservoir via the water services pipeline connecting the accommodation camp to Talbingo Reservoir.</p> <p>Waste water from the exploratory tunnel and concrete batching plant will either be re-used on site or sent to the waste water treatment plant for treatment prior to discharge.</p>

## 2.9 Construction and schedule

### 2.9.1 Geotechnical investigation

To assist the design development for the portal construction pad, accommodation camp, Middle Bay Road, Spillway Road, and Lobs Hole Ravine Road, further survey of ground conditions is required. A program of geotechnical investigations including geophysical survey, construction of test pits, and borehole drilling within the disturbance footprint, will be undertaken as part of construction. Excavation of test pits in areas where information on relatively shallow subsurface profiles is required, or where bulk sampling is required for laboratory testing. Borehole drilling is required to facilitate the detailed design of cuttings, bridge foundations, retaining wall foundations, and drainage structures.

### 2.9.2 Construction activities

A disturbance footprint has been identified for the Exploratory Works. The extent of the disturbance footprint is shown on Figure 2.1 and shows the area required for construction including the buildings and structures, portal construction pad, road widenings and bridges, laydown areas, and rock emplacement areas. Typical construction activities that will occur within the footprint are summarised in Table 2.4.

TABLE 2.4 CONSTRUCTION ACTIVITIES

Activity	Typical method
Geophysical and geotechnical investigation	<p>Geophysical surveys will generally involve:</p> <ul style="list-style-type: none"> <li>• laying a geophone cable at the required location and establishing seismic holes;</li> <li>• blasting of explosives within seismic holes; and</li> <li>• in-reservoir geophysics surveys will use an air gun as the seismic source.</li> </ul> <p>Geotechnical surveys will generally involve:</p> <ul style="list-style-type: none"> <li>• establishing a drill pad including clearing and setup of environmental controls where required;</li> <li>• drilling a borehole to required depth using a tracked or truck mounted drill rig; and</li> <li>• installing piezometers where required for future monitoring program.</li> </ul> <p>Geophysical and geotechnical investigation within Talbingo Reservoir will be carried out using barges and subject to environmental controls.</p>
Site establishment for portal construction pad, accommodation camp, rock placement areas and laydown areas	<p>Site establishment will generally involve:</p> <ul style="list-style-type: none"> <li>• identifying and flagging areas that are to be avoided during the Exploratory Works period;</li> <li>• clearing of vegetation within the disturbance footprint, typically using chainsaws, bulldozers and excavators;</li> <li>• civil earthworks to create a stable and level area suitable for establishment. This will involve a cut and fill approach where required to minimise the requirement for imported material;</li> <li>• installing site drainage, soil erosion and other permanent environmental controls where required;</li> <li>• surface finishing, compacting only existing material where possible, or importing additional material. Where suitable, this material will be sourced locally (eg from upgrade works to Lobs Hole Ravine Road); and</li> <li>• set up and commissioning of supporting infrastructure.</li> </ul>
Road works	<p>Upgrades of existing tracks (no widening) will generally involve:</p> <ul style="list-style-type: none"> <li>• identifying and flagging areas that are to be avoided during the Exploratory Works period; and</li> <li>• removing high points, infilling scours, levelling of rutting, and compacting surfaces.</li> </ul> <p>Extension or widening of existing tracks will generally involve:</p> <ul style="list-style-type: none"> <li>• identifying and flagging areas that are to be avoided during the Exploratory Works period;</li> <li>• installing site drainage, soil erosion and other permanent environmental controls where required;</li> <li>• clearing and earthworks within the disturbance footprint; and</li> <li>• placing road pavement material on the roadway.</li> </ul>
Bridge works	<p>Establishment of permanent bridges will generally involve:</p> <ul style="list-style-type: none"> <li>• installing erosion and sedimentation controls around watercourses and installing scour protection as required;</li> <li>• establishing temporary diversions within the watercourse where required, including work to maintain fish passage;</li> <li>• establishing temporary bridges to facilitate permanent bridge construction;</li> <li>• constructing permanent bridges including piling, establishment of abutments</li> </ul>

Activity	Typical method
	and piers; and
	<ul style="list-style-type: none"> <li>removal and rehabilitation of temporary bridges and diversions.</li> </ul>
Barge access works	Establishment of barge access infrastructure will generally involve: <ul style="list-style-type: none"> <li>installing sediment controls;</li> <li>excavating and dredging of barge ramp area and navigation channel;</li> <li>installing precast concrete planks and bollards; and</li> <li>set up and commissioning of supporting infrastructure.</li> </ul>
Exploratory tunnel construction	The drill and blast excavation process will be repeated cyclically throughout the tunnelling works, involving: <ul style="list-style-type: none"> <li>marking up and drilling blast holes in a predetermined pattern in the working face of the tunnel;</li> <li>loading the blast holes with explosives, attaching detonators and connecting the holes into a blast sequence, and detonating the blast;</li> <li>ventilating the tunnel to remove blast fumes and dust;</li> <li>removing blasted rock;</li> <li>scaling and wash down of the tunnel roof and walls to remove loosened pieces of rock;</li> <li>geological mapping of the exposed rock faces and classification of the conditions to determine suitable ground support systems for installation;</li> <li>installing ground support; and</li> <li>advancing construction ventilation ducting and other utilities including power, water, compressed air and communications.</li> </ul>

### 2.9.3 Ancillary construction areas

Ancillary facilities and laydown areas have been identified within the conceptual layout for the portal construction pad and accommodation camp. A number of other indicative construction and laydown areas have also been identified to support Exploratory Works. A summary of these sites are:

- Upper Lobs Hole Ravine Road laydown area;
- rock emplacement area laydown, storage and ancillary uses;
- barge access infrastructure laydown areas at Talbingo and Middle Bay; and
- other minor laydown areas as needed during site establishment of watercourse crossings.

All laydown areas are within the disturbance footprint identified for Exploratory Works.

In addition, an area near Camp Bridge has been identified to be used for a plant nursery and organic stockpile area. Construction workforce requirements

### 2.9.4 Construction workforce requirements

#### i. Staffing levels

It is currently expected that workforce for Exploratory Works will be approximately 200 people in total at peak construction. Workers are anticipated to work a 'swing' shift, for example two weeks on and one week off. These workers will be accommodated within the accommodation camp at Lobs Hole when rostered on.

The majority of the workforce will work on a fly-in fly-out and drive-in drive-out basis. It is expected that the majority of workers will fly in and out of either Cooma Airport or Canberra Airport and then travel to site via bus.

During construction of the accommodation camp, workers will be accommodated at Cabramurra. Some workers may also be accommodated at Snowy Hydro existing accommodation units at Talbingo during construction of the Talbingo barge ramp. No accommodation will be required outside of Cabramurra, the construction accommodation camp or Talbingo for the Exploratory Works workforce.

## ii. Hours of operation

It is expected that construction of the exploratory tunnel and haulage of rock material between the tunnel and excavated rock stockpile locations at Lobs Hole will be 24 hours a day, seven days a week for the duration of the tunnel drilling and blasting operation. Other construction activities, including the establishment works, road and infrastructure works, will normally work a 12 hour day, seven days a week.

The transport of materials along the haul route from Snowy Mountains Highway, Link Road and Upper Lobs Hole Ravine Road will only occur during day time hours (except during emergency), to avoid impacts to threatened species (Smoky Mouse). Transport by barge will be 24 hours a day, seven days a week.

## 2.9.5 Timing and staging

Exploratory Works are expected to take about 34 months, with the exploratory tunnel expected to be completed by late 2021.

It is expected that the construction works will be completed largely in parallel. However, road and access works are expected to be completed within the first six months from commencement. The proposed staging of construction activities are highlighted in Table 2.5.

TABLE 2.5 INDICATIVE STAGING OF CONSTRUCTION

Construction works	2018	2019	2020	2021
Access roads				
Portal construction pad				
Accommodation camp				
Services infrastructure				
Barge access infrastructure				
Tunnelling				
Excavated rock management				

## 2.9.6 Site rehabilitation

All Exploratory Works align with components of the main works for Snowy 2.0. However, should Snowy 2.0 not be approved or not progress, the project area will need to be rehabilitated, and project elements decommissioned in consultation with NPWS. Anticipated rehabilitation activities are summarised in Table 2.6.



TABLE 2.6 PLANNED REHABILITATION ACTIVITIES

Exploratory Works element	Indicative rehabilitation activities
Exploratory tunnel	Tunnel to remain open, and allowed to flood in lower portion provided groundwater impacts are negated.
Exploratory tunnel portal area	Permanent portal facade to be constructed, portal to be sealed from entry.
Portal construction pad and associated infrastructure	To be demobilised and all infrastructure removed. Site to be revegetated and returned to “original state”.
Excavated rock emplacement areas	Emplaced excavated rock in the western emplacement area to be revegetated and returned to “original state”. The eastern emplacement area could remain in situ and the landform rehabilitated as agreed with NPWS.
Accommodation camp	To be demobilised and all infrastructure removed. Site to be revegetated and returned to “original state”.
Road access works	No remediation required as works are to be designed to be permanent.
Barge access infrastructure	No remediation works required as wharf and loading ramps are designed as permanent. Wharf can be removed if desired.
Services and infrastructure	To be demobilised and all infrastructure removed. Site to be revegetated and returned to “original state”.

## 2.10 Decommissioning

Should Snowy 2.0 not proceed following the commencement or completion of Exploratory Works, elements constructed are able to be decommissioned and areas rehabilitated. Given works are within KNP, Snow Hydro will liaise closely with NPWS to determine the extent of decommissioning and types of rehabilitation to be undertaken. This approach will be taken to ensure that decommissioning allows for integration with future planned recreational use of these areas and to maintain the values of KNP.

## 2.11 Key aspects relevant to recreational users

A review of the proposed Exploratory Works and associated activities identifies some potential recreational user impacts. The following aspects of the project are considered relevant to this assessment:

- the closure of Lobs Hole Ravine Road and the Lobs Hole Ravine campground – restricting access to the Lobs Hole Ravine area for the duration of the Exploratory Works will impact current and potential users of the road and site including campers, drive tourers, fishers and those who visit the area with an interest in its heritage;
- barge operations on Talbingo Reservoir – the proposed barge access infrastructure and the operation of the barge on Talbingo Reservoir has the potential to impact swimmers, water skiers, fishers and boat and other water craft users on the reservoir; and
- traffic movements – increased traffic along the primary transport routes.

# 3 Recreational User Impacts

## 3.1 Overview

### 3.1.1 Kosciuszko National Park

Most of the recreational use areas impacted by the Exploratory Works are within KNP, with the exception of some of the foreshore of Talbingo Reservoir.

KNP is 690,425 hectares<sup>1</sup> and is the largest national park in NSW and one of the best known and best loved national parks in Australia. It is contiguous with Namadgi National Park in the Australian Capital Territory in the north east, and the Alpine National Park in Victoria to the south.

The NSW National Parks and Wildlife Service (NPWS), as the land management agency responsible for KNP, was consulted throughout the development of this impacts assessment and provided detailed advice for the formulation of mitigation strategies to address the impacts on recreational users.

### 3.1.2 Kosciuszko National Park Plan of Management

Recreation in KNP is managed under the 2006 Plan of Management for Kosciuszko National (POM). The POM recognises that the park is a nationally significant place for outdoor recreation because there are few other places in Australia that offer the opportunity for snow play and snow sports, because there are extensive and diverse natural and cultural features and landscapes, and because of the cultural heritage of the park, which includes evidence of Aboriginal and European phases of historic land use.

The POM's management objectives for recreation prioritise managing conflicting uses; providing a spectrum of recreational opportunities and settings in the long term with experiences across different activities in a mix of different physical, biological, social and managerial settings; and minimising adverse impacts from visitors on the other values of the park.

The zoning/recreational activity schedule of the POM divides the park into management units and prescribes the recreational activities that are permitted, managed and promoted within each management unit.

The Exploratory Works project area is located within the northern area of KNP and includes the Lobs Hole mining area and the Ravine campground. This area is referred to in this report as Lobs Hole Ravine. The northern area of KNP includes areas that are zoned as:

- Wilderness – wilderness areas declared under the NSW Wilderness Act 1987;
- Back Country – parts of KNP without public road access and not within declared wilderness areas;
- Minor Road Corridors – corridors along minor public roads and associated visitor developments;
- Major Road Corridors – corridors along major sealed and unsealed public roads and associated visitor developments; and
- Visitor Services Zone – alpine resorts, development nodes and operational centres.

Most of the camping and visitor use areas in the northern part of KNP are within the “Minor Road Corridors” zone that allows for car-based camping, sightseeing and picnicking, none of which are allowed in the Wilderness and Back Country zones. A key aim of the Minor Road Corridors zone is “the provision of

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<sup>1</sup>

opportunities for “soft” adventures in which visitors can experience a sense of isolation, and appreciate the values of the park, in the presence of relatively small numbers of people and in settings with low to moderate levels of on-site management presence”<sup>2</sup>.

Some roads in KNP are intended to provide a more challenging touring experience to visitor use sites in which few or no facilities are provided. The Lobs Hole Ravine Road is included in the “Minor Road Corridor” zone and is one of only a few in KNP that offers a more challenging drive touring experience. The relatively difficult level of access to this precinct enhances the sense of isolation and remoteness of the campground that has a low level of on-site management presence and no facilities provided.

### **3.2 Recreation in Northern Kosciuszko National Park**

Recreational activities undertaken in the northern area of KNP include drive touring, picnicking, camping, walking, horse riding, cross country skiing, downhill skiing, snowboarding and snow play, cycling, climbing, caving, canoeing and rafting, boating and fishing. Popular sites for recreational activities are shown on Figure 3.1.

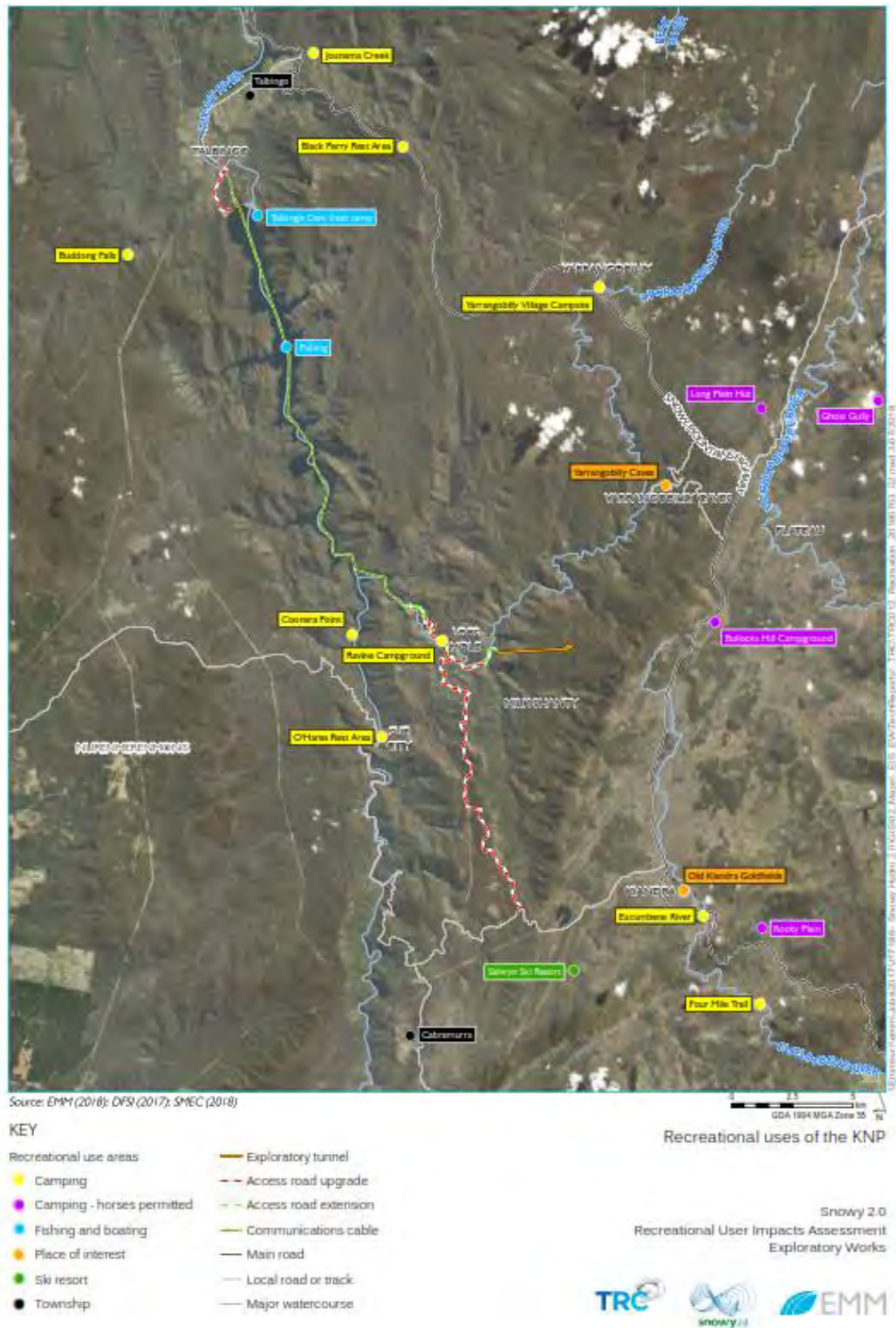
No park use fees or camping fees are currently collected in the northern area of KNP, with the exception of the Yarrangobilly Caves precinct, where fees of \$4 per vehicle per day apply, and the Link Road (for access to Selwyn Snowfields) where park use fees of \$29 per vehicle per day apply between the June and October long weekends.

Recreational use of the north end of the park is centred around a number of geographical precincts, each of which have different uses and users. Those directly affected by the Exploratory Works are only Lobs Hole Ravine and Talbingo Reservoir. Other precincts and their use are described below both to provide context and because some of those sites might be indirectly impacted by displacement of visitors from Lobs Hole Ravine and Talbingo Reservoir.

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<sup>2</sup> Kosciuszko National Park Plan of Management 2006, Department of Environment and Conservation NSW, page 31

FIGURE 3.1 MAP OF RECREATIONAL AREAS IN NORTHERN KOSCIUSZKO NATIONAL PARK





### 3.2.1 Recreational Precincts of Kosciuszko National Park

#### *Blowering*

Accessible campgrounds with pit toilets, picnic tables and fire places are clustered along the Snowy Mountains Highway around the Blowering Dam foreshores. These campgrounds (Yolde, Humes Crossing, Log Bridge Creek, Old Yachting Point and The Pines) are popular with people using the dam for fishing and water skiing. While the dam stores water released from the Snowy Scheme for release into the Murrumbidgee Irrigation Area, the dam does not form part of the scheme. Blowering Dam is managed by WaterNSW. The area is busy between October and April, but recreational use is affected by the level of the dam as low water levels impact on campsites and access to the lake edge.

#### *Snowy Mountain Highway Corridor*

The Snowy Mountains Highway is a major through route from Tumut and areas west including off the Hume Highway, to Cooma and the Monaro and onwards to the South Coast. A number of sites of interest as well as campgrounds are located along the Snowy Mountains Highway corridor, in close proximity to the road. These sites suit touring travellers as they are easy to access. NPWS reports these sites are becoming increasingly popular with “grey nomads” in campervans and caravans as well as camping. These types of campers tend to stay longer and require more room because of their larger set ups. A recent trend has been observed<sup>3</sup> where this type of visitor is spending the maximum period of time allowed in campsites (three weeks) as part of extended trips.

The Yarrangobilly Village campground has toilets, BBQ facilities and picnic tables. The campground is located beside the Snowy Mountains Highway, adjacent to Cotterill’s Cottage. This campground is suitable for tents, camper trailers and caravans.

Further south along the Snowy Mountains Highway, Bullocks Horse Camp and the Rocky Plain campgrounds provide the opportunity to camp with horses within close proximity to the main road.

The Eucumbene River near Kiandra is also a popular area for informal camping without facilities and with easy access to fishing.

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<sup>3</sup> Discussions with NPWS staff, April 2018



IMAGE 1 YARRANGOBILLY VILLAGE CAMPGROUND APRIL 10 2018 (TRC)



IMAGE 2 YARRANGOBILLY VILLAGE CAMPGROUND APRIL 10 2018 (TRC)



### *Long Plain/Blue Waterholes*

Long Plain Road provides access to the Long Plain Hut campground, Ghost Gully campground and Cooinbil Hut. The road is unsealed but accessible by 2WD. It is closed between the June and October long weekends. The Long Plain Road campgrounds have basic facilities, including toilets, and are popular with horse riders as horses are permitted at the campground and along trails in the area. This precinct is popular for horse riding as well as sightseeing/car touring.



IMAGE 3 LONG PLAIN HUT CAMPGROUND MARCH 31 2018 (TRC)

Blue Waterholes is also accessed from the Long Plain Road and is one of the more popular locations in the northern area of KNP. Campers and day visitors visit Blue Waterholes to hike the Clarke Gorge and Nichols Gorge walking tracks, enjoy the waterholes and rock formations of the Cave Creek. The Cooleman Mountain and Cooinbil campgrounds are located within easy travel distance of Blue Waterholes.



IMAGE 4 BLUE WATERHOLES CAMPGROUND (OEH)

### *Talbingo Reservoir*

Talbingo Reservoir is approximately 5km south of the township of Talbingo. It is popular with water skiers and fishers and is stocked with Rainbow Trout and Trout Cod, however aquatic ecology surveys completed for the Exploratory Works EIS found few (if any) trout. The predominant species noted in the survey was Redfin perch, listed as a Class 1 noxious fish in NSW.

The proposal for Exploratory Works includes the construction of a ramp on the spillway on the western side of the reservoir, which will be referred to as the Talbingo barge ramp. The spillway is located outside the boundary of KNP, and is managed by Snowy Hydro, however the site is also used by some visitors to access sites in KNP along the shores of the reservoir. Picnic tables and toilets are provided at the spillway. A ramp will also be constructed at Middle Bay; there are currently no visitor facilities in this location.



IMAGE 5 TALBINGO SPILLWAY APRIL 1 2018 (TRC)



IMAGE 6 TALBINGO SPILLWAY APRIL 1 2018 (TRC)



### *Yarrangobilly Caves*

The Yarrangobilly Caves precinct is one of the main visitor attractions in KNP. It is the largest karst area in the park, with guided and self guided tours through six of the highly decorated show caves. The area has been a tourist attraction since 1882, and the historic Yarrangobilly Caves House has been refurbished to provide visitor accommodation. The Yarrangobilly Caves precinct is managed as a Visitor Services Zone, which caters for visitors seeking “short duration experiences in natural or natural appearing settings in which they are likely to encounter relatively large numbers of other people<sup>4</sup>”. There is a small visitor centre, a number of walking tracks, a thermal pool, barbeques and picnic tables.

### *Tantangara Reservoir*

The area around the foreshores of Tantangara Reservoir is a popular part of the KNP. The reservoir is appealing to fishers and during the summer many people camp around the foreshores of the reservoir with their boats. Beyond that, there a number of well used campgrounds to the south and east of the reservoir that allow camping with horses. Wares Yard and Old Snowy Camp situated on the Tantangara Road are overnight stops for horse riders including commercial operators offering horse riding tours.

The historic Currango Homestead is located some 25km beyond the Tantangara Dam wall along the Pockets Saddle Road. This is very popular accommodation from where people walk, mountain bike ride, horse ride and fish.

A number of trails that can be used for horse riding, walking or cycling cross the area around Tantangara Reservoir, including some that are parts of multi-day walks or rides.



IMAGE 7 TANTANGARA FORESHORE CAMPING (TRC)

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<sup>4</sup> Kosciuszko National Park Plan of Management 2006, page 33

### *Selwyn Snowfields/Cabramurra*

Selwyn Snowfields is a small (approximately 45 hectares) ski field located on the Kings Cross Road, off the Link Road, offering predominantly beginner and intermediate level skiing. The Selwyn Management Unit is zoned as an Area of Exceptional Recreational Significance in the POM. The resort is leased to Selwyn Snow Resort Pty Ltd by the NSW Government.

All visitors to the resort are day visitors as there is no overnight accommodation for visitors in the resort. It does not offer any summer activities.

Cabramurra was originally built to accommodate workers in the original Snowy Scheme and was modernised and rebuilt in the early 1970s. The town is still used to accommodate Snowy Hydro workers and contractors and has a general store and coffee shop. Accommodation at Cabramurra is not available to the public.

### *Elliot Way corridor*

The Elliot Way is a scenic touring route between Tooma and Cabramurra. The road is windy and steep in sections as it descends to the bottom of the Tumut Valley and crosses the Tumut River five times.

O'Hares Rest Area is located just off the Elliot Way on the southern shores of Talbingo Reservoir. Camping is allowed, and a boat ramp provides access to the water for boating, fishing and water skiing and access to sites further up the reservoir, such as Coonara Point and Ravine campground.



IMAGE 8 O'HARES REST AREA (OEH)





IMAGE 9 CARAVANS SET UP ALONG THE WATER AT O'HARES REST AREA CAMPGROUND MARCH 31 2018 (TRC)



IMAGE 10 O'HARES REST AREA MARCH 31 2018 (TRC)

### 3.2.2 Multi day walking and riding tracks

Three well known tracks go through the northern end of KNP. These are the Hume and Hovell Track (currently also being assessed as to its suitability for mountain bike riding as well as walking), the National Bicentennial Trail and the Australian Alps Walking Track.

The Hume and Hovell Track cuts across the north western tip of the Goobarragandra Wilderness Area, then continues outside KNP on the western foreshores of Blowering Dam and Jounama Pondage opposite the township of Talbingo, before re-entering the park about 3 km from Buddong Falls.

The National Bicentennial Trail is a horse riding trail that stretches over 5,000 km from Cooktown in tropical far north Queensland to Healesville in Victoria. This crosses through the north end of KNP, travelling near Currango Homestead in a southerly direction between Old Snowy Camp and Wares Yard. Whilst predominantly a horse riding trail, some walking also occurs on the National Bicentennial Trail.

The Australian Alps Walking Track which comes from Namadgi in the ACT and goes to Walhalla in Victoria, travels between Tantangara and Talbingo reservoirs, past Kiandra.

### 3.2.3 Commercial Tour Operators

Two commercial tour operators run horse riding tours in the north end of KNP *Reynella Rides* and *Cochran Horse Treks*. These tours are guided rides with horses, equipment, meals, tents and mattresses provided. The season for both operators runs from October to the end of April.

*Cochran Horse Treks* offers three to seven day treks from homesteads at Yaouk and Khancoban including camping in the park. *Reynella Rides* offers trips of three to five days through the north of KNP across Currango Plain, Tantangara Creek and Mount Tantangara including camping in the park.

Four-wheel drive tours are offered in the north end of the park by *Getabout 4WD Adventures*. They offer tagalong tours where participants use their own four wheel drive vehicles and drive in convoy with a guide vehicle.

*Outward Bound* runs adventure experiences for school and youth groups including camping and walking in the park.

### 3.2.4 Remote Campgrounds

There are a number of campgrounds in the north end of KNP outside the major recreation precincts in the minor road corridor zone at which camping is allowed under the POM but no facilities are provided. These include Lobs Hole Ravine, Broken Cart, Eucumbene River, Perkins Flat and Tumut Ponds.



### 3.3 Visitation

#### 3.3.1 Existing data

KNP is the sixth most visited national park in NSW with almost 2.2 million domestic visitors to the park in 2016.<sup>5</sup> This was a sharp increase of just over 740,000 visitors, or 52% on 2014 visitor numbers.

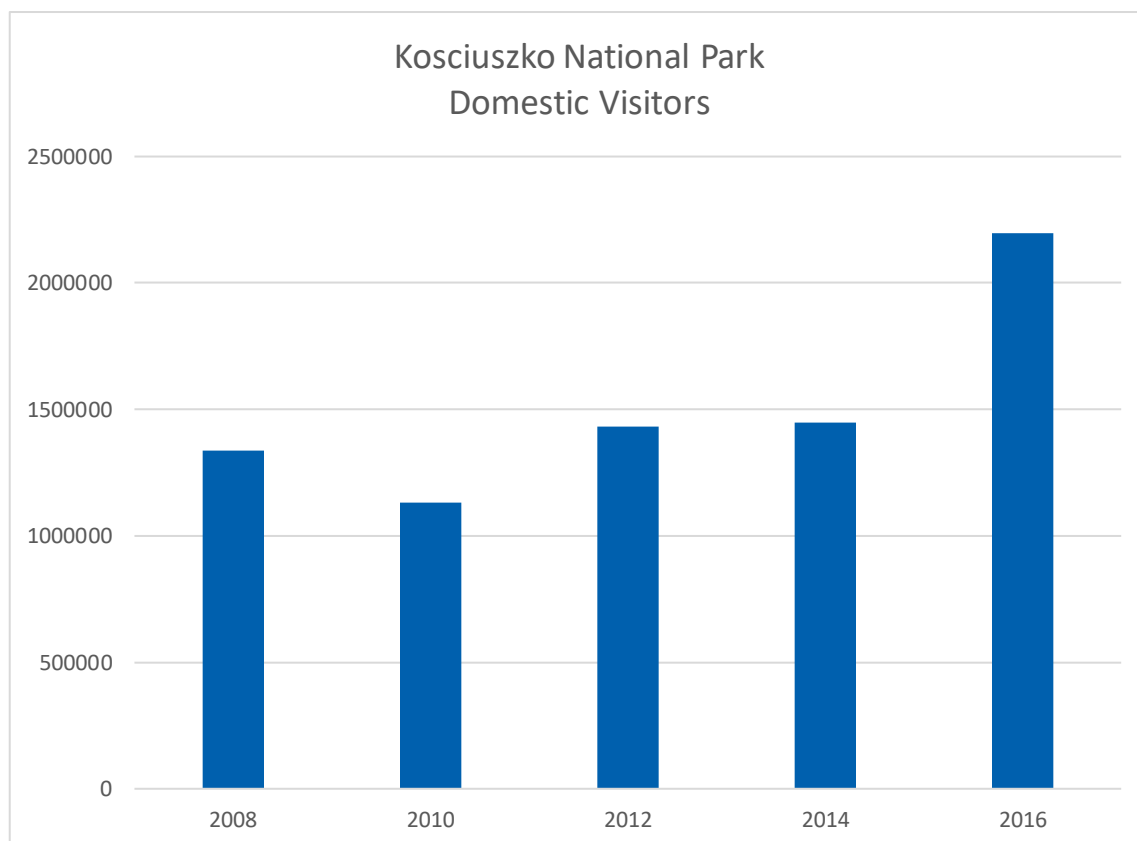


FIGURE 3.2 DOMESTIC VISITATION TO KOSCIUSZKO NATIONAL PARK. SOURCE: OEH

There is little visitor data available on visitation to the northern end of KNP. There is no requirement to either book sites or pay park use fees or camping fees in camp grounds, except at Yarrangobilly Caves, where 11,756 site fee permits were purchased over the 12 months to the end of April 2018<sup>6</sup>. Note that vehicles with National Parks Annual Passes do not need to purchase the site fee so this number does not represent total vehicles visiting the site. The total number of people who toured the caves in the 2015-16 financial year was 25,817.<sup>7</sup>

<sup>5</sup> Annual Visits to NSW National Parks and Wildlife Service Managed Parks and Reserves 2016 State Report. Roy Morgan Research, May 2017

<sup>6</sup> NPWS

<sup>7</sup> ibid

### 3.3.2 Collection of new data

This Recreational User Impacts Assessment was undertaken in consultation with stakeholders, with NPWS and KNP users considered the key stakeholder groups. Qualitative and quantitative data has been collected through this consultation and NPWS as the land manager of most of the land affected by the Exploratory Works was consulted through all phases of the assessment.

Initial inputs involved site visits to affected and potentially affected areas within KNP with John Hepper of Inspiring Places, information from which was provided to TRC on commencement of the next phase of the project. NPWS staff also provided data (where available) and background information on current use and management issues. Survey questions (see below) and methodology were also developed with the assistance of NPWS, and TRC liaised closely with NPWS during the implementation of the surveys.

To give some indication of visitor numbers, camping and day use areas likely to be impacted by the Exploratory Works (both directly and indirectly) were surveyed over six days during March and April 2018, including three days over the peak Easter period and one day (Saturday 14 April) which corresponded with the first weekend of the NSW and ACT school holidays and the final weekend of the Victorian school holidays. Surveys were also undertaken over two days outside the holiday periods (Saturday 7 April and Sunday 8 April) to ascertain usage of campgrounds outside of the busier times.

Easter 2018 fell early, with Good Friday on March 31, and the weather was particularly favourable for outdoor activities. It is considered (anecdotal discussion with NPWS) that these two days would have been amongst the busiest in the year, if not the busiest, at most sites.

Surveys were also conducted at O'Hares Rest Area, around Tantangara Foreshores, at Talbingo Reservoir, Three Mile Dam campground, Rocky Plain campground and Talbingo Reservoir. Although campgrounds were busy compared to other times of the year<sup>8</sup> none were full. The informal nature of the campgrounds means that while visitors might have to camp further from the most desirable locations (water and facilities) in busier periods at most campgrounds they can still get a spot.

### 3.3.3 Park User Surveys

Inputs from park users were sought via surveys conducted in KNP over the survey period. Surveys were conducted at Lobs Hole Ravine campground over two days on Saturday 31 March and Sunday 1 April and again on the morning of 7 April. Each individual camp site was visited over these dates. No refusals to participate were received so the survey represents a complete sample of visitors at the Lobs Hole Ravine campground over these days.

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<sup>8</sup> TRC Park User Surveys March/April 2018, NPWS discussions



IMAGE 11 TRC STAFF SURVEYING PARK USERS AT TANTANGARA OVER EASTER

Sixteen groups (93 people) were surveyed at Lobs Hole Ravine on 31 March and 1 April (Easter Saturday and Sunday) and two groups (15 people) on Saturday 7 April.

Mr George Thomas, who has a family connection to the area, also assisted with the distribution of the survey and emailed the survey to his contacts. These were others in the Thomas family and also the Wagga Wagga Wilderness Walkers. Thirty nine surveys were completed by email.

In total, 57 surveys of Lobs Hole Ravine users were completed, representing approximately 521 park users (based on group size).

Visitors at Three Mile Dam, Talbingo Reservoir and the Talbingo Caravan Park were also surveyed. The Talbingo Caravan Park also distributed online surveys to customers. In total, 26 surveys of Talbingo Reservoir users were completed, representing approximately 254 users (based on group size).

The survey was not intended to provide a representative sample of users of the area but to contribute to the understanding of scale of visitor numbers and to gain insights into the motivations for use and the values of the area for KNP users. Lobs Hole Ravine Users were also asked where they were likely to go if they could not access the Lobs Hole Ravine area.

### 3.3.4 Survey Results Summary

Survey results are attached in full at Appendix 1 and 2. In summary, the surveys provide the following insights into users of the Lobs Hole Ravine area:

- The site is not a high visitation area; over the peak Easter period approximately 96 people were counted at the site;
- Visitors are generally from within the local area, with most travelling less than three hours to visit the Lobs Hole Ravine area;
- Users value the scenery, remoteness, unspoiled nature and lack of crowds at the site. For those with a family connection, the history of the place was also important;
- For a proportion of people (12% of those surveyed on site and 50% of those surveyed online) Lobs Hole Ravine is the only place in KNP they visit; and
- Most of those surveyed will be likely to go elsewhere in KNP if they cannot go to Lobs Hole Ravine; some will travel outside the park.

The surveys provide the following insights into users of Talbingo Reservoir:

- Talbingo is characterised by high levels of repeat visitation with more than 60% of respondents having visited more than 50 times;
- Fishing, swimming and water skiing were the most popular activities;
- The scenery and the activities available at Talbingo were the most highly valued attributes;
- A high proportion of visitors to Talbingo don't go anywhere else in Kosciuszko National Park; and
- Lake levels were a significant concern to Talbingo Reservoir users.

## 3.4 Impacts on Park Users

Recreational values are affected by a range of factors, such as the activities available at a location, the quality of the activity (e.g. the quality of the fishing or cycling trails), the availability of the activity elsewhere, the scenic amenity of the area in which the activity takes place and the opportunity to connect with nature, the numbers of other people in the area and the opportunity to connect with others, or to find solitude. The severity of the impact depends on the change to these values as a result of the proposed works. The significance of an impact is assessed by considering the change to the recreational value and the magnitude of the impact before and after the application of mitigation and management measures, using the risk levels described in Table 3.1.

TABLE 3.1 RISK LEVELS

Degree of Impact	Description of Degree of Impact
Low	An impact on one or two of the recreational values of an area that is temporary or short term and affects a small number or only some users.
Medium	An impact that changes the recreational values of an area for a longer period or for a larger number of users.
High	An impact that is long lasting or results in substantial and irreversible change to the recreational value of an area affecting a significant proportion of visitors to an area.

Table 3.2 summarises the impacts and assesses each according to the table both before and after mitigation.



## 3.5 Lobs Hole Ravine Exploratory Works Site – Impacts on recreational use

### 3.5.1 The site

Lobs Hole Ravine is a remote campground situated beside the Yarrangobilly River. Campsites are unmarked and there are no facilities provided. Fishing and swimming in the Yarrangobilly River, drive touring and the remote nature of the location are the main appeals of the Lobs Hole Ravine area for visitors. Camping at Ravine is permitted under the POM, and the campground is managed as a remote site. People camp at informal sites along a 2 km stretch beside the river and up the arm of the Talbingo Reservoir. The amount of space and the topography allows for groups to have their own space at a reasonable distance from other visitors. There is no mobile phone reception. The scenery, remoteness, (perceived) unspoiled nature isolated nature and lack of crowds of/at site are drawcards for many visitors.<sup>9</sup>

Lobs Hole was previously settled by pastoralists in the mid 1800s and was the site of a copper mining operation which continued on the site for 50 years<sup>10</sup>, a much longer period than most of the other mining which occurred in the park. The Lobs Hole mining area is identified as a heritage precinct in the POM. Evidence of this era of the site exists through mine tailings and the ruins of the Washington Hotel.

The POM notes that “for some people, particular recreational activities and destinations present direct personal links with family and community histories.”<sup>11</sup> This is relevant for the Lobs Hole Ravine area as there is an active group of descendants of John Thomas, who resided in the area in the later 1800s, who are interested in their family history and visit the location because of this connection.

### 3.5.2 Recreational Use of Lobs Hole Ravine

Visitors are attracted to Lobs Hole Ravine for a number of reasons<sup>12</sup>:

- as part of a wider vehicle touring route through the park;
- because of a family connection to the area;
- for fishing;
- for a remote camping experience not available in many locations elsewhere in the park;
- for bushwalking; and
- as a destination on a canoe/kayaking or boat trip from Talbingo Reservoir.

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<sup>9</sup> TRC Park User Surveys March/April 2018

<sup>10</sup> Kosciuszko National Park Plan of Management 2006, page 82.

<sup>11</sup> Ibid, page 104

<sup>12</sup> TRC Park User Surveys, March/April 2018



IMAGE 12 CAMPSITE AT LOBS HOLE RAVINE ALONG YARRANGOBILLY RIVER MARCH 31, 2018 (TRC)



IMAGE 13 CAMPSITE AT LOBS HOLE RAVINE ALONG YARRANGOBILLY RIVER MARCH 31, 2018 (TRC)





IMAGE 14 CAMPSITE AT LOBS HOLE RAVINE ALONG TALBINGO RESERVOIR ARM MARCH 31, 2018 (TRC)



IMAGE 15 CANOES ON TALBINGO RESERVOIR ARM MARCH 31, 2018 (TRC)

### 3.5.3 Impacts of Exploratory Works at Lobs Hole Ravine

#### *Access to Lobs Hole Ravine - Immediate Impacts*

As part of the Exploratory Works, road access to Lobs Hole Ravine (via Lobs Hole Ravine Road) will be upgraded for operational vehicles (see section 2.6.1) but closed to the public from both access points on the Link Road and the Snowy Mountains Highway for the duration of the Exploratory Works project. The closure of Lobs Hole Ravine Road will have an immediate impact on Lobs Hole Ravine users as the site will no longer be able to be accessed for recreational purposes for the duration of the Exploratory Works (and for the duration of the Project if it progresses to that stage). The site will also be unable to be accessed for recreational purposes from the Talbingo reservoir.

Visitor counts over Easter recorded approximately 96 people camping in the area. Easter represents a peak period at the campground, but even if this level of visitation occurred every weekend<sup>13</sup> over summer the total number of visitors impacted would be less than 2,500, a very small proportion of the total 2.2 million domestic visitors to KNP. It should be noted that vehicle tourers through the area are not included in this number. It was not possible to quantify the number of vehicle tourers during the study.

Survey results indicate that some users will choose to relocate to other places in KNP with others going outside the park. For those who are visiting the site because of their family connection to the area, the impact will be higher. Although the family history remains (and it is well documented) the physical site will not be able to be accessed until the completion of Exploratory Works. Some of those with a family connection to the area indicated in survey responses that if they cannot visit Lobs Hole they will not go anywhere else.

“It is the place my family have been coming for years, and in terms of space and remoteness for a large family, apart from our family connection to the area, nowhere else has ever compared. It is also a central location for all our family and we haven’t been able to determine a place that would otherwise meet our needs and bring the same enjoyment.” (TRC Park User Surveys March/April 2018)

#### *Displacement*

The closure of the Lobs Hole Ravine areas will result in some displacement of users to other areas. Survey results indicate that some users will choose to recreate outside KNP (for example at the coast), some users will choose not to camp at all, and some users are likely to go elsewhere in the park, which will in turn impact on those areas with increased demand for campsites, fishing, bushwalking and driving experiences in other precincts. The places most commonly nominated by users as alternative locations were Three Mile Dam, Yarrangobilly and Blowering.

#### *Recreational Demand from Construction Workers*

Detail on the transport arrangements and rosters for shift workers to be accommodated at Lobs Hole Ravine is not yet known, but, whilst much of the time spent on site will be on shift or resting, it is likely that some workers will want to walk, fish or explore the local area near the camp. While this will not be a significant number with total employment on site of approximately 200 workers, effective management of these activities needs to occur such that a) they do not impact on the environment and b) recreational users that have been displaced do not feel this is to the benefit of workers that have exclusive access to the area.

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<sup>13</sup> Archaeologists working at Lobs Hole Ravine for eight weeks from late January to late March reported there were very few visitors at the site during the week.



#### *Access to Lobs Hole Ravine -Long Term Impacts*

While the closure of Lobs Hole Ravine Road will have an immediate impact, on its reopening (on completion of the Exploratory Works or the Project) the upgraded road is likely to impact the visitor experience at the site in the long term and alter the visitor mix. Improved access will change the character of the remote experience that is valued by some current users, decreasing the appeal of the site for these visitors. At the same time, the easier access is likely to increase the appeal of the site for new visitors. The expected result is an overall increase of visitors to the area and a change to the visitor mix.

Given the improved access, returning the area to the current standard with no facilities and informal camping is impractical and difficult to achieve.

### **3.5.4 Mitigation**

To address the higher levels of visitation that are likely to occur as a result of the improved access, it is recommended that a master plan be developed and implemented for the Lobs Hole Ravine area. The master plan would need to be prepared and approved so that it can be implemented at the completion of works at Lobs Hole Ravine; either following Exploratory Works should Snowy 2.0 not proceed past these works; or after Snowy 2.0.

The master plan should consider issues such as:

- Vehicle access and potential vehicle conflict – from both directions and potential upgrading of the northern access;
- Changing user dynamics and use of the area (from current use);
- Planning for camping in a flexible and scalable approach addressing different user types into the future, e.g. individuals, groups, tents and camper trailers/caravans;
- Provision of designated camping sites as well as ‘general camp sites’;
- Consideration for collection of camping fees;
- Provision of toilets (type to be determined);
- Provision of a day use area;
- Provision of interpretation for Snowy 2.0 and KNP values – natural, aboriginal and cultural heritage in the Ravine; and
- Weed and feral animal control.

Work on the rehabilitation of the site and the installation of visitor infrastructure would commence before the conclusion of the Exploratory Works (or Snowy 2.0) to enable visitor use of the area to recommence as soon as possible.

The completion and implementation of a master plan has the potential to result in a positive impact from the Exploratory Works (or Snowy 2.0) in the long term for the site for some park users as the area will have improved access and will be likely to have increased facilities, toilets, interpretative materials etc. However, the user group may change and some previous (current) users will seek alternative areas for their more remote activities.

To address the impacts on those who are currently visiting the site for a remote camping experience accessed by 4WD, it is recommended that alternative sites for the provision of a similar experience for these users be considered as the impacts of the upgraded access on Lobs Hole Ravine will be permanent. Other locations in the park that offer the same or a similar combination of challenging access, few crowds, a remote site and waterside camping near fishing are limited. Perkins Flat, Broken Cart and Tumut Ponds all offer

remote camping by water but are all much smaller sites and do not have the capacity of Lobs Hole Ravine, and are already well utilised at peak periods such as Easter. Amendments to the POM may need to be considered at potential sites that could offer a comparable experience but are located on management trails that do not currently allow public access. Replication of the existing experience would not require a significant investment in infrastructure given that there is currently no infrastructure at Lobs Hole Ravine, although there may be some increased cost for road maintenance.

It is also recommended that site master planning be undertaken for busier areas potentially affected by displacement of Lobs Hole Ravine users (Three Mile Dam, Yarrangobilly Village, Eucumbene River, Blowering campgrounds) and increased demand from Exploratory Works workers to determine whether they will need any expansion, and how the current visitor experiences in those places will be maintained.

## 3.6 Talbingo Reservoir: Impacts of Exploratory Works

### 3.6.1 The site

Talbingo Reservoir is approximately 5 km from the Talbingo township. The dam is a rockfill dam with a gross capacity of 920,600 megalitres<sup>14</sup> and was the last completed dam in the Snowy Scheme, being completed in 1970. Public access to the dam for boats is from either a concrete boat ramp on the western side of the dam wall or a slipway on the eastern side. The reservoir is also accessible from points within KNP including Lobs Hole Ravine campground and O'Hares Camping and Rest Area.

Some of the visitors to Talbingo Reservoir stay in the township of Talbingo. Talbingo is located on the shores of the Jounama Pondage, 45 km south of Tumut and about 1 km outside the border of KNP. The town has a population of 239<sup>15</sup> and has a service station, golf course, country club motel, primary school, general store and caravan park. The caravan park has approximately 100 sites and has a mixture of annual visitors (who keep a permanent van on site and visit multiple times throughout the year) and casual visitors.

The operations of Snowy Hydro's Tumut 3 Power Station, which is located between the Talbingo Reservoir and Jounama Pondage, mean that for safety reasons there is no swimming or boating allowed on Jounama Pondage and fishing is allowed from the shore only. The Talbingo Reservoir and Blowering Dam (also about 5 km from the town but to the north) provide recreational opportunities for residents and visitors to the town.

### 3.6.2 Recreational Use of Talbingo Reservoir

Talbingo Reservoir is used for water skiing, paddle boarding, canoeing and swimming. It is also a popular fishing spot with Brown Trout, Rainbow Trout, Golden Perch, Macquarie Perch, Redfin and Trout Cod present, however surveys undertaken for the Exploratory Works indicate that Redfin is the predominant species. Picnic tables and toilets are provided at both the boat ramp and the spillway. There is no data available on recreational usage of the reservoir.

The area around the spillway is also used by trail bike riders - a number of riders were observed on the beach and in the hills around the spillway area on Easter Saturday.

Water skiing and water sports are seasonal with the season finishing by March or early April when the water gets too cold. The reservoir is open to fishing all year round. Traffic counts undertaken between March and April 2018 as part of the *Subaqueous excavated rock placement assessment* (RHDHV 2018) indicate a peak daily demand of 75 vessels per day using the boat ramp and a typical daily demand of less than 10 vessels.

<sup>14</sup> <http://www.snowyhydro.com.au/our-energy/hydro/the-assets/dams/>

<sup>15</sup> Census of Population and Housing, Australian Bureau of Statistics, 2016

Survey responses indicate that reservoir users value the scenery, activities and the unspoiled nature of the site as the most important attributes influencing their enjoyment of the site. The survey indicated high levels of repeat visitation with 61% of respondents indicating that they had visited the reservoir more than 50 times.



IMAGE 16 FAMILY PADDLE BOARDING ON TALBINGO RESERVOIR MARCH 31, 2018 (TRC)



IMAGE 17 WATER SKIING AT TALBINGO SPILLWAY MARCH 31, 2018 (TRC)



IMAGE 18 TRAIL BIKE RIDERS AT TALBINGO SPILLWAY MARCH 31, 2018 (TRC)

### 3.6.3 Impacts of Exploratory Works at Talbingo Reservoir

The Exploratory Works at Talbingo Reservoir involve the establishment of barge access to Lobs Hole Ravine. New ramps will be constructed on the northern end of the spillway on the western side of the reservoir, and at Middle Bay near Lobs Hole. Barges will transport bulky and heavy equipment on the reservoir between the two ramps.

The northern end of the spillway where the barge ramp will be constructed and operated will be closed to the public for the duration of Exploratory Works. Public access will be provided and maintained to the southern end of the spillway. There is an informal boat launching area ramp near Middle Bay, only accessible by a four wheel drive track, which will be closed.

The swimming enclosure located at the northern end of the spillway will be relocated to the southern end.

### 3.6.4 Access to Talbingo Reservoir Immediate Impacts

It is anticipated that the works at Talbingo Reservoir will only result in minor restrictions or exclusions for recreational users of Talbingo Reservoir. While public access to the northern end of the spillway will be closed to the public, access will be provided and maintained to the southern end. The swimming enclosure will be relocated to the southern of the spillway.

During the construction of the ramps some restrictions may apply to access to the spillway. When the barge is loading or unloading appropriate traffic and marine controls will be put in place to mitigate public access/interference.



### 3.6.5 Amenity at Talbingo Reservoir Immediate Impacts

There may be some amenity impacts on users of Talbingo Reservoir from the construction and operation of the ramps and operation of the barges, including noise and visual impact. The scenery at the reservoir is highly valued by users: responses to the survey indicate it is the most important element in users' enjoyment of the area.

The operation of the barge is not considered likely to have a significant impact on recreational users of the reservoir; it is anticipated there will only be two round trips per day and the size of the reservoir provides space to avoid collisions between the barge and recreational vessels<sup>16</sup>.

#### *Displacement*

Some users may find that the restrictions and amenity impacts are enough to persuade them to go elsewhere for fishing or water sports, although this is considered unlikely as a result of Exploratory Works. Should this be the case, increased use of Blowering Dam and Tantangara Reservoir is probable.

### 3.6.6 Talbingo Reservoir Long term impacts

The long term impacts at Talbingo Reservoir will depend on whether the ramps remain at the spillway and Middle Bay after the completion of the Exploratory Works (and Snowy 2.0 if it proceeds). There is the potential for the improved infrastructure to provide the opportunity for increased recreational use of the precinct.

### 3.6.7 Mitigation

Restrictions to access to Talbingo Reservoir at the spillway end for recreational users should be timed to avoid the peak visitor use periods:

- 7am-9am on weekends and school holidays between October and April; and
- All day during the Christmas to New Year and Easter holiday periods

Any restrictions to access to the spillway and reservoir itself, and the timetable for the operation of the barge should be communicated to reservoir users.

## 3.7 Impacts of Exploratory Works on Other Areas

There will be some indirect impact on park users as a result of the Exploratory Works such as increased traffic, noise and dust. The greatest traffic impact will be during winter which is the highest visitation period for Kiandra and Selwyn Snowfields.

The Snowy Mountains Highway will be the primary route providing vehicular access to the Exploratory Works from Tumut and Cooma via Link Road and Murray Jackson Drive. Increased traffic travelling along the Snowy Mountains Highway, the Link Road and Murray Jackson Drive is likely to have an impact on the journeys of some park users, in particular, during the winter months when there is a significant increase in traffic on the Snowy Mountains Highway and access road to the Selwyn Snowfields (KNP 5). At times of peak traffic (8-10 am and 3-5 pm Saturdays, Sundays and school holidays) queuing at the Vehicle Entry Station, slow driving in icy conditions, and roadside snow play may all be impacted by frequent and/or heavy vehicle traffic.

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<sup>16</sup> Subaqueous excavated rock placement assessment, Royal HaskoningDHV, July 2018.

Traffic management arrangements will need to be put in place to minimise the amenity and safety risks for recreational users during these periods of high traffic flow.

Increased traffic on Murray Jackson Drive is also expected however because of the existing standard of the road and traffic levels it is not expected that this will have a significant impact on recreational users.

Outside winter, roadside rest areas and campgrounds including Three Mile Dam and other sites along the Snowy Mountains Highway may experience impacts from dust and noise.

Separate studies have been undertaken to assess noise, air quality and traffic generated by Exploratory Works. These studies conclude that Exploratory Works are unlikely to have significant noise, air quality and traffic impacts on the local environment, including on recreational users.

### 3.8 Impacts Assessment Summary Table

TABLE 3.3 IMPACTS ASSESSMENT SUMMARY TABLE

	Direct Impact	Secondary Impact	Level of Impact		Mitigation/Offset	Residual Impact	
			During Exploratory Works	Project Completion		During Exploratory Works (Temporary Impact)	Project Completion (Permanent Impact)
Closure of Lobs Hole Ravine Campground	Lobs Hole Ravine family history visitors access to site of family history		High – family history remains but access to site not available	Low – access to site improved	Masterplan to consider inclusion of interpretive material outlining Aboriginal and European history	High	Low
	Lobs Hole Ravine fishers		High – nil use of campground available	Low	Provide alternative locations elsewhere in the park that could offer a similar experience such as Yans Crossing (may require POM amendments). Ensure park visitors are aware of similar alternative options such as Perkins Flat, Broken Cart and Tumut Ponds.	Medium	Low
	Lobs Hole Ravine remote campers		High – nil use of campground available	High – character of experience altered	Allow access to and camping in alternative locations elsewhere in the park that offer a similar experience such as Perkins Flat or Yans Crossing (may require POM amendments). Ensure park visitors are aware of alternative options	High	Medium
		Users of campsites elsewhere in the park affected by dispersal of	Low – medium. Relatively low numbers of campers to disperse and other sites	Low	Master planning for busier sites potentially affected. Consider upgrades at Yarrangobilly Village,	Low	Low – there will be a return of some campers to Lobs Hole Ravine on

	Direct Impact	Secondary Impact	Level of Impact		Mitigation/Offset	Residual Impact	
			During Exploratory Works	Project Completion		During Exploratory Works (Temporary Impact)	Project Completion (Permanent Impact)
		campers from Lobs Hole Ravine to other sites	have the capacity to absorb additional demand		3 Mile and O'Hares campgrounds.		completion of the works
Closure of Lobs Hole Ravine Road	Lobs Hole Ravine 4WD tourers		High – closure of road	High – road no longer offers 4WD experience	Consideration and promotion of alternative routes within the park. Improve access to Eucumbene River at Kiandra. Consider POM amendments to provide access to additional drive touring routes.	Low	Low
Creation of construction camp at Lobs Hole Ravine		Users of campsites elsewhere in the park affected by increased demand from workers off swing	Low	Nil	Guidelines for recreational use outside work hours to be implemented by construction camp manager  Master planning for busier sites potentially affected	Low	Nil
Restrictions to use of Talbingo Reservoir for construction and operation of wharfs and barge	Use of boat ramp and spillway may be affected by timed closures to allow for barge operations	Increased use of Blowering and Tantangara Dams	Low	Nil	Provide access to and relocate swimming enclosure to southern part of the spillway. Time closures to have least effect on reservoir uses. Communicate timetable for closures to users.	Low	Nil
Operation of Barge at Talbingo Reservoir	Amenity impacts (visual and noise) on reservoir users		Low	Nil	Communicate timetable for barge operation to users	Low	Nil
Increased traffic movements of light and heavy vehicles	Drive tourists and skiers will experience		Medium	Low	Consider exclusion windows for heavy traffic during peak periods, eg weekends during the ski	Low	Nil



	Direct Impact	Secondary Impact	Level of Impact		Mitigation/Offset	Residual Impact	
			During Exploratory Works	Project Completion		During Exploratory Works (Temporary Impact)	Project Completion (Permanent Impact)
along the Snowy Mountains Highway, Link Road and Elliot Way	increased traffic and extended journey time				season and every day during the July school holidays between 7:30am and 9:30am.  Maximise trucking movements prior to winter  Maximise use of barge for transport of heavy plant and machinery		
Noise from operations and traffic	Users of campsites along road corridors may experience increased noise from heavy vehicles		TBC	Nil			Nil

## 4 Conclusion

The Exploratory Works at Lobs Hole will result in the closure of the Lobs Hole Ravine area to recreational users for the duration of the works. At the conclusion of the works (or the Project) the site will be open to visitors, but the upgraded access put in place for the Works will remain and will be likely to result in increased visitation to the area, which will require a higher level of visitor facilities such as toilets and picnic tables. At the same time that this will increase visitation to the area it will also alter the character of the site and reduce the appeal of it for some current users. The impacts at Lobs Hole Ravine can be mitigated by ensuring that visitors are aware of other opportunities for similar experiences and the remediation of the site at the conclusion of the works. Guidelines for workers at Lobs Hole Ravine should also be prepared to ensure that they do not impact on the recreational value of the area.

At Talbingo, the Exploratory Works will involve the provision of a ramp for barge facilities on the spillway of the Talbingo Dam and at Middle Wharf. This will have some minor impact on users of Talbingo Reservoir for the period of the Works. The impacts at Talbingo Reservoir can be mitigated by providing access to the southern part of the spillway, relocating the existing swimming enclosure from the northern part of the spillway to the southern part, limiting access restrictions to the spillway and reservoir during times of peak usage, and ensuring that users of the reservoir are aware of the timing of the operation of the barge.

There may be some impacts on recreational users from increased traffic, particularly on visitors to Selwyn Snowfields in the ski season. These impacts are likely to be minor and can be mitigated through traffic management and the use of exclusion windows for heavy traffic during peak traffic periods.

Displacement of visitors from Lobs Hole Ravine may impact other sites in the park, and use of these should be monitored and a master planning exercise undertaken to ensure they will be able to absorb the additional visitation, as some of the similar sites do not have the capacity of Lobs Hole Ravine.

Recommended mitigation measures include:

- site master planning Lobs Hole Ravine
- site planning at sites to which visitors may be displaced from Lobs Hole Ravine
- a regular program of monitoring of usage and visitor satisfaction at the above sites
- effective communication about changes to visitor site availability

Overall, it is considered that the impact of Exploratory Works on recreational users is likely to be low given that:

- direct impacts will be temporary and will affect a relatively low number of users of KNP
- most long terms impacts, once mitigation strategies are implemented, will be low
- some long term impacts will be positive such as improved access and facilities to/at Lobs Hole and at Talbingo Reservoir
- displacement, both temporary and long term, is not expected to occur at high levels and will be to sites that generally have the capacity to absorb some extra visitation.

Therefore, on balance, the impact of the Exploratory Works on recreational users is considered acceptable.

## APPENDIX 1 - LOBS HOLE RAVINE SURVEY RESULTS

Surveys were conducted at Lobs Hole over two days on 31 March and 1 April and again on the morning of 8 April. Sixteen groups (96 people) were surveyed at Lobs Hole Ravine over two days: the 31 March and 1<sup>st</sup> April (Easter Saturday and Sunday) and two groups (15 people) on Saturday 7 April.

Mr George Thomas, who has a family connection to the area, also assisted with the distribution of the survey and emailed the survey to his contacts. These were others in the Thomas family and also the Wagga Wagga Wilderness Walkers. Thirty nine surveys were completed by email.

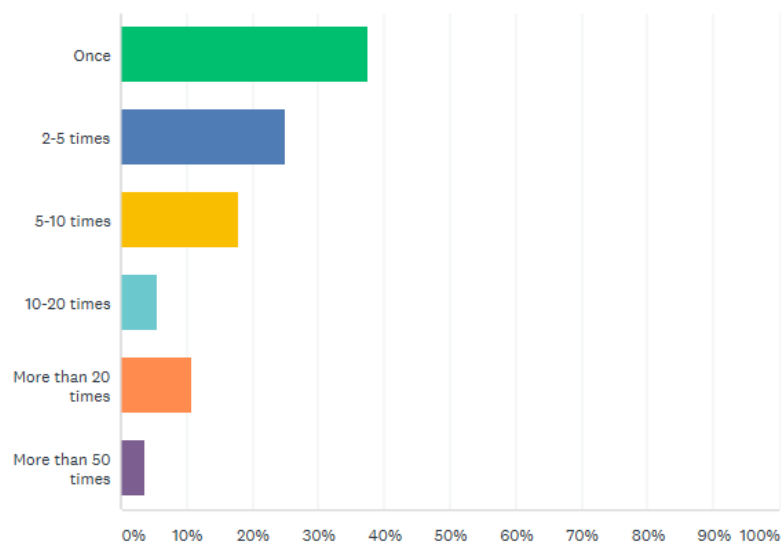
In total, 57 surveys of Lobs Hole users were completed, representing approximately 521 park users (based on group size).

### *Regularity of Use*

Almost 20% of users had visited the area more than ten times. A higher proportion of those surveyed face to face (almost 50%) were on their first visit to the area, compared to the sample overall.

Q1 How many times have you visited Lobs Hole?

Answered: 56 Skipped: 1



ANSWER CHOICES	RESPONSES	
Once	37.50%	21
2-5 times	25.00%	14
5-10 times	17.86%	10
10-20 times	5.36%	3
More than 20 times	10.71%	6
More than 50 times	3.57%	2
TOTAL		56

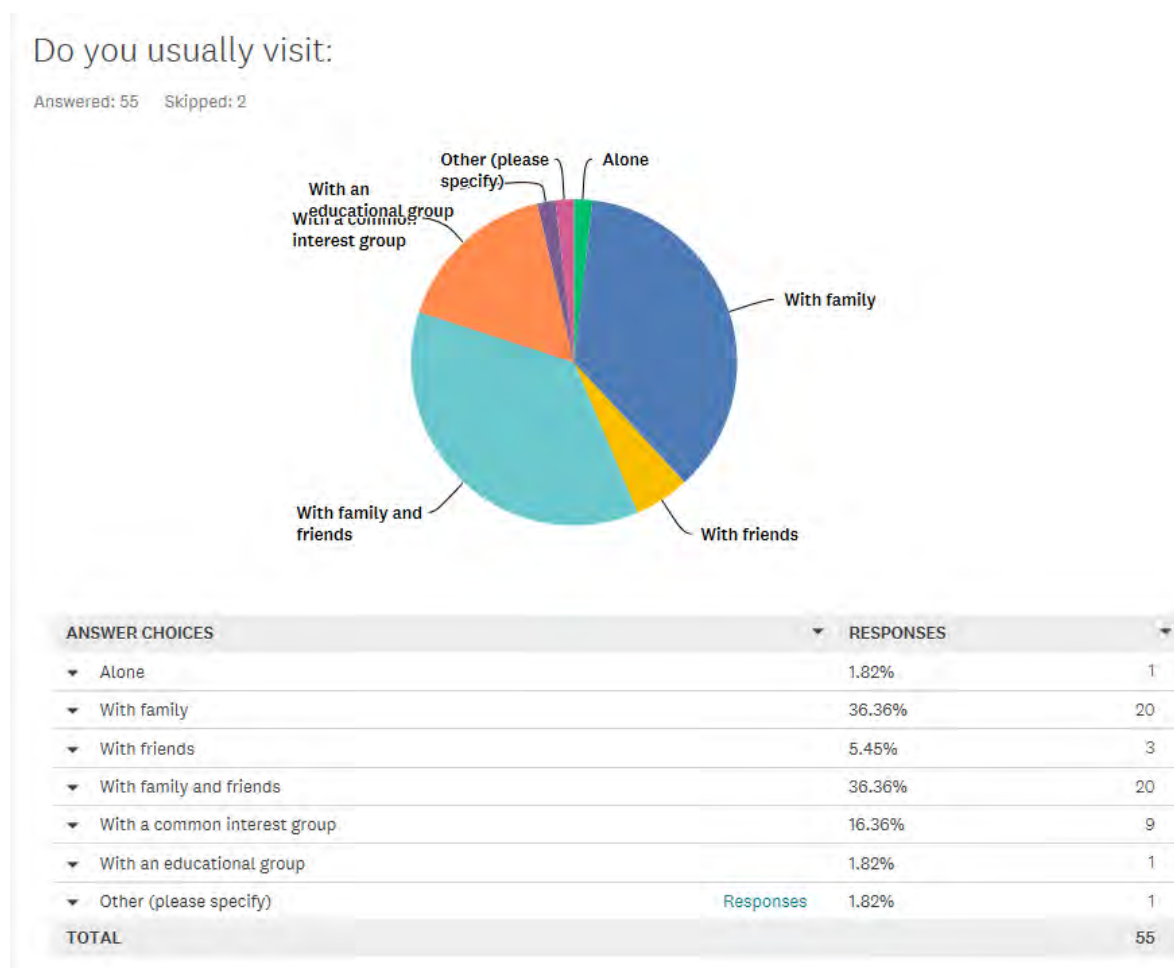
### Travel Party Type

The most common party types were family or family and friends. One respondent noted that Tumut and District Bushwalking Club were regular users.

The education group was a school group of two teachers and 13 students who had canoed in from Coonara Point.

### Do you usually visit:

Answered 55



### Group Size

The most common group size was 2 (17.57% of groups) followed by 4, 8 and 10 all with 12.28% of responses.

### Origin of Visitors

There were 69 postcodes provided to this question (by 57 respondents) as many survey respondents listed all the postcodes represented in their travel party.

There were no international visitors surveyed, and only two from outside NSW/ACT (one from Victoria and one from Queensland). The most common postcode was Wagga Wagga, followed by the ACT, Tumut,



Sydney then the Southern Highlands. Most users surveyed were located within four hours drive of Lobs Hole.

### **Activities Undertaken**

The most popular activity nominated by survey respondents overall was bushwalking. This is likely to be influenced by the dispersal of the survey to bushwalking clubs. Users surveyed on site were more likely to nominate “camp, relax, fish and swim” than those completing the survey on line, with over 70% of respondents on site nominating those activities, and 39% nominating bushwalking.

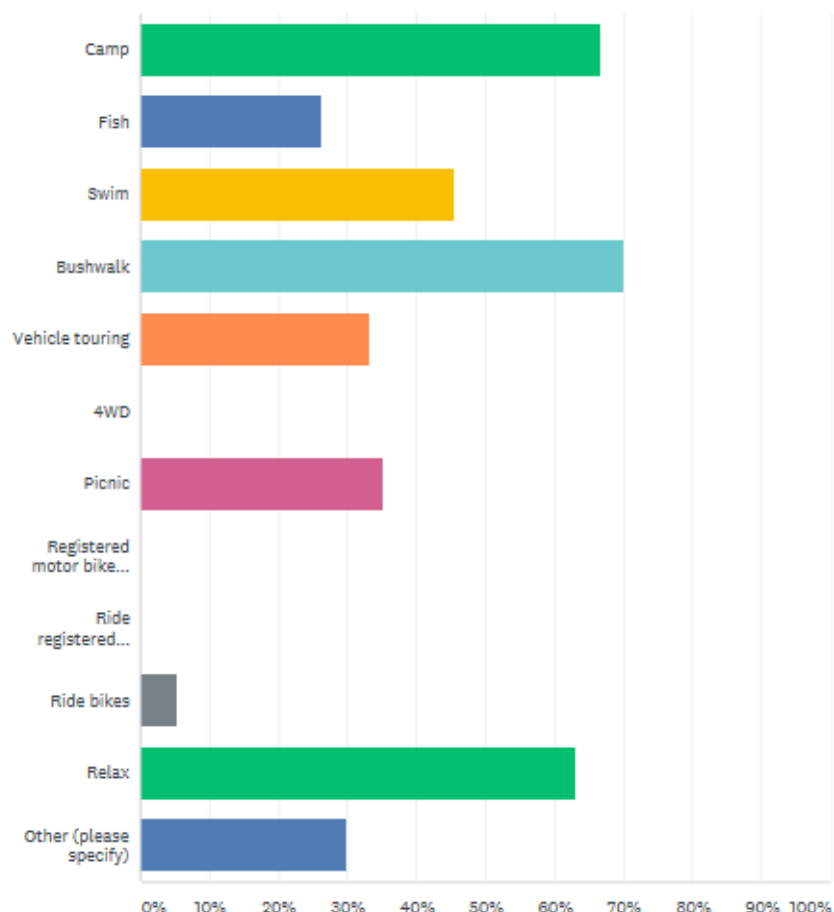
“Other activities” (17 responses) were mostly related to family history (visiting John Thomas homestead site/family history/genealogy etc – 11 responses), paddling (2 responses) and “looking for stuff with a metal detector” (2 responses). The remaining two “other” responses were bird watching and wildflower observation and unplugging.

On the third survey date (7 April 2018) an educational group of two teachers and 13 students had canoed/kayaked into Lobs Hole from Coonara Point.

### **What do you do at Lobs Hole/Ravine?**

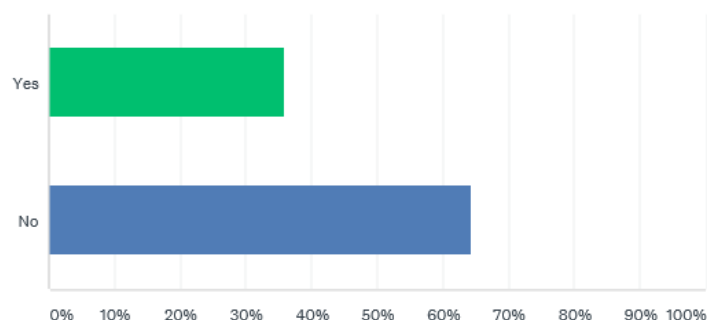
Answered 18

Answered: 57 Skipped: 0



**Are you a member of a group or club that uses Kosciuszko National Park regularly? If yes, what type of group?**

Answered: 56 Skipped: 1



ANSWER CHOICES	RESPONSES	
▼ Yes	35.71%	20
▼ No	64.29%	36
TOTAL		56

Seventy seven percent of visitors surveyed face to face were not part of an organised group, but when combined with the results of the email survey, 65% of users were not a member of a group or club that used KNP regularly.

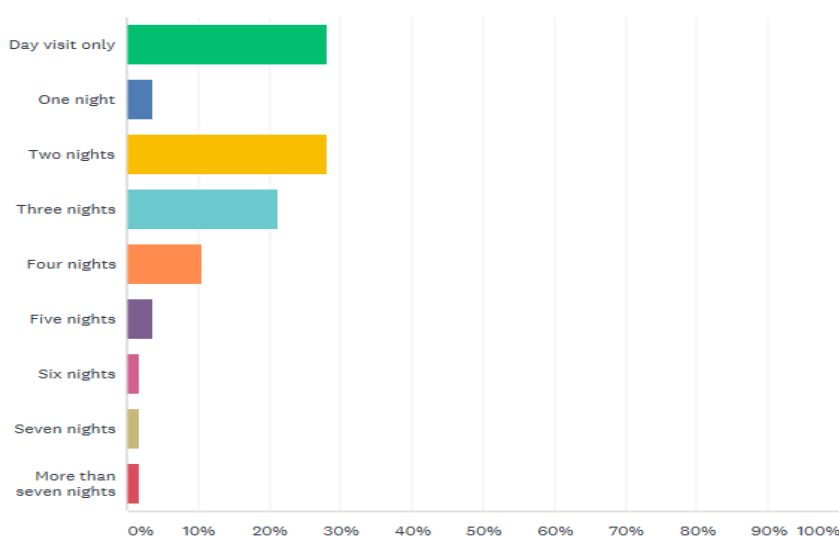
**Length of trip**

The most common length of stay was a day visit or a two night stay. Those surveyed on site were staying an average of 3.9 nights.

Three groups surveyed on site were day visitors, representing 26% of all people surveyed.

**How long are you staying on this visit/do you stay on average?**

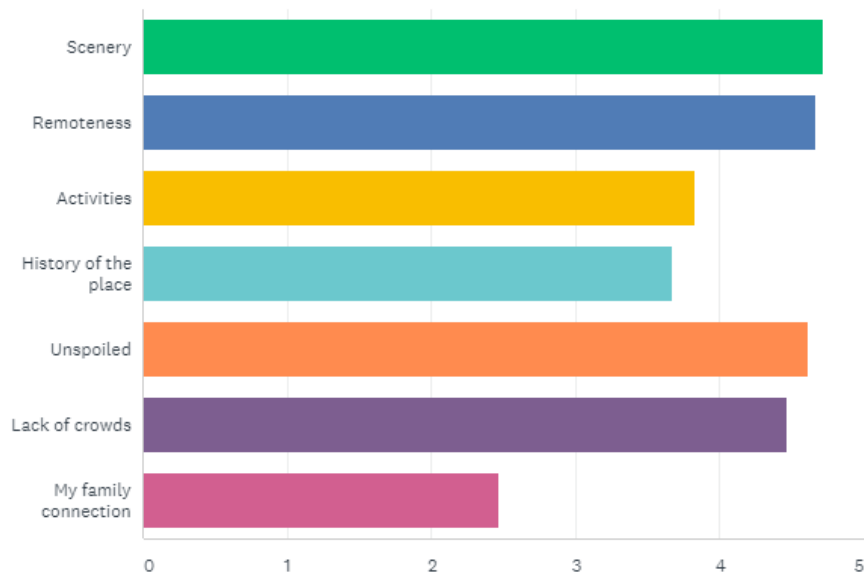
Answered: 57 Skipped: 0



The most common length of stay was a day visit or a two night stay.

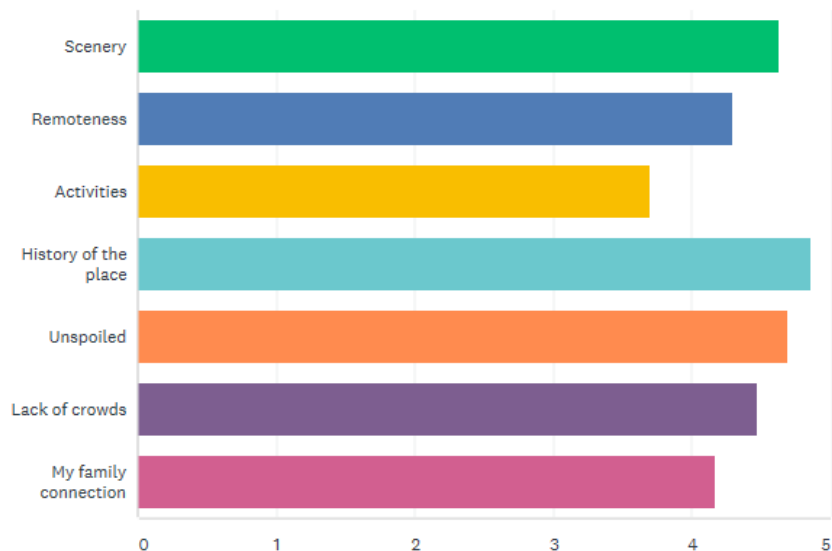
***How important do you think the following elements are in your enjoyment of the Lobs Hole/Ravine area?***

***Surveyed on site (18 responses)***



For those surveyed face to face, the least important elements in the enjoyment of the area were their family connection, the history of the place and activities. The most important aspects were scenery, followed by remoteness and the unspoiled nature of the area.

***Email Survey (39 responses)***



For those completing the email survey, a family connection to the area was a more important element in their enjoyment of the place, probably as a result of the distribution of the survey to the John Thomas group; activities and remoteness were less important.

### ***Places Visited***

Almost half the survey respondents only visited Lobs Hole in KNP, but 75% of all respondents also recreated outside KNP.

#### **Q Do you visit other places in Kosciuszko National Park?**

Answered: 52



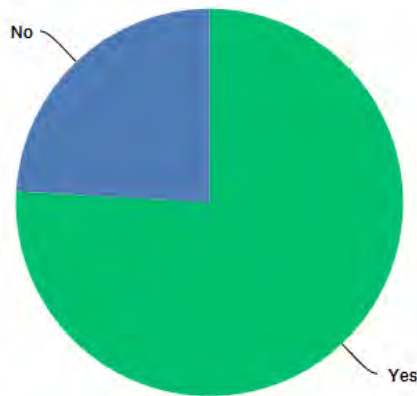
ANSWER CHOICES	RESPONSES	
▼ No, I only visit Lobs Hole	46.15%	24
▼ Yes, I visit Bullocks Hill/Gooandra Hill area	23.08%	12
▼ Yes, I visit Tantangara north (Currango area)	25.00%	13
▼ Yes, I visit Tantangara south (dam wall and foreshores)	23.08%	12
▼ If other, where?	Responses 44.23%	23
Total Respondents: 52		

Overall, 46.15% of respondents only visited Lobs Hole. However, this number was markedly less for the sample of respondents who were surveyed face to face on site: less than 12% of those people only visited Lobs Hole. For the sample completing the survey online, 50% only visited Lobs Hole.

Other places visited included the ski resorts (4), Yarrangobilly (4), Kiandra (3) and Three Mile Dam (3).



**Q Do you recreate in places other than Kosciuszko National Park?**



ANSWER CHOICES	RESPONSES	
Yes	75.93%	41
No	24.07%	13
TOTAL		54

[Comments \(34\)](#)

Thirteen respondents indicated that they did recreate in places other than KNP, however many respondents then went on to nominate places in the park such as ski resorts, Sawpit and Long Plains. Others gave general answers such as all over Australia (1), Coast and Victorian high country. One respondent nominated Canagreil (location not determined).

Other places visited included the ski resorts (5 responses), other national parks and state parks (20 responses), Yarrangobilly (2 responses) and the South Coast (2 responses).

***Displacement***

The list of responses indicates that most of those surveyed would go elsewhere in KNP and surrounds, or to the coast. Six respondents indicated they did not know, and three indicated they would not go anywhere if they could not go to Lobs Hole.

**Q If you were unable to visit Lobs Hole for a period of time, where would you go instead?**

Answered: 47

The list of responses indicates that most of those surveyed would go elsewhere in Kosciuszko National Park and surrounds, or to the coast.

wouldnt bother me at all

Anywhere

Talbingo, blowring

Coast

Yarrangobilly

3 mile dam

Coast

Jounama creek

Three Mile Dam

Coast

Blowering

Bendethra

South Coast

This would be harder to do as around this area is where we do a lot of our walking -Currango,

Tantangara, Goandra, Cabramurra area etc

Jounama Creek, Henry Angel / Thomas Boyd Trackheads, Goobragandra, Jingellic. Anywhere and everywhere!

Other areas in Kosciuszko NP and Victoria

Tantangara Dam, Bluewater Hole, Tantangara Creek

Yarrangobilly

I don't know

other areas in KNP

Other areas

Three Mile

Victoria National Parks

Other areas of KNP

Sue City

nowhere

South Coast

Unknown

West Wyalong

Kiandra

I live on the Goldcoast hard to get there

Tumut, Kiandra, Cooma

Tumut

Other parts of Kosciuszko National Park but this would mostly mean greater distance to travel

Nowhere, stay at home

I really don't know. It is the place my family have been coming for years, and in terms of space and remoteness for a large family, apart from our family connection to the area, nowhere else has ever

compared. It is also a central location for all our family and we haven't been able to determine a place that would otherwise meet our needs and bring the same enjoyment.

Other National Parks

No where. It is the the family holiday spot

I need to research other places to camp that are as unspoilt & uncrowded.

This is a very special, remote, historical area with family connections - possibly not go elsewhere

No park can replace it's family connection

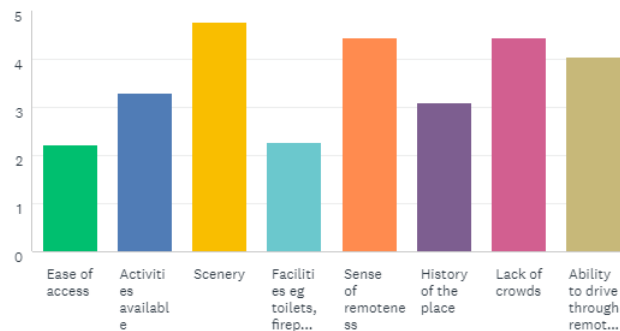
I don't know. It's something that we have been discussing & we may need to go further afield to find somewhere as uncrowded and unspoiled.

Unknown

stay home

Geehi, parts of Victoria

#### Q 11 How important are the following to you when choosing a place to visit?

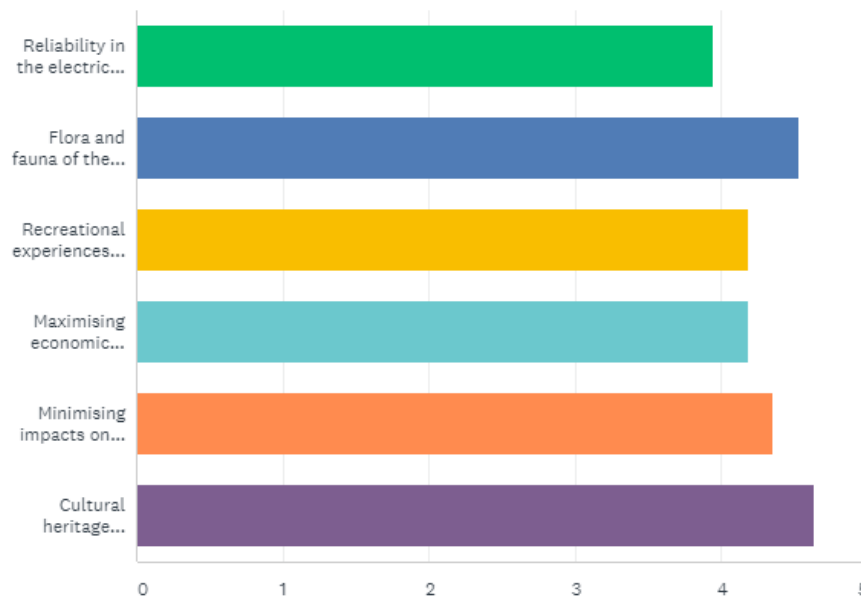


	EXTREMELY UNIMPORTANT	UNIMPORTANT	NEUTRAL	IMPORTANT	EXTREMELY IMPORTANT	TOTAL	WEIGHTED AVERAGE
▼ Ease of access	38.89% 7	27.78% 5	16.67% 3	5.56% 1	11.11% 2	18	2.22
▼ Activities available	17.65% 3	5.88% 1	17.65% 3	47.06% 8	11.76% 2	17	3.29
▼ Scenery	0.00% 0	0.00% 0	0.00% 0	22.22% 4	77.78% 14	18	4.78
▼ Facilities eg toilets, fireplaces	44.44% 8	11.11% 2	16.67% 3	27.78% 5	0.00% 0	18	2.28
▼ Sense of remoteness	0.00% 0	0.00% 0	5.56% 1	44.44% 8	50.00% 9	18	4.44
▼ History of the place	5.56% 1	27.78% 5	27.78% 5	27.78% 5	11.11% 2	18	3.11
▼ Lack of crowds	0.00% 0	0.00% 0	5.56% 1	44.44% 8	50.00% 9	18	4.44
▼ Ability to drive through remote places	0.00% 0	5.56% 1	5.56% 1	66.67% 12	22.22% 4	18	4.06

Scenery was the most important factor in choosing a place to visit, with no-one indicating this factor as extremely unimportant and almost 78% indicating it was extremely important. A sense of remoteness and a lack of crowds were ranked second equally.

Facilities and ease of access were the factors most commonly considered as extremely unimportant.

**Q 12 If the Snowy 2.0 project goes ahead, how important are the following?**



Most Lobs Hole users considered the flora and fauna of KNP either important or extremely important. Two respondents commented that they considered the Aboriginal heritage extremely important and the European heritage important, but that the survey did not allow for differentiation of this so answers were marked as extremely important.

***Are there any aspects of Snowy 2.0 that concern you? Do you have any other comments?***

All comments are attached.

Seven respondents either did not answer or indicated “no” or “nil” to question 13. Twenty five respondents did not answer or indicated “no” or “nil” to question 14.

Seventy seven percent of people surveyed indicated they did have concerns about Snowy 2.0. This figure was lower for those surveyed face to face on site, with only 55% of that sample nominating any concerns. Those who completed the survey online (making a choice to “opt-in”) were much more likely to have environmental concerns and to comment negatively on consultation about the project.

Comments have been grouped by content around the following themes to indicate the general areas of concern:

- environmental concerns (16 comments)
- access and use (12 comments)
- viability and/or the economics of the project (12 comments)
- changes to the character of Lobs Hole (7 comments)
- consultation (7 comments)
- fishing
- heritage
- survey (5 comments)
- other



<p><b>Environmental concerns</b></p> <ul style="list-style-type: none"> <li>• How will it affect irrigation needs?</li> <li>• Closure and/or degradation of areas</li> <li>• take care with the environment locally!</li> <li>• Damage done to the area and the needs of the project that can further damage the area</li> <li>• Dump sites for excavated material. Where?</li> <li>• Environmental impact on natural areas.</li> <li>• Impact on park</li> <li>• impacts on flora, fauna, the natural landscape &amp; the cultural heritage of the area</li> <li>• Please tread gently and do not overdevelop this region</li> <li>• PLEASE do not destroy this beautiful scenic wilderness</li> <li>• Possible destruction of wildlife habitat, native flora and fauna and historical features of the area.</li> <li>• Potential damage to the ravine lobby hole area, e.g. bitumen roads, spoil being spread in area etc</li> <li>• I'm also concerned about the impact to creeks and rivers by a 2000 man camp</li> <li>• Wildlife losing their habitat</li> <li>• The loss of a natural, pristine reserve</li> <li>• The loss of wilderness, the loss of native flora, the destruction of habitat of native wildlife, and the loss of the history of Lob's Hole</li> </ul>
<p><b><i>Access and use</i></b></p> <ul style="list-style-type: none"> <li>• Not really - only loss of camping</li> <li>• Access – keep parks open</li> <li>• Yes - shutting down places for a long time</li> <li>• Access</li> <li>• Access to Lobs Hole and preservation of historical sites</li> <li>• Accessibility</li> <li>• Closure and or degradation of areas</li> <li>• Yes - shutting down places for a long time, keep parks open</li> <li>• Loss of camping</li> <li>• Our only real concern would be being locked out of the area for our bushwalking/snow shoeing because of the construction of Snowy 2.0. We realise areas during construction there must be some restrictions to access but it would be a shame if after construction restrictions remained in place.</li> <li>• Indiscriminate use of the park areas by workers</li> </ul>
<p><b><i>Viability and/or economics of the project</i></b></p> <ul style="list-style-type: none"> <li>• The cost, that it won't work, that it isn't reliable, the amount of time available, not enough water in Murray Darling</li> <li>• Cost! There are easier ways</li> <li>• More going off the grid why increase? Decreasing network</li> <li>• Uncertainty of economics</li> <li>• cost, won't work, isn't reliable, time</li> </ul>

- Time to operation from breaking ground may see a shift the Deficiencies the NEM before it even generates.
- Lack of transparency about costs of the project
- Make sure Australians benefit from this project
- Mismanagement
- Why not look into lower velocity water turbines that could be used in the existing scheme so many great technologies available to create so much more power reusing the same water eg in stream or in pipe options
- Feasibility maybe spend same amount on batteries
- Viability of scheme
- the expense worth it? i.e. can this be achieved outside of a national park
- Danger that this scheme will be pursued for political purposes regardless of its economic feasibility or outcomes of proper cost -benefit analyses
- Need for progress why close coal fired?

#### ***Changes to the character of Lobs Hole***

- Roads will be the long term consequences
- Ruining Lobs Hole
- final rehab, visual impact, longevity and transition
- Increased numbers of people visiting Lobs Hole may threaten the peace, flora and fauna and the historical aspects of Lobs Hole
- The impact this will have on Lobs Hole Ravine
- The infrastructure required to support a large workforce over many years may destroy the peace and remote beauty of this area for years to come and maybe forever
- Indiscriminate use of the park areas by workers

#### ***Consultation /communication***

- It is important that organisations such as ours are given plenty of notice about what is going to happen and the areas that will be restricted.
- You need to communicate with groups that use the area to keep us informed and up to date with the impact of decisions as they are made.
- When at Lob's Hole over Easter, we were surprised at how few people were aware of the potential impact of Snowy 2.0 on the area. I don't believe that the public are being kept in the loop as well as they could be.
- There is a lack of specific information about the project. Snowy 2.0 website is particularly uninformative - no indication of route, environmental impacts, duration of works, effects on other users etc.
- Don't know the details yet
- insufficient public discussion - insufficient communication
- currently there is not a lot of info on the impact on lobs hole particularly.
- Lack of consultation by the planners

Comments about the survey	<p>happy to be surveyed</p> <p>Surveys OK</p> <p>Thank you for this survey</p> <p>The survey is important</p> <p>it would have helped in filling in this survey if details of what is planned for Lobs Hole had been included so respondents have some idea what they are responding to!</p>
Heritage	<p>My family ( John Thomas) were early pioneers 1800's in the ravine, lobs hole area , I would hate to see this heritage destroyed Retaining original settlers home site and history.</p> <p>I am the oldest direct descendant of John Thomas the first person to purchase 2560 acres at Lobbs Hole. His son Charles James Thomas was my grandfather. I have recently completed a history of their activities in the area. My grandmother Eva Honor (nee Hatcher) Thomas named the site Ravine - she had a dislike of Lobbs Hole. From here they ran three sixteen team bullock waggons to Twofold Bay with copper and gold and returned with merchandise. I would like to see any building remains preserved and a plaque displayed. I can supply a copy of the history if required. Regards</p> <p>the possible destruction of heritage areas and the remoteness of the area</p> <p>Please do not destroy what is a very special place for my family and my grandparents. We want our children to enjoy the area and learn about our history there.</p>
Positive comments	<p>There is long term value in the project.</p> <p>It's progress</p> <p>Should be more projects of it's kind</p>
Fishing	water flow/fishing
Other	<p>Surprised by how busy it was</p> <p>Can I have a job?</p> <p>Wasps</p> <p>Council needs advice from a neutral advisor.</p> <p>Power</p>

**Ungrouped comments by respondent:**

Are there any aspects of Snowy 2.0 that concern you?	Do you have any other comments?
Access to ravine and lob's hole.	
Access	
Access	NA
Access to Lobs Hole and preservation of historical sites	
Accessibility	
closure and/or degradation of areas	take care with the environment locally!
cost, won't work, isn't reliable, time	how will it effect irrigation needs?
Cost! There are easier ways	
Damage done to the area and the needs of the project that can further damage the area	
Don't know the details yet	
water flow/fishing	need for progress/ why close coal fired
Dump sites for excavated material. Where?	Feasibility maybe spend same amount on batteries
Environmental impact on natural areas.	
Impact on park, viability of scheme	No
impacts on flora, fauna, the natural landscape & the cultural heritage of the area	
Increased numbers of people visiting Lobs Hole may threaten the peace, flora and fauna and the historical aspects of Lobs Hole	Please tread gently and do not overdevelop this region
Indiscriminate use of the park areas by workers	
insufficient public discussion - insufficient communication	PLEASE do not destroy this beautiful scenic wilderness
Is the expense worth it? i.e can this be achieved outside of a national park. Currently there is not a lot of info on the impact on lobs hole particularly	Thank you for this survey



Are there any aspects of Snowy 2.0 that concern you?	Do you have any other comments?
It's progress	NA
Lack of consultation by the planners	
Lack of transparency about costs of the project	Danger that this scheme will be pursued for political purposes regardless of its economic feasibility or outcomes of proper cost -benefit analyses
Lobs has a strong family connection for us, as it is the birth place of my grandfather. Limited access for a long period would be very sad for our family, as would significant changes to the access roads and the environment of the valley	
loss of camping	
Mismanagement	Make sure Australians benefit from this project
More going off the grid why increase? Decreasing network	Surprised by how busy it was
N/A	N/A
Nil	
No	No
No	Can I have a job?
No	Wasps
no	no
Not really	No
Not really - only loss of camping	Not really
Our only real concern would be being locked out of the area for our bushwalking/snow shoeing because of the construction of Snowy 2.0. We realise areas during construction there must be some restrictions to access but it would be a shame if after construction restrictions remained in place.	It is important that organisations such as ours are given plenty of notice about what is going to happen and the areas that will be restricted.

Are there any aspects of Snowy 2.0 that concern you?	Do you have any other comments?
Possible destruction of wildlife habitat, native flora and fauna and historical features of the area.	
Potential damage to the ravine lobby hole area , e.g bitumen roads, spoil being spread in area etc	My family ( John Thomas) were early pioneers 1800's in the ravine, lobbs hole area , I would hate to see this heritage destroyed
Preservation	Surveys OK
Retaining original settlers home site and history.	I am the oldest direct descendant of John Thomas the first person to purchase 2560 acres at Lobbs Hole. His son Charles James Thomas was my grandfather. I have recently completed a history of their activities in the area. My grandmother Eva Honor (nee Hatcher) Thomas named the site Ravine - she had a dislike of Lobbs Hole. From here they ran three sixteen team bullock waggons to Twofold Bay with copper and gold and returned with merchandise. I would like to see any building remains preserved and a plaque displayed. I can supply a copy of the history if required. Regards Paul Pereira Email :paulfpereira86@gmail.com
Roads will be the long term consequences	The survey is important
Ruining Lobs Hole	
Should be more projects of it's kind	Why not look into lower velocity water turbines that could be used in the existing scheme so many great technologies available to create so much more power reusing the same water eg in stream or in pipe options
The impact this will have on Lobs Hole Ravine	no
The infrastructure required to support a large workforce over many years may destroy the peace and remote beauty of this area for years to come and maybe forever	You need to communicate with groups that use the area to keep us informed and up to date with the impact of decisions as they are made.

Are there any aspects of Snowy 2.0 that concern you?	Do you have any other comments?
The loss of a natural, pristine reserve	Wild life losing their habitat
The loss of wilderness, the loss of native flora, the destruction of habitat of native wildlife, and the loss of the history of Lob's Hole	When at Lob's Hole over Easter, we were surprised at how few people were aware of the potential impact of Snowy 2.0 on the area. I don't believe that the public are being kept in the loop as well as they could be.
the possible destruction of heritage areas and the remoteness of the area	I'm also concerned about the impact to creeks and rivers by a 2000 man camp
There is a lack of specific information about the project. Snowy 2.0 website is particularly uninformative - no indication of route, environmental impacts, duration of works, effects on other users etc.	it would have helped in filling in this survey if details of what is planned for Lobs Hole had been included so respondents have some idea what they are responding to!
Time to operation from breaking ground may see a shift the Deficiencies the NEM before it even generates.	Please do not destroy what is a very special place for my family and my grandparents. We want our children to enjoy the area and learn about our history there.
Uncertainty of economics	power
Yes - final rehab, visual impact, longevity and transition.	Happy to be surveyed, there is long term value in the project. Council needs advice from a neutral advisor.
Yes - shutting down places for a long time	Keep parks open
Yes - The cost, that it won't work, that it isn't reliable, the amount of time available, not enough water in Murray darling	How will it affect irrigation needs ?

## APPENDIX 2 - TALBINGO USERS SURVEY RESULTS

Users at the Talbingo Reservoir were surveyed on 30 and 31 March, and 8 and 14 April. Visitors at Talbingo Caravan Park were also surveyed on 31 March. No visitors were on site at the spillway on the 8 and 14 April.

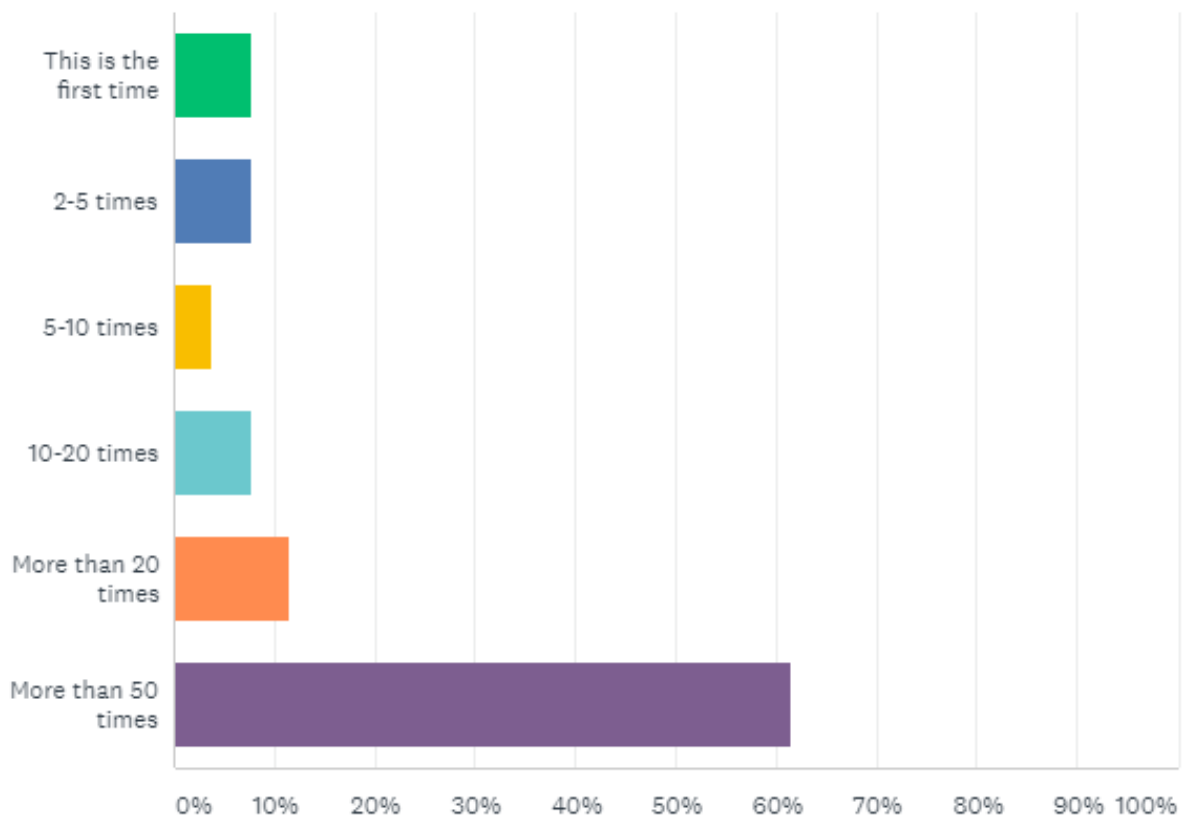
The Talbingo Caravan Park also distributed online surveys to customers. In total, 26 surveys of Talbingo Reservoir users were completed, representing approximately 254 users (based on group size).

### ***Regularity of Use***

The survey indicated high levels of repeat visitation at this site: 73% of people surveyed had visited more than 20 times.

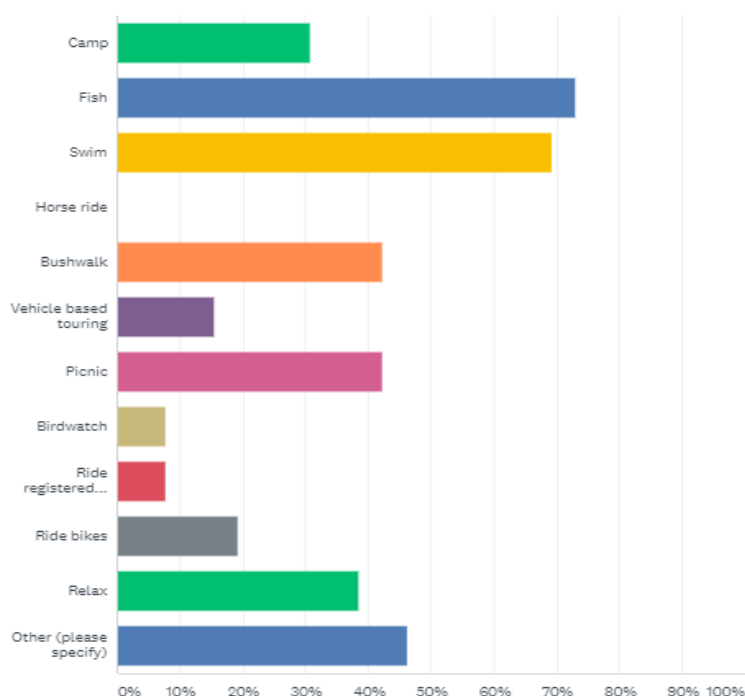
#### **Q How many times have you visited this site before?**

Answered: 26



### Activities Undertaken

Fishing and swimming were the most popular activities, followed by water skiing (in “other” responses).

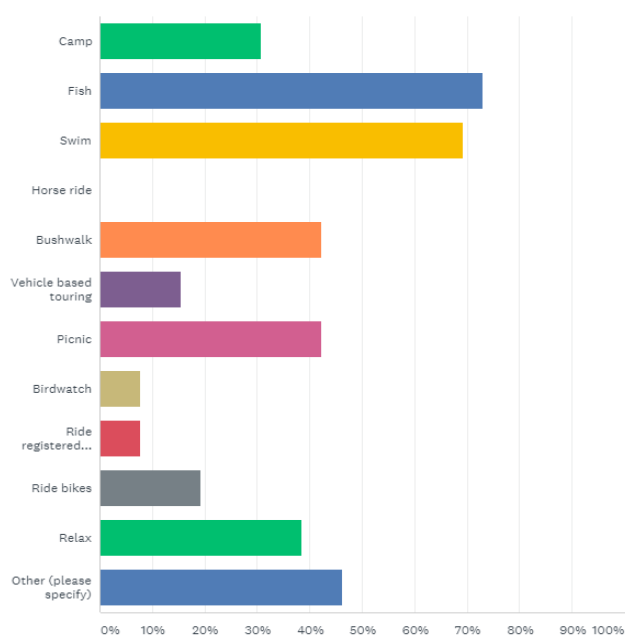


### Origin of Visitors

There were 26 responses to this question. Two were from the ACT, the remainder were from NSW, mostly from Wagga Wagga (15), Cootamundra (4) and Tumut (2).

What do you do at this site? Please tick all that apply.

Answered: 26 Skipped: 0





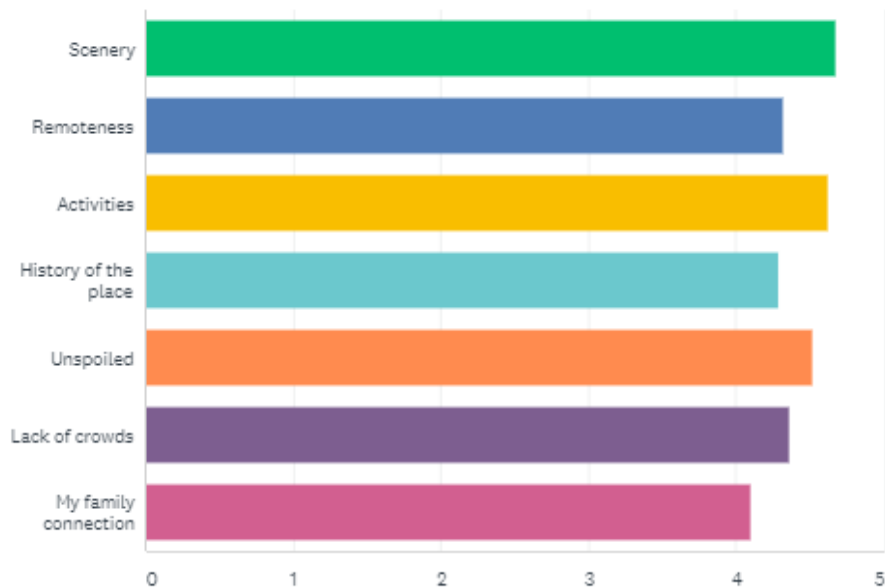
## Values

Users of Talbingo Reservoir value the scenery of the area, what they can do there, and the unspoiled nature of the area.

When choosing other places to visit, scenery is again the most important element, followed by lack of crowds.

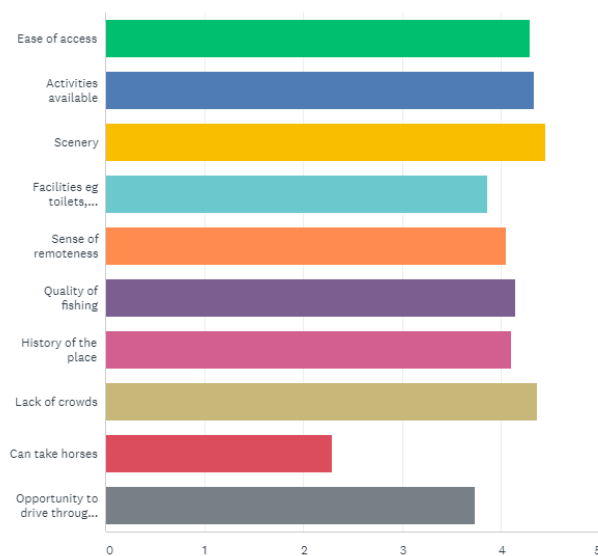
### How important are the following elements in your enjoyment of this site?

Answered: 22



### How important are the following to you when choosing a place to visit?

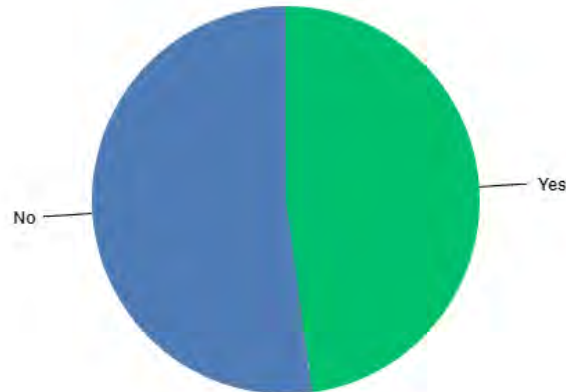
Answered: 22



## Places Visited

Just over 50% only recreated in KNP. Other places that people visited included Lake Albert (2), Blowering (2), and the Murrumbidgee River (3).

### Do you recreate in places other than Kosciuszko National Park?

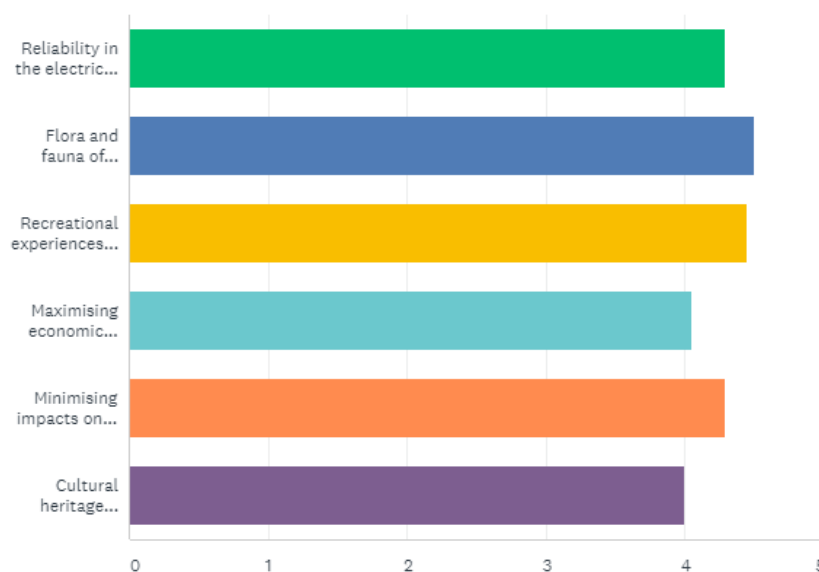


ANSWER CHOICES	RESPONSES	
Yes	47.83%	11
No	52.17%	12
TOTAL		23

[Comments \(8\)](#)

### If the Snowy 2.0 Project goes ahead, how important are the following?

Talbingo Reservoir users considered the flora and fauna of KNP to be very important, followed by recreational experiences. Reservoir users rated recreational experiences as more important than the Lobs Hole users did. Least important was the cultural heritage of KNP, with 26% rating this element as unimportant or neutral.



### Are there any aspects of Snowy 2.0 that concern you?

At the time of the survey, it was not known how the Exploratory Works would affect Talbingo Reservoir. However, users of the reservoir did have concerns around access to Talbingo and other water in the Snowy Scheme. Twelve comments related to access to water which represented 57% of total comments. Other frequently expressed comments were that users were aware of the project, but did not have any concerns (four comments).

Access to water
levels and access to Tantangara and Talbingo
Access to Talbingo dam
Access to Talbingo and Tantangara dams for fishing and waterskiing and other recreational activities
No skiing on Talbingo Dam
Any closures and restricted use of waterway and foreshores
Losing access to the waterways
Any restrictions in access
As a business owner directly in the construction area should we have any major closures of Talbingo Dam post 2.0 it will have a big impact on the business
If use of Talbingo was affected it would definitely be a concern
Concern that it will drain Tantangara Dam
I think it will be good as long as it doesn't affect use of Talbingo in construction or after
Fluctuating water levels and affects on environment
Not concerned
No
Knew about the project, no concerns
Knows about the project, did not have any concerns
No not concerned
Fluctuating water levels and affects on environment
Other Concerns
Aboriginal drawings and things need to be put back in place.
Snowy Hydro overreaching their authority, like they do at Jounama Pond



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## Appendix D

### Service level provider interviews

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## Service level provider interviews

Exploratory Works for Snowy 2.0

Prepared for Snowy Hydro Limited | 16 May 2018

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## Service level provider interviews

Final

Report J17188RP1 | Prepared for Snowy Hydro Limited | 16 May 2018

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Prepared by	<b>Alice Meng</b>	<b>Tania Amanovic</b>	Approved by	<b>Brett McLennan</b>
Position	Planner	Environmental Scientist	Position	Director
Signature			Signature	
Date	16 May 2018	16 May 2018	Date	16 May 2018

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This report has been prepared in accordance with the brief provided by the client and has relied upon the information collected at the time and under the conditions specified in the report. All findings, conclusions or recommendations contained in the report are based on the aforementioned circumstances. The report is for the use of the client and no responsibility will be taken for its use by other parties. The client may, at its discretion, use the report to inform regulators and the public.

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# 1 Introduction

This report provides the results of service level provider interviews in some of the townships and localities within the Snowy Monaro Regional and Snowy Valleys local government areas (LGAs). It has been prepared by EMM Consulting Pty Limited (EMM) to support the social assessment for Snowy Hydro Limited's (Snowy Hydro) Exploratory Works, an exploratory tunnelling exercise to support Snowy 2.0.

Three rounds of interviews with service level providers (SLPs) in the townships and localities were undertaken by EMM in March and April 2018. The key objectives of the interviews were twofold; to gain an understanding of baseline service levels within the LGAs and to ascertain the views of the SLPs on both Exploratory Works and the broader Snowy 2.0.

This report provides an overview of the methodology employed during the interview process, and a summary of each interview. The interviews have enabled the identification of potential and/or perceived social issues, concerns and opportunities associated with both Exploratory Works and Snowy 2.0. While this report provides the outcomes of the interviews, the social assessment will provide a detailed analysis of potential social impacts of the Exploratory Works and appropriate measures for managing adverse impacts (if required) while enhancing potential benefits.

## 2 Methodology

The methodology adopted for the SLP interviews aligned with the NSW Department of Planning and Environment's (DPE) *Social Impact Assessment Guideline for state significant mining, petroleum production and extractive industry development 2017* (SIA Guidelines 2017) taking into account the following approach:

- engagement objectives for Exploratory Works and Snowy 2.0 (engagement objectives);
- who to engage (location of Exploratory Works and Snowy 2.0); and
- how to engage (baseline study phases and methods).

### 2.1 Engagement objectives

As previously noted, the objectives of the interviews were twofold;

- to gain an understanding of baseline service levels within some of the townships and localities within the Snowy Monaro Regional and Snowy Valleys LGAs; and
- to ascertain the views of the SLPs on Exploratory Works and Snowy 2.0.

These objectives have been further split into engagement objectives adopted from the SIA Guidelines 2017:

- ensuring potentially affected SLPs within some of the townships and localities within the LGAs are identified and have a sufficient understanding of;
  - the Exploratory Works and Snowy 2.0;
  - how they may affect them;
  - how the interviews are contributing to the overall approval process (social assessment and environmental impact statement (EIS)); and
  - how they can participate and be informed and consulted.
- collecting qualitative and quantitative data, evidence and insights for scoping the social assessment, in ways that maximise diversity and representativeness;
- understanding the interests that potentially affected and interested SLPs have in Exploratory Works and Snowy 2.0 and how potential impacts are predicted to be experienced from their perspective;
- considering the views of potentially affected and interested SLPs in a meaningful way and using these insights to inform project planning, mitigation and enhancement measures, and monitoring and management frameworks; and
- respecting people's privacy, allowing them to communicate their views anonymously if they desire.

## 2.2 Location of Exploratory Works

Snowy 2.0 and the Exploratory Works are within the Australian Alps, in southern NSW. The regional location of the Exploratory Works is shown in Figure 2.1. The area in which the Exploratory Works would be undertaken is described as the Exploratory Works project area (Figure 2.1).

Snowy 2.0 is within both the Snowy Monaro Regional and Snowy Valleys LGAs, and parts of Snowy 2.0 and the Exploratory Works are within Kosciuszko National Park (KNP). The Exploratory Works would predominantly be in the Ravine region of the KNP. This region is between Talbingo Reservoir to the north-west and the Snowy Mountains Highway to the east, which connects Adaminaby and Cooma in the south-east to Talbingo and Tumut to the north-west of the KNP. Talbingo Reservoir is an existing reservoir that forms part of the Snowy Scheme. The reservoir, approximately 50 kilometres (km) north-west of Adaminaby and approximately 30 km east-north-east of Tumbarumba, is popular for recreational activities such as fishing, water skiing and canoeing.

The nearest large towns to the Exploratory Works would be Cooma and Tumut. Cooma is approximately 95 km south-east of Talbingo Reservoir. Tumut is approximately 45 km north of Talbingo. There are several communities and townships near the Exploratory Works project area including Talbingo, Cabramurra and Adaminaby. Talbingo and Cabramurra were originally built for the original Snowy Scheme workers and their families. Adaminaby was relocated to alongside the Snowy Mountains Highway from its original location (now known as Old Adaminaby) in 1957 due to the construction of Lake Eucumbene. Talbingo and Adaminaby provide a base for users of the Selwyn Snow Resort in winter. Cabramurra was modernised and rebuilt in the early 1970s and is owned and operated by Snowy Hydro. It is still used to accommodate Snowy Scheme employees and contractors. Properties within Talbingo are now predominantly privately owned. Snowy Hydro now only owns 21 properties within the town.

Other attractions and places of interest in the vicinity of the Exploratory Works project area include Selwyn Snow Resort, the Yarrangobilly Caves complex and Kiandra. Kiandra has special significance as the first place in Australia where recreational skiing was undertaken and is also an old gold rush town.

The Exploratory Works project area is shown on Figure 2.1 and interacts with the following locations:

- **Lobs Hole:** the exploratory tunnel with the portal and construction pad would be near Lobs Hole with the construction pad and portal outside the tunnel at a site east of the Yarrangobilly River. An area of about 300,000 square metres (m<sup>2</sup>) at Lobs Hole would accommodate the spoil disposal areas, construction compound and construction accommodation camp;
- **Talbingo Reservoir:** modifications to the slipway near the dam wall, the installation of wharf and barge facilities at Middle Bay and a submarine cable from the T3 Tumut Power Station to Middle Bay, providing power and communications to the construction sites;
- A primary construction materials transport route has been identified that comprises the **Snowy Mountains Highway** providing vehicular access to the Exploratory Works from Tumut and Cooma via Link Road, Lobs Hole Ravine Road that provides access between the highway and Lobs Hole, and Murray Jackson Drive that provides access between the highway and the northern end of Talbingo Reservoir near Tumut 3 Power Station;
- A section of **Mine Trail Road** would be upgraded and extended to provide a haul road allowing the transport of excavated rock from the exploratory tunnel to spoil sites at Lobs Hole that would be used to stockpile the excavated material, as well as for the transport of machinery and construction equipment and for the use of general construction traffic;

- Several sections of **Lobs Hole Ravine Road** would be upgraded in a manner that protects the identified environmental constraints present near the current alignment.

## 2.3 Interview locations

Interview locations (townships and localities) were chosen based on;

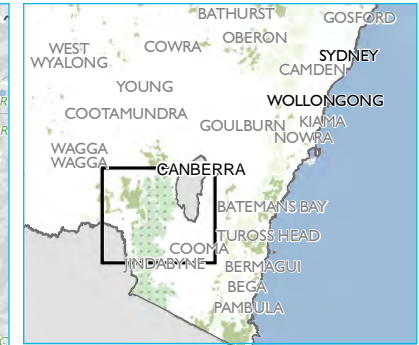
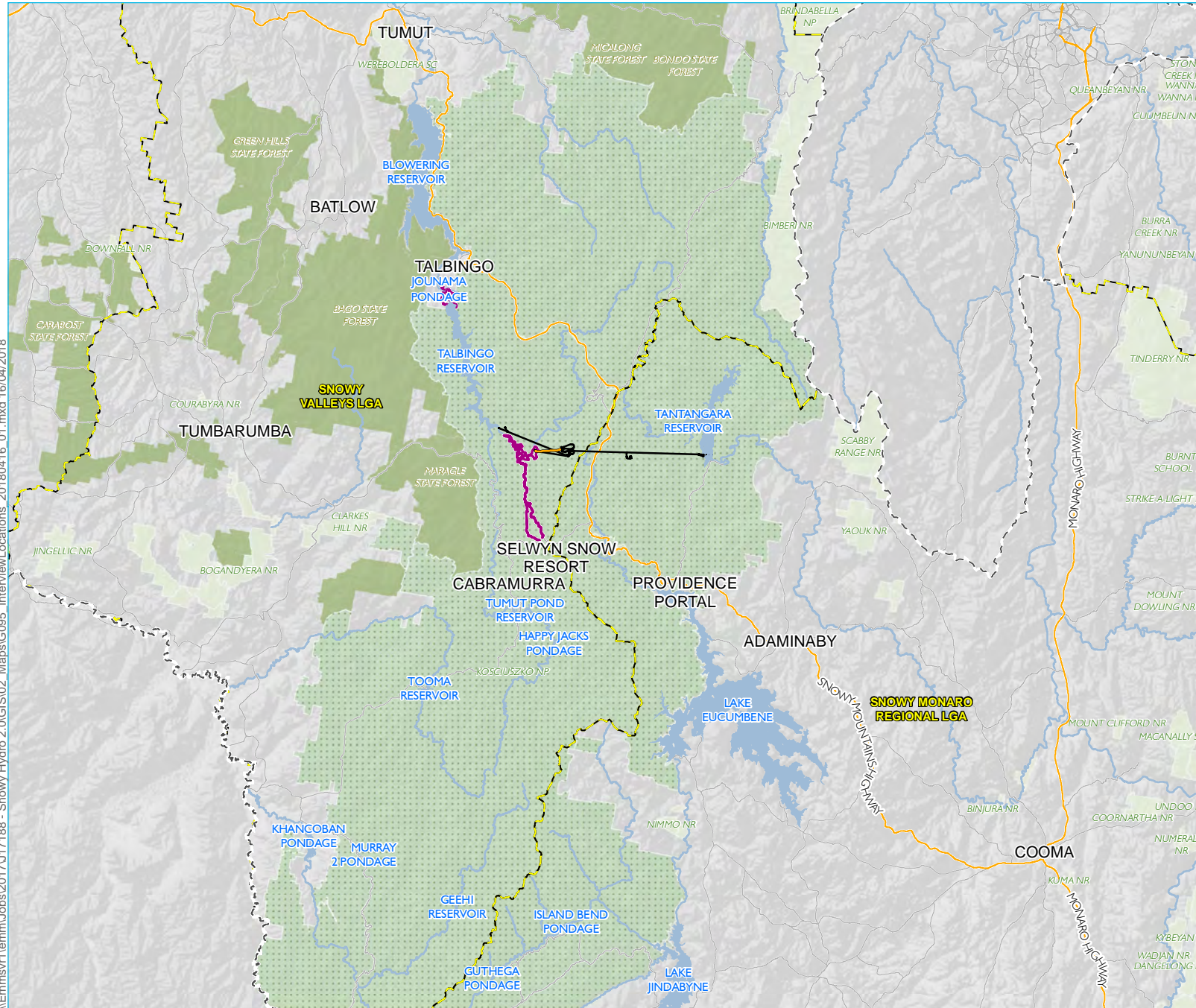
- proximity to areas most likely to be affected during the construction of Exploratory Works and Snowy 2.0 (refer Section 2.2);
- availability of accommodation and services within approximately one hour of driving to the Exploratory Works project area and Snowy 2.0; and
- consultation with affected Councils; Snowy Monaro Regional and Snowy Valleys Councils (refer Table 2.1).

Interview locations included the following townships and localities as shown in Figure 2.1.

- Snowy Monaro Regional LGA:
  - Cooma;
  - Adaminaby;
  - Providence Portal; and
- Snowy Valleys LGA:
  - Cabramurra;
  - Tumut;
  - Talbingo;
  - Batlow; and
  - Tumbarumba.



\\Emmsvr1\emm\Jobs\2017\17188 - Snowy Hydro 2.0\GIS\02 Maps\G095 InterviewLocations\_20180416\_01.mxd 16/04/2018

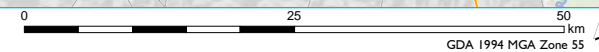


- KEY**
- Snowy 2.0 Exploratory Works
  - Snowy 2.0 exploration tunnel and portal
  - Snowy 2.0 project (indicative alignments)
  - Main road
  - Local road
  - Watercourse
  - Waterbodies
  - Kosciuszko National Park
  - NPWS reserve
  - State forest
  - Local government area boundary
  - State boundary

Baseline assessment study area and interview locations

Snowy 2.0  
Social impact baseline assessment  
Figure 2.1

Source: EMM (2018); Snowy Hydro (2018); SMEC (2018); DFSI (2017); GA (2015); LPMA (2011)





## 2.4 Baseline study phases and methods

A wide range of study and analytical methods have been utilised in the overall scope of the social assessment for Exploratory Works, which were used to inform and establish the baseline study phases and methods. A summary of the approaches and methods used in the process are presented in Table 2.1.

**Table 2.1 Baseline study phases and methods**

Requirement	Description
<b>Phase 1</b>	<b>Preliminary research</b>
Preliminary background research	Extensive desktop research and analysis was undertaken to inform the content of the social assessment for Exploratory Works and thus stakeholder engagement requirements.
Sector selection process	<p>Preliminary background research informed the selection of industry/organisations/sectors to be interviewed during the SLP engagement process. The following were identified as either essential services or services potentially to be affected by Exploratory Works:</p> <ul style="list-style-type: none"> <li>• childcare services (including daycare, pre-school, early learning centre);</li> <li>• tourist accommodation services (including hotels, motels, caravan parks and holiday parks);</li> <li>• health care services (including medical centres and hospitals);</li> <li>• education services (including public schools, high schools, and private schools);</li> <li>• real estate services;</li> <li>• community and/or governance and economic services (ie chamber of commerce, Council, etc); and</li> <li>• township(s) established for the Snowy Hydro Scheme (ie Cabramurra).</li> </ul>
<b>Phase 2</b>	<b>Sampling and selection process</b>
Development of interview locations	Refer Section 2.2 and Section 2.3.
Selection of SLPs	A list of existing SLPs was compiled based on the preliminary desktop analysis.
Consultation with Councils	The list of SLPs was refined based on consultation with the Snowy Monaro Regional and Snowy Valley Councils on 21 and 22 February 2018.
Selection process	<p>A process of random selection was employed to select SLPs to be interviewed during the SLP engagement process.</p> <p>The criteria employed was to interview at least one SLP in each of the sectors identified above, within each township/locality surveyed. However, the timeframes allowed for the baseline study provided for additional interviews allowing for a larger SLP sample and thus additional qualitative data.</p>
<b>Phase 3</b>	<b>Interview process</b>
Interview process	<p>Three rounds of face-to-face interviews were undertaken by EMM on the following dates:</p> <ul style="list-style-type: none"> <li>• 6 and 7 March 2018 at Cooma and Tumut;</li> <li>• 19, 20 and 21 March 2018 at Talbingo, Tumut, Cabramurra, Providence Portal, Adaminaby and Cooma; and</li> <li>• 10 and 11 April 2018 at Tumbarumba and Batlow.</li> </ul> <p>Handwritten notes were taken during each of the interviews.</p> <p>Follow-up interviews were organised with SLPs not available on the day of the interviews; with subsequent phone interviews taking place on 26 March 2018 and 12 and 13 April 2018.</p> <p>Some SLPs did not respond within the given timeframes and thus their responses are not</p>

**Table 2.1**      **Baseline study phases and methods**

Requirement	Description
	included in this baseline study.
<b>Phase 4</b>	<b>Reporting and analysis</b>
Reporting requirements	Interviews were summarised in a preliminary report (this report). The names of SLPs and interviewees were de-identified, respecting people’s privacy and allowing them to communicate their views anonymously.
Reports	This baseline study was developed using the information gathered as part of the interview process. The baseline study will be used to inform the social assessment for Exploratory Works.

### 2.4.1 Interview style

Both face-to-face and follow up phone interviews were conducted as part of the interview process.

#### i Face-to-face interviews

Face to face interviews was carried out in three separate rounds at each of the locations specified in Section 2.3. In each instance, interviewees were contacted in advance via phone or email to arrange an interview contact, location, date and time. The interviewees were also informed about the objectives and scope of the interviews in advance of the interview/meeting taking place.

Some of the interviewees were followed up by an email request and/or confirmation at the request of the interviewee.

The interview consisted of the following:

- a brief overview of the project if the interviewee had no background knowledge or sought further information;
- a series of structured questions to ensure the collection of consistent information from interviewees;
- an opportunity for interviewees to ask questions and provide feedback; and
- the provision of two information booklets about the proposed projects prepared by Snowy Hydro, including:
  - Snowy 2.0 Feasibility Study Summary; and
  - Snowy 2.0 Community Information Booklet.

#### ii Phone interviews

The same interview style and content was adopted for phone interviews. The only item omitted was the provision of booklets; although, if the interviewee’s time allowed, interviewees were informed about Snowy Hydro’s website and where they could obtain further information.

## 2.4.2 Baseline study outcomes

A total of 42 SLPs were interviewed, as shown in Table 2.2.

Further discussion and qualitative data collected from the interviews summarised in this report will be further discussed and assessed in the social assessments.

**Table 2.2** Baseline study results

SLP category/ sector	Snowy Monaro Regional LGA			Snowy Valleys LGA				
	Cooma	Adaminaby	Providence Portal	Cabramurra	Tumut	Talbingo	Batlow	Tumbarumba
Child care services	2				1		1	1
Tourist accommodation services	3	3	2		3	1	1	2
Health care services	3				2		1	2
Education services	4				2		1	1
Real estate services;	1	1			1			
Community and/or governance and economic services	1				1			
Snowy Hydro township				1				
<b>Total interviewed</b>	<b>14</b>	<b>4</b>	<b>2</b>	<b>1</b>	<b>10</b>	<b>1</b>	<b>4</b>	<b>6</b>

### 3 Interview summaries

Interview summaries are arranged in alphabetical order of the township/locality they were undertaken in.

#### 3.1 Adaminaby

##### 3.1.1 Tourist accommodation SLPs

###### i Tourist accommodation A

- Offers nine self-contained family cabins with queen-sized beds or single adult size bunks. Guests consist of a combination of walk-ins/visitors passing through Adaminaby via the Snowy Monaro Highway, recreational visitors and workers;
- Workers prefer to have one person per unit (ie normally do not share accommodation), while recreational fisherman usually have one to two persons per cabin;
- Selwyn Snowfields is an introductory snowfield, with visitors (in particular families with young children) relying on nearby accommodations service providers. It is only open six months a year and their staff is seasonal;
- During winter, accommodation is most often at 100% capacity. February and October are two of the quietest months;
- Workers that have stayed in Tourist accommodation A in the past have a great reputation with management. They are neat, tidy, prefer to recycle their waste, quiet, and tend to be family people. Workers prefer to be self-sufficient and to have kitchen facilities;
- Location wise, Adaminaby is fairly isolated. Small town reacts when new people come in. Retirees do not prefer to stay in small towns;
- The owners/management of Tourist accommodation A noted that Selwyn workers used to stay in a particular accommodation facility in Adaminaby, which has recently been sold. They believe this will impact on Selwyn this coming winter. Selwyn employs seasonal staff, usually backpackers that are provided free accommodation and meals while they work at the resort;
- The local shop has some pharmaceutical items and a few prescription items can be sourced via the shop but not much. This can be an inconvenience in winter as there are many families/children around, and children often get sick on the snowfields (eg. flu, cold, injuries);
- There is a school in town with about 25 to 30 students in total; and
- There are two main places to go for dinner in Adaminaby and one of them is not open every night.

###### ii Tourist accommodation B

- Offers motel and pub style rooms. There are 13 rooms, two rooms contain bathroom facilities, and the rest have shared facilities;
- On weekends, accommodation B is always full. June to November, it is busy with recreational fishermen and snowfield visitors. September, October and November, it is normally 100% booked out;

- On one of the busiest nights, the hotel provided 240 meals in one evening. Pre-ordering meals is required as the hotel needs to plan in advance. All food is ordered from town and delivered via van/truck;
- Often in winter months, there is a large line of people waiting outside of the hotel for a seat as there are not many restaurant options in town. The hotel chef usually works a 40 hour week. Last time it took 6 months to recruit a chef. The owner tends to hire locals to work at Tourist accommodation B, as employees that do not live locally are hard to retain. This hotel employs 20 staff;
- Workers associated with Snowy 2.0 booked out all rooms last winter, which had an impact on families that wanted to stay at the hotel and ski at Selwyn. This also impacted the hotel as families would be staying there, eating and drinking in the hotel, whereas the employees have everything provided in Cabramurra so they did not spend money at Tourist accommodation B;
- The owner mentioned that despite the above, there are no other issues with workers staying there. Workers associated with Snowy 2.0 tend to pay for their accommodation in advance which provides a level of certainty to hotel owners/management;
- There are many houses in Adaminaby which are vacant (these houses are rented out during the holiday season). Most rental properties are advertised through Cooma, with a few advertised locally;
- Food supplies are delivered from Canberra and fruit and vegetable supplies are delivered from Jindabyne;
- Housekeeping sends linen to Cooma for washing. There is no laundry service in town. The hotel provides washing room/drying/hanging room, and is looking into opening their own laundry room as there is a need in the area (both for Adaminaby and Providence Portal);
- Approximately nine months ago, Sydney Water started looking into working with Council to upgrade the sewerage system in town;
- There is a lot of street parking in town, but truck and caravan parking is an issue. There are no big parking spaces for trucks and caravans to stop by which is of concern; most of them drive through without stopping for this reason;
- Staffing is very difficult in Adaminaby; normally the owner/manager has to employ locals as staff employed from out of town has no incentive to stay. The owner noted that their chef recently went to work in Cabramurra for Snowy Hydro, which has left the hotel without a chef. The owner thinks that with Snowy 2.0, he might lose other staff;
- The town is quite peaceful, there is no crime. There is one manned police station in town; however, the owner believes that the police station is looking to increase by one staff member due to Snowy 2.0.

### iii Tourist accommodation C

- This centre provides accommodation options and ski packages for the Selwyn Snow Field visitors and staff, in Adaminaby and other local area;
- The centre acts as an intermediary between the owners and guests.



- Number of cottages/houses available for accommodation vary year to year, but the numbers are quite steady:
  - there are currently about 60 to 70 on the market;
  - they always lose a few and then win a few new ones; and
  - most of the owners live in Sydney and along the coast, but there are a few that live locally.
- Bookings are seasonal:
  - in winter, bookings are mostly for families that visit the snowfield; and
  - in summer, bookings are for visitors that come to fishing and attend local events.
- Accommodation is never 100% booked out, even in winter;
- Capacity varies depending on season;
- They accept walk-ins; and
- The interviewee has no concerns about Snowy Hydro workers residing in the town, if needed, but would be concerned if they took accommodation that is currently booked out by families and visitors to the area.

### 3.1.2 Real estate SLPs

#### i Real estate A

- The real estate owner usually only takes a couple of properties from the market to advertise/manage;
- There is not much available in Adaminaby;
- Rent averages from \$200 to \$250 per week;
- Sales are very slow in the area. Their own property has been on the market for two years and they would love someone to purchase it;
- Visitors to town prefer to come and stay during holidays;
- Their perception is that perhaps people that rent for recreational holiday purposes may wish to rent out to workers for more money. Their perspective is that there could be locals wanting to enter the market with workers but is not sure how many; and
- Their advice was to consult with other accommodation intermediaries in town.

## 3.2 Batlow

### 3.2.1 Childcare SLPs

#### i Childcare provider A

- This child care centre can accommodate 29 spaces. The average vacancy rate is around 30%. This is the only long day care centre (including pre-school) in Batlow;
- There is another licenced family daycare in town, which is operated from home;
- The number of children attending child care has been reasonably steady for the last five years. Parents from other localities send children here (from Adelong, Tumbarumba), they normally come to Batlow for work;
- There is 10 staff on the payroll system; approximately six to seven staff a day. Permanent to casual rate is around 50% and 50%. Working in child care requires a lot of responsibility, and can be stressful at times. Thus, management prefers to have quality staff working at the centre;
- Pre-school teacher is difficult to recruit, they tend to choose to teach in school;
- This is the only community-based child care in the Council region, run by a parent-managed committee;
- There are many community events, eg Batlow Apple Cider Festival, Tumut Falling Leaf Festival and Batlow Apple Blossom Festival, that bring visitors or workers to town;
- The interviewee expressed concerns about social issues in the community;
- There are a lot of low-income families in town;
- The interviewee noted that there is a lack of rental properties in town; Schools in Batlow are good, education is quality, teachers do an amazing job (a Catholic public school and another public school with good facilities);
- There are families that move to the area to occupy/live in public housing;
- Batlow is not an isolated town, it is close to Tumut and Wagga Wagga; people perceive themselves as a part of the entire region;
- There is one doctor located in Batlow;
- There is only one doctor that lives in Tumut, other doctors are drive in drive out (DIDO);
- A lot of locals will travel to Tumut or Wagga Wagga for GP services;
- Batlow has a hospital, which most likely refers patients to larger townships/hospitals in emergency situations;
- It is difficult to find regular GPs, people have to change their GP all the time due to difficulty in retaining doctors. This can be a concern for the local residents, as everyone would like one stable GP to go that knows the history of their health;

- Families come back to visit even if they seek further education elsewhere or move out to work. They have roots here;
- Many of the children that attend childcare are from families that have occupied the area for generations. Child care staff know their parents and grandparents; they know what families they come from;
- It is a very inclusive community in Batlow and
- A new library is opening in Batlow, which will provide a range of learning spaces for local residents.

### 3.2.2 Healthcare SLPs

#### i Healthcare provider A

- There is one GP in this medical centre, looking to recruit one more by end of 2018 or early 2019.
- The GP sees around 30 to 40 patients per day;
- The practice is open Monday to Friday (8 am to 5 pm) and half day on Saturday (9 am to 2 pm, or whenever the last appointment finishes);
- For emergency patients, the centre obtains first aid information, and then either call the doctor or ambulance. For non-emergency but serious medical cases, patients are usually referred to Batlow hospital;
- There is at least one GP on call in the hospital and one from Adelong;
- There is no surgery room in Batlow hospital, patients are referred to Wagga Wagga and other major cities;
- In terms of GP numbers, the town has enough capacity given it is a small town (if there is one more GP recruited, it will be more than enough); and
- Generally, the medical service in the community is OK, and there are no significant health concerns.

### 3.2.3 Education SLPs

#### i School A

- There are currently 120 students enrolled. The school is built to accommodate 300 to 500 students, ranging from K to 12;
- Students come from a large catchment area: Adelong, Tumut, Tumbarumba, etc;
- Teacher housing is an issue, there are not many rental properties;
- In the last two to three years, there were few apprenticeship opportunities in town, with many students pursuing further educational opportunities in Wagga Wagga and Wollongong. Some students also seeking work in Wagga Wagga;

- The school recruits teachers for secondary education through the Department of Education because it is a more specialised area. If the number of students grows, the school will need one more maths teacher;
- Houses in Batlow are relatively cheap and affordable;
- It is not easy finding rental accommodation; and
- People go to Wagga Wagga for grocery shopping.

### 3.2.4 Tourist accommodation SLPs

#### i Tourist accommodation A

- This motel has 12 rooms. No kitchen or laundry service is provided in rooms. However, laundry services can be provided for some guests, at request;
- There is no restaurant and food provided at the motel, there is an RSL club and pub nearby;
- The occupancy rate is good this year, with over 60% after Christmas every day. Most guests are visitors and contractors (at present, many of the visitors work in the fruit industry);
- They have many repeat guests;
- High visitation during snow season, they have Selwyn Snow Resort guests. During various local festivals, visitors come to see the Sugar Pine Walk;
- This motel accepts walk-ins and works on call 24/7;
- When the mill has a shutdown period, they are completely booked out for two weeks;
- The town doubles during the fruit picking season and it copes fine with the increase and fluctuation in numbers;
- There are not many rental properties in town; and
- The population in town tends to be of an older demographic, most people are 50 and above. There are not many young people.

## 3.3 Cabramurra

### 3.3.1 Facility management A

- The facilities in Cabramurra are Snowy Hydro owned and were rebuilt in the 1970s. The accommodation is only for Snowy workers and contractors; it is not open for public tourist and campers;
- The accommodation is also open to work groups to support the township (eg cleaning, catering). It is also sometimes open to NPWS staff when catching wild cats, and other pest animals;
- Operational workers have their permanent place; other workers are booked through the Reservations Manager;

- On the day that the interview was undertaken, there were 212 people in the town, which is the largest number of workers accommodated at any given time in the last 10 to 15 years;
- The average number of persons staying on any given night is approximately 50 persons;
- The maximum number that can be accommodated with current accommodation options is 400;
- There is one school in Cabramurra, and currently, there is only one student and one teacher. The school is run by the Department of Education;
- There is an on-site medical centre, the GP is from Cooma;
- There are an emergency evacuation and assembly area on site. Cabramurra has been working with NSW Rural Fire Services to mitigate bushfire risks and is currently running a trial. There are strict fire ratings in place. Snowy is working on a Crisis Management Plan. There is emergency response team run from Tumut (ambulance and an on-call paramedic);
- Cabramurra is approximately 1 hour and 30 minutes drive to both Tumut and Cooma hospitals;
- The oval is used for recreational purposes including cricket and football;
- The bar and bistro facilities are open to tourists and visits (approximately 60 to 70 meals prepared for visitors a week);
- The main building accessible to visitors has a cafe, post office, newspapers and magazines for sale, a small grocery store which is subsidised by Snowy Hydro, heating in some common area in winter months;
- Garages are provided for Snowy Hydro workers staying on site; each of the houses has a garage. There are also designated garage buildings;
- The current sewerage plant can cater for 400 people; it would be easily mirrored to cater for 800 people;
- Food and grocery are delivered from Canberra and Cooma twice a week. All food trucks are set up for winter road conditions, with drop-down chains installed behind their wheels;
- Security wise, there are cameras in place in Cabramurra;
- Cabramurra is working on a Traffic Management Plan as there is increased risk from travelling via some of the incoming roads, especially in winter conditions (snow/ice). In particular, the Goat Ridge Road coming into Cabramurra is dangerous; it is very narrow with no fencing. Often they have to help motorcyclists and cars that veer off the path into the bush;
- There is a weekly bin service (waste is transport out of town); and
- Over time, there has been an increase in kitchen and cleaning staff.



## 3.4 Cooma

### 3.4.1 Childcare SLPs

#### i Child care provider A

- This child care centre has the capacity for 46 spaces (12 infants, 14 toddlers, and 20 pre-schoolers). The representative is considering changing their licence from 46 to 48 depending on space;
- There is demand for childcare service, the representative is considering building an extra room to accommodate additional 10 places or more;
- There are two other daycare centres in town and two pre-schools;
- This centre is quite full due to good local reputation, and has a wait list for some days; and
- Other child care centres are not as busy.

#### ii Child care provider B

- This is the biggest childcare centre in town. It has the capacity for 76 children and only at 50% - 60% full;
- This centre employs 14 casual local staff and currently has an oversupply of staff. The representative stated that if the number of children enrolled increases, staff number could also increase to 17 to 20 locals;
- November, December and January are quieter months as people move out of the area at that time. April, May and June are busier;
- The representative has a very positive outlook with regard to Snowy 2.0 as the project may bring additional population to town, and is keen to collaborate with Snowy Hydro (offering a salary sacrifice option for Snowy Hydro staff); and
- Many local businesses are not surviving due to a lack of people in town, recently some restaurants have closed down.

### 3.4.2 Healthcare SLPs

#### i Healthcare provider A

- The local hospital was built in 1984. It has 20 beds funded and has the capacity for 30 beds;
- There are currently five maternity beds and it has the capacity for an additional bed;
- The operating theatre is for general surgery only, there is an on-call anaesthetist for emergencies;
- There are 14 to 15 doctors in two medical surgeries in town, and one visiting doctor. Doctors are on call 24 hours a day, seven days per week, on a roster basis;
- The hospital only takes in patients that require minor treatments and surgeries, most patients are referred to Canberra for treatment;

- There following community services are available:
  - early childhood;
  - oncology;
  - renal;
  - immunisation; and
  - midwife services.
- During summer, the hospital is busy with an influx of recreational users like mountain bike riders, etc. During winter, the hospital is always busy;
- Although most patients travel to Canberra to see specialists, there are visiting specialists that come to town; and
- In the next 18 months, there will be major renovation works occurring at the hospital. Phase one of renovations will involve the radiology and emergency departments and phase two will involve upgrades to the maternity wing.

## ii Health care provider B

- This medical centre is run by four partners, but each of them works partially for the practice and partially in the hospital;
- Although there are about eight to nine doctors, it is equivalent to six full-time doctors per week when taking into consideration the work done at the hospital;
- This practice sees about 600 – 700 patients per week. The number fluctuates, however, during the winter season; the medical practice is always busy;
- The NSW Ambulance service is also busy during winter;
- The centre representative mentioned the biggest area of stress is the local hospital emergency department. The hospital needs more resources and increases in population will place more strains on current services;
- This year, the hospital is trialling a different model of service to ease the burden, by overlapping two doctors at a time. This will have to increase and thus take staff away from the practice;
- There is no anaesthetist in town, there are a few doctors that administer only for emergency caesareans or miscarriages;
- The representative mentioned that it is difficult to find doctors to cover the night shift;
- There is only one specialist living in town, for palliative care. Visiting specialists take on elective cases;
- There is no after hour GPs, residents are understanding and do not abuse the after hour hospital care; and

- During snow season, road conditions are tough. Road infrastructure requires improvement particularly overtaking lane on highway/motorway.

### iii Health care provider C

- There is nine to ten full-time equivalent staff; most also work at the hospital. For example, some doctors spend about three days at the surgery and two at the hospital. Office hours are normally from 8 am to 5 pm or 5.30pm. There are no dedicated after-hours GPs, everyone that is sick after hours goes to the hospital;
- The doctor works about a 50 hour week, seeing about 100 patients. The representative mentioned that this varies hugely week to week;
- Cooma has plenty of doctors in town and this centre currently has the capacity. Most patients can obtain a same day appointment; generally, spare appointments are kept every day. One doctor is generally dedicated for walk-ins on a daily basis;
- The major referral centre is Canberra, approximately 90% of transfers from the hospital are to Canberra. For more complex conditions, patients are referred to Sydney if Canberra cannot deal with the issue;
- The representative believes the major concern in town is a lack of accommodation;
- The local hospital covers a very large catchment area: Berridale, Jindabyne, ski injuries from Perisher, Thredbo, Bombala, Michelago, Selwyn, etc. The hospital does not cover Tumut. Cabramurra residents generally split between Cooma and Tumut hospitals;
- Approximately 20 years ago, Tumut hospital was as large and functional as the Cooma hospital; over the years, their service capacity has decreased due to a number of factors; and
- Tumut hospital has suffered as it has been difficult to retain quality doctors. It is a different story in Cooma where it is much easier to retain doctors.

### 3.4.3 Real estate SLPs

#### i Real estate A

- There is a recent project that brought approximately 100 to 150 construction workers to town. This resulted in an increase in rents and property value;
- There are normally five to six listings for rent, during the construction period, owners took up the opportunity to move out of their homes and rent them out for a greater value. Normally the rental rate of a 4 bedroom, 2 bathroom house is approximately \$400 - \$450 per week, during the construction, the rent increased to approximately \$500 - \$550 per week;
- In about 18 months from when the workers first arrived, the property market went back down as these construction workers moved out of the area;
- Rental properties are filled up quickly;

- At present, the property market is going up about \$50,000 per property due to local speculations related to Snowy 2.0. This increase is pricing some of the locals out. Most of the investors are from Sydney and prefer to purchase tenanted houses;
- Houses in Cooma have been rented out by people that have lived in the area for a long time, many of them are older people that have aged in these houses. The houses are old and worn down. The real estate representative stated that historically many construction workers preferred a new or renovated home, especially if they were relocating with families;
- Generally, there is a lack of new or renovated homes in the area and the representative believes that locals are not happy with the Council not reacting to the shortage of residential land;
- The representative believes the town has the capacity to accommodate an increase in population;
- From the community perspective, doctors and medical centres always seem to be busy;
- The representative believes the industrial area needs expansion and new residential land is needed to accommodate new homes; and
- It is difficult to retain a workforce in the area. Many people come but leave after a few months. Winters are long and many outsiders struggle during that time of year.

#### 3.4.4 Education SLPs

##### i School A

- There are three secondary schools in Cooma. This is a Snowy Hydro built school in 1954. The school is built to cater 1,000 students. The school is currently undergoing an upgrade with fewer classrooms;
- There are currently approximately 500 students, 50 teaching staff (20 support staff including temporary staff). Overall, the student numbers have dropped from 650 to 500 over eight years period and are predicted to move up to 600 to 650 over the next four to five years;
- Snowy Hydro is a part of Country Universities Centre (CUC), Snowy Monaro. The CUC set up and plan a model to provide university education opportunities for local students;
- In recent times it has been somewhat difficult to recruit teachers. Not long ago, a group of teachers retired at the school. Recruitment of teachers is requested through the Department of Education. Many teachers relocate for the purpose of teaching (not many local teachers);
- In the interviewee's opinion, small towns are vulnerable and can be 'eaten up' by bigger regional hubs. Cooma is not so far away from Canberra, and many people live in Cooma commute to Canberra for work and vice versa;
- There is a discussion about a regional theatre for performing arts. In Cooma, there is no purpose-built facility for performing arts;
- School graduates easily find work: 30% to 40% graduates obtain apprenticeship or further education in TAFE; 30% of graduates move on to university (the majority going to Canberra University and a few to Wollongong, Armidale and Sydney); and 10% of graduates transition immediately into the workforce;

- The school is currently working with Macquarie University and Snowy Hydro to offer top students the opportunity to undertake projects with Snowy Hydro;
- Students will benefit from an influx of Snowy Hydro employees and families to town;
- Cooma does not experience the winter influx of visitors like Jindabyne; and
- It is generally a safe community.

## ii School B

- The school currently has 263 students enrolled and has the capacity for an additional 100 students in terms of classroom space. The number of students was 240 in 2014 and 263 in 2018;
- There is a formula to calculate enrolment and number of classes. Once the number per class increases up to a certain number, additional students will be allocated to a new class. Currently, there are 11 classes;
- There are 17 teachers and support staff. There is no issue with the recruitment of teachers. Permanent teachers tend to stay long term;
- There have been problems with external agencies and community services offering support to school children and their families. Current community services organisations have a high staff turnover rate. Families and children can be deterred as it takes a long time for them to build a connection and trust with the support workers;
- There is a general lack of speech therapists, occupational therapists, mental health professionals, family support services, and psychologists;
- Snowy Hydro will fund a pilot program to recruit a well-being nurse servicing the entire community and situate in one school, which the school is excited about;
- In Cooma, there are not many choices in terms of rental properties;
- The catchment area of this school is large (students coming from in-town and regional areas), some travel one hour on the bus;
- The number of mountain bikers is increasing, and the hospitality workforce is growing; and
- There are families relocating from Sydney, Brisbane and other larger cities, looking for a different lifestyle.

## iii School C

- There are currently 78 students enrolled and this school has the capacity to accommodate several more students. There are eight full-time teachers and eight part-time teachers;
- The school is owned by a Church of a particular denomination and has most educational facilities, eg science lab, general purpose learning area, music room;
- It is easy to retain local teachers;



- Students coming from other regions, eg Adaminaby, Eucumbene, Jindabyne (travel by a school bus);
- There are vacancies in rental properties in summer;
- The school organises activities in winter and summer;
- There are no community issues to be aware of;
- The school has a positive and tight-knit culture;
- The interviewee mentioned there is plenty of accommodation in Jindabyne and it is only active/full in winter months and
- There is a positive outlook in regards to Snowy 2.0.

#### iv School D

- There are currently 324 students enrolled in this school. The school is at capacity, however, should more students enrol; there are rooms for three additional classrooms to accommodate an additional 90 students. These will have to be in a demountable building. Due to the lack of space on site, limited areas are available to accommodate a demountable building;
- Due to the age of the school building, some classrooms are small and can only fit younger students. The interviewee would like to have some more permanent buildings to accommodate additional students;
- There are 18 teachers (one part-time). The teacher turnover rate is fairly low. Permanent teachers are recruited through the Department of Education;
- Students at the school are from all regions. Due to the current enrolment number and the school being at full capacity, any future intake of students would be restricted to Cooma. Other students would be directed to other schools within the wider locality;
- The school was built by Snowy Hydro in the 1950s and is the closest school to the Snowy head office. Many children of Snowy staff attend this school; and
- The interviewee is very positive towards Snowy 2.0 and believes it would be good for the town and the community.

### 3.4.5 Tourist accommodation SLPs

#### i Tourist accommodation A

- There are 27 rooms in this hotel. The hotel is currently upgrading a number of its rooms to executive type suites;
- This hotel is a busy place in town; many locals dine here;
- When there were construction workers in town, the hotel did not hire extra staff;
- The hotel is currently fully booked because sheep farmers are passing through town. It is usually busiest mid-week and on weekends. However, this hotel is not always fully booked out;

- The hotel representative is positive about Snowy 2.0 and having construction workers coming to town and boosting local businesses;
- People will always find a parking spot, either street parking or in the nearby car park;
- Many locals are concerned about public housing opening up in the area; and
- The representative noted that there has been an increase in minor crime/vandalism lately and that they, as well as a number of locals, are concerned about this.

## ii Tourist accommodation B

- This motel has 60 rooms and can accommodate a total of 300 people. It is the biggest motel in Cooma. It has already been impacted by this project with a number of foreign engineers staying at the motel; with management welcoming Snowy workers. Given this, the representative advised that they have a positive attitude towards the project.;
- There are seven staff working in this motel;
- The main visitors include tourists, Snowy Hydro workers (engineers from Dubai, Japan, France, etc), school groups (26 schools have booked accommodation this winter, each staying two to three days). Special deals/rates are sought for those staying for a prolonged period of time;
- Recently, an engineer stayed at the motel for three weeks as they were unable to find a rental property;
- The motel is already 100% booked out over winter for 2018 and 2019, visitors book two years in advance to secure a spot for the ski season. During summertime, the accommodation always has capacity;
- General comments relating to living and working in Cooma include:
  - there are limited employment opportunities in Cooma;
  - it is difficult to recruit employees, particularly on a full-time basis. The interviewee finds that a lot of locals prefer to work on a casual or part-time basis if they are in the hospitality industry;
  - In the locality wages are low ;
  - backpackers generally do not attempt to work in Cooma; they prefer to work for the Selwyn Snow Resort as they would like to ski. Working at Selwyn snowfield also provides them with free accommodation and meals, as well as minimal pay;
  - private vehicle parking in Cooma is never an issue, however, caravans and heavy vehicle parking is an issue in town;
  - truck drivers do not stop in town, they just drive through as there is nowhere to stop;
  - some businesses are closing down in town, rents are high, electricity bills and Council rates are exceptionally high. Business owners cannot earn enough to keep up with the expenses;
  - it has always been tough living in Cooma; and

- most locals are not happy with the Council.

### iii Tourist accommodation C

- This motel has 43 rooms (14 rooms are 2 bedrooms). Their guests are mostly walk-ins, booking marks around 20%. This year there has been an influx of mountain bikers;
- In winter, the occupancy rate is 100%, in summer it is around 50-60%. There are two to three coaches coming a month seeking accommodation;
- Usually, March is a quiet month, but this year it has been busy due to workers/contractors and Snowy Hydro contractors/trades;
- Four staff are employed. It is easy to recruit casuals, hard to recruit full-time employees;
- They have been advertising for a full-time receptionist role since September and still have not found a suitable candidate. and
- This motel does not encourage long-term guests.

## 3.4.6 Community organisation SLPs

### i Community organisation A

- Rental accommodation in Cooma is at capacity;
- The community organisation has been talking to Council regarding the following:
  - more development applications (DAs) should be approved;
  - more land should be released in Cooma North for residential purposes; and
  - the industrial area in Cooma should be upgraded.
- Most houses in Cooma were built in the 1950s, they are old and undesirable. Cooma has a lack of quality motel accommodation with most motels having been built in the 1950s and requiring significant upgrades. The representative believes that if local motels/hotels were upgraded, this would attract more visitors to the area;
- Hospitality businesses need competition to realise the need for a significant upgrade. There is ongoing demand for 'Quest' style service apartments;
- The interviewee is looking forward to building housing quickly and opportunities coming from Snowy 2.0. However, accommodation in Cooma is going to be an issue;
- Hospital and medical services are good;
- Jindabyne is out of accommodation (difficulty with placing staff in a rental property)
- School wise, there is room to grow;
- There is a range of child care services in which a majority have capacity;

- In terms of transportation options, there is a community bus and a school bus;
- Parking is good in Cooma; and
- Council is working with developers to release residential land (small high-density housing); a number of developers are waiting for Council to take the next step.

### 3.5 Providence Portal

#### 3.5.1 Tourist accommodation SLPs

##### i Tourist accommodation A

- There are 22 lodges with shared kitchenette facilities and a communal living/dining room.. 60 visitors in total can sleep, including two self-contained two bedroom cabins, and one self-contained one bedroom unit and a five-bedroom house;
- Every room has central heating. The owners only cater food for groups over 10; any less is not cost effective. Only three of the family lodges have laundry facilities. Bed linen is taken to Cooma once a week for washing;
- The owners are the only staff there, they will have two extra staff to help out during busier periods;
- Usually, May to October is the peak season and most guests stay only one night;
- In winter, August is usually 100% booked, other months vary;
- Owners accept walk-ins and most of their guests are walk-ins;
- Visitation is busy from March to June long weekend, as fishing is bringing in recreational visitors. (although fishing is weather dependent) ;
- The owners have noticed that the dam level has been lower than usual;
- Adaminaby is the closest town but there are no medical services there, the next closest medical services are in Cooma;
- There is no public transport passing through Providence Portal;
- The owners think that Tantangara Road requires an upgrade;
- There is no telecommunications in Providence Portal – communication via landline or satellite phone, satellite TV and internet are available but not for all guests; and
- The owners did not convey any positive or negative feedback about Snowy 2.0.

##### ii Tourist accommodation B

- There are 10 cabins and a two bedroom unit. All of the accommodation is fully self-contained. It can accommodate a maximum of 50 people with one shared cabin. The average occupancy rate is approximately 40% to 50% and receives repeat trade annually. In winter, the lodges are completely booked out with no vacancy;

- From April to the June long weekend, accommodation is busy with fisherman, followed by families and visitors visiting the Selwyn snowfields from August to mid-September;
- The owner is concerned about the water level of Eucumbene River and potential impacts to aquatic ecology (eg. will the Redfin enter the Eucumbene River following the tunnelling work, and the potential impacts to trout population). The owner will submit a formal complaint to Snowy Hydro in regards to this concern;
- Selwyn Snowfields does not provide accommodation on site. They rely on accommodation in Providence Portal and the surrounding localities. If workers take up all accommodation space in Providence Portal, the owner believes this will harm Selwyn Snow Field's business in winter;
- Mobile coverage is poor in Providence Portal. Communication is mainly via landline, satellite phone, internet and TV via satellite. They do not provide TV or internet for visitors; and
- The owners travel to Cooma for all supplies, rarely to Adaminaby.

## 3.6 Talbingo

### 3.6.1 Tourist accommodation SLPs

#### i Tourist accommodation A

- This retreat can accommodate a maximum of 65 people across a variety of rooms (including share rooms);
- The retreat can only cater for groups and has to be pre-booked. ;
- Food and groceries are delivered to the Country Club by Pacific Food Distributor;
- The representative sees Talbingo as a rural transaction place. There is a post office, a supermarket and bank in the locality;
- During winter (particularly July and August), this retreat is very busy as there is no accommodation provided in Selwyn Snow Field. Most guests have to make a booking in advance;
- Autumn and Spring are relatively quiet times. Summertime is also busy;
- Accommodation is normally fully booked out on the weekends. Mid-week, Tourist accommodation A tends to have the capacity; and
- The retreat representative stated that they prefer long stay workers and receiving notice in advance about any potential workers that will take up available vacancies (in particular long-term).

## 3.7 Tumbarumba

### 3.7.1 Childcare SLPs

#### i Childcare provider A

- Childcare services under Council include:



- a Council owned service which includes babies from 6 weeks to children ready for high school (before and after school care); and
- Puggles Children's Services Van, which is a mobile daycare which services six venues including Tooma, Rosewood, Brungle, Ladysmith, Tarcutta and Adjungbilly. It has an equipped truck that visits these venues and sets up for a five-hour program. It has the capacity for 20 children. It services three venues each week and works on a roster basis. Most venues are at capacity.
- The childcare services have just increased but there are still not enough toddler spaces;
- There are 55 under five-year-old children, and 24 school-aged children;
- There is no private pre-school/family day care centre in Tumbarumba. Many people rely on family and friends. It is very hard to accommodate people a lot of the time;
- There are concerns for children or parents with disabilities that are unable to access child care services;
- The interviewee expressed some general concerns, including:
  - staffing/casuals being burnt out;
  - although there are plenty of people looking for work, business owners find it difficult to find the right kind of staff to employ (e.g qualified and suitable for working with children);
  - the baby and toddler rooms are at capacity throughout the year;
  - the rental market is poor with a lack of rental properties;
  - there is a big issue surrounding aged care, the aged population is increasing but there is not enough supply of infrastructure/services to cater for the ageing population;
  - the number of financially disadvantaged families is growing;
  - the lack of community social services (special services) – there is a long wait in Albury and Wagga Wagga; and
  - there is no public transport in Tumbarumba, people need to rely on their own cars for transportation.
- Early childhood education/training is available, many qualifications are obtained via long-distance learning;
- There is a local leadership group that meets once a month;
- There is a new trend where people are coming back to town to raise children;
- There is an aged population in town; people are choosing to retire in Tumbarumba because it is cheaper to live;
- Fruit pickers provide a transient population, they come to pick blueberries, grapes, apples. The town absorbs demand produced by this influx of individuals quite well;

- A few students leave in Year 10 and 11, not many finish Year 12. Most move away to work in Albury, Wagga Wagga, there are not many that stay locally;
- Major local employers are the timber mill, the Corrective Centre and the Council;
- There are many low socio-economic families in town;
- There is an issue with drug usage in town, including high school students; and
- Council is looking to service the childcare services in Cabramurra due to increase number of children (there were only two children in the past, now there are more).

### 3.7.2 Healthcare SLPs

#### i Healthcare provider A

- There are two medical centres in Tumbarumba and three GPs. However, for a few years there was only one GP. It was really difficult when the GP was the only doctor in town;
- At times when the GP needed to go to a conference/seminar in Sydney or Melbourne, or want to take a day off, it was very hard as there was no backup;
- There are no specialists and no visiting specialists in Tumbarumba, patients have to travel to Wagga Wagga, Albury or Tumut (mostly Wagga Wagga);
- There is a community bus that takes patients to Wagga Wagga with a fee;
- There are few rental properties in town. Unlike other regional Councils in NSW that provide free accommodation for new GPs and teachers coming into town. The local Council here does not provide accommodation for doctors;
- There are many properties for sale but people are reluctant to buy if they do not have permanent employment, as they may wish to sell their property and now it will be hard to sell;
- There is a high turnover in the local population due to local industries (eg timber mill);
- Elderly residents coming from major cities tend to move out of town sometimes due to the difficulty of finding specialists in town.;
- Hospital nurse numbers:
  - each shift has two staff;
  - high care – unknown; and
  - emergency – always one registered nurse.
- This medical centre is open Monday to Friday, and the other medical centre opens Monday to Friday and half Saturday;
- The GP sees an average of 40 patients per day;

- Tumbarumba has two grocery stores (IGA and Foodworks), one butcher, one swimming pool which is only open in summer; and
- Apart from the removal of skin lesions, no other surgeries are performed in town. Patients are referred to Wagga Wagga, sometimes to Canberra and Sydney.

#### ii Health care provider B

- There are two full-time doctors in this medical practice. The opening hours are Monday to Saturday (half day on Saturday);
- The medical practice sees around 40 to 45 patients on a daily basis, split between two doctors;
- The owner of the medical practice is planning to have an after hour service depending on the influx of patients;
- The doctors also work in the hospital (on call);
- Generally, the town needs new and improved infrastructure and more housing to be built; and
- The interviewee believes the town will benefit from an increase in population.

### 3.7.3 Education SLPs

#### i School A

- The school has 162 students (10 years ago, the school had 200 students, and in 2014 there were 147 students). There is capacity for 240 students. Given that the number of students has reached a certain quota, the school can advertise for the role of Acting Principal;
- The main difficulty is the inability to advertise for a full-time permanent role, there is a serious shortage of teachers in the area and anyone would be reluctant to move for a contract/temp role. During the flu season if one of the teachers is sick children have to be split up between classes;
- There are 12 teachers, eight classes (10 full-time teachers and two part-time teachers), nine teacher aids and three office staff. There are two special casual teachers, one lives in the town and is over 70 years old; another one is willing to drive from Wagga Wagga and step in when required. There is an issue finding casual staff, the Department of Education will only provide permanent teacher placements, not casual positions. There is also a shortage of teachers in Albury and Wagga Wagga;
- There are many industries in the area, including the mill, private blueberry farms, agricultural activities (niche/hobby farmer activities). Tourism is a growing industry;
- Tumbarumba is a popular retirement spot with many pensioners deciding to retire here due to the cooler climate;
- The interviewee commented on the following local services:
  - there are two doctors in town, they work very long hours. There are not enough doctors on call after hours;

- a new hospital is about to open;
  - there is certainly a need for additional medical staff;
  - emergencies are referred to Wagga Wagga, in particular when doctors are not there. There have been situations when doctors are on leave and there is no one to go to in town;
  - children are not allowed to stay in the local hospital; they are referred to Wagga Wagga;
  - transport could be improved;
  - the community would really like a new swimming pool;
  - shortage of rental properties; and
  - a lot of work has already been done with town landscaping.
- There are three schools in town, including one public primary school, one Catholic school, and one high school;
  - A few parents choose to send their children to private schools, particular religious denomination school in Albury and Wagga Wagga. These students commute daily;
  - The school offers a variety of subjects, some available over video conferencing; and
  - The merger of the two Shire Councils was very unpopular within the community.

### 3.7.4 Tourist accommodation SLPs

#### i Tourist accommodation A

- There are 16 rooms in this motel. No kitchenette and laundry facilities on site;

There are three casual staff, two managers; The peak period is October through to April/May;

Saturday to Friday is normally fully booked out.

- Lately, many contractors have occupied this motel, due to infrastructure upgrades in the area. Other guests include travellers passing through to go to places such as Philip Island;
- This year the motel is very busy, the occupancy rate is above average;
- Many people coming off the highway make reservations at the motel, including car clubs/bike groups. People also come to camp at O'Hare's and Paddy River;
- In winter the motel is busy with families visiting Selwyn snowfield;
- The motel is also busy with families that come to visit their relatives at Mannus Corrective Centre;
- There is ample parking on site; trucks can park at the nearby Bowling Club;
- There is a shortcut to Talbingo through the forest during the warmer months;

- The interviewee mentioned Batlow used to be a great/lively town until one of the industries there closed down. It used to be bigger than Tumbarumba and has a lot more infrastructure;
- People that live in Tumbarumba mainly work at the Mill and at the Corrective Centre;
- There are trucks coming through Tumbarumba all hours of the day and night and travel to and from different directions. Truck drivers stop in town frequently and sometimes do stay overnight; and
- There is new backpacker/contractor accommodation being built this year at the caravan park for blueberry, cherry, apple pickers. These will be self-contained with bathrooms/kitchens.

#### ii Tourist accommodation B

- The motel has 31 rooms and is currently fully booked. The normal occupancy rate is around 60% (skiers do not stay here);
- The business of the motel is very dependent on the season (raining/cold – less stay, warm – more stay). October to April is the peak period with around 70% to 75% occupancy rate, then it drops to 50% in winter (July and August are the quietest periods);
- A majority of motel guests are corporate, tradespeople, contractors and mill workers;
- There are 40 more rooms set up in the caravan park and rent out at half price. All rooms are self-contained and open to the public (mainly for blueberry pickers);
- There is a lack of rental accommodation in town and lack of doctors;
- The State Government is currently refurbishing the local hospital; and
- It would be very good for the town if workers and/or families relocate to Tumbarumba because of this project.

### 3.8 Tumut

#### 3.8.1 Childcare SLPs

##### i Child care provider A

- This child care centre is originally a 60 space centre and has expanded to 71 spaces;
- The centre is currently 90% full; The centre employs 18 staff;
- There is an enrolment loss to school each year but does not take long to fill up; There are three long day care centres and one pre-school in Tumut;
- Children from Talbingo, Gundagai and Adelong come to Tumut (there is only one child care centre in Gundagai);
- The representative believes that Tumut has available space for additional families (the town has grown for the last seven years);



- There are two supermarkets in town. There are currently empty shops for more businesses;
- The representative mentioned there has been talking about building a new hospital in Tumut;
- There are three medical practices in Tumut. In general, it is hard to retain doctors in Tumut, and additional doctors are required; and
- The representative was positive about Snowy 2.0 noting that it will be good for the locality as it may bring wealth to the local community.

### 3.8.2 Healthcare SLPs

#### i Healthcare provider A

- There are currently four to five doctors working in this centre, however, the retention rate is very low as most registrars choose to leave after six months in Tumut;
- The representative believes it needs to be made easier for doctors and specialists to stay in town. For example, specialists normally stay overnight so they need accommodation and parking in proximity to their work. There need to be extra parking spaces for doctors and patients;
- There are no specialists in town. They come once a month to visit and patients book appointments. The specialists generally include a mental health specialist, urologist, orthopaedic specialist, rheumatologist, gynaecologist and two surgeons. When specialists come to town, they save approximately 30 people from catching the bus to Wagga Wagga (many patients travel to Wagga Wagga for specialist care);
- On occasion local GPs act as specialists due to a lack of specialist care in town;
- One of the GPs in this centre sees approximately 50 patients per day (by appointment and walk-in patients). They work between 7 am to 7 pm most days and about 60 to 70 hours per week (including weekends);
- There are many elderly patients in Tumut, one of the GPs in this centre also consults patients at the local nursing home and hospital; and
- This medical centre is looking to expand to provide more rooms for doctors; The representative's view is that the Council should make it easier to expand medical services in town which would assist in attracting and retaining additional GPs and specialist staff.

#### ii Health care provider B

- The representative believes there are no issues in terms of the local hospital's ability to accommodate more patients. The occupancy rate of the hospital beds is approximately 70%;
- There is a gap in anaesthetists which limits the ability to do emergencies. The only emergency surgery undertaken by the hospital is a caesarean;
- The biggest proportion of patients suffer from respiratory and cardiac issues. There are also drug and alcohol patients, which is consistent with other rural and regional towns.. Tumut hospital has a mental health team that works within the hospital;

- Tumut does not meet the criteria for needing extra GPs;
- Nursing care and clinical training is very high in Tumut hospital; staff have a high level of training and know 'a bit of everything';
- There is a Clinical Care Advisory line the staff can dial in and receive instructions remotely on how to perform the procedure;
- There is one obstetrician in town that delivers about 100 babies per year. Previously the obstetrician would deliver about 160 babies per year but when facilities are upgraded in surrounding towns (eg Wagga Wagga), the number tends to drop as people prefer to go to a new hospital.;
- On occasion the emergency services use the hospital helipad; and
- Generally, the representative believes that Tumut hospital is performing well as a rural hospital and does not require any further improvements.

### 3.8.3 Real estate SLPs

#### i Real estate A

- Tumut had previously experienced an influx of construction workers. In the past projects that have occurred locally have not provided accommodation for their contractors/workers. As a consequence:
  - rent increased for properties after the construction work commenced;
  - landlords chose not to have too many 'men' in their properties, so generally, the rental packages included cleaners and gardeners in the price. This system worked well and the construction workers accepted paying a premium for these services;
  - property owners and agents finding out that there were an extra three to four people staying at the property; and
  - one or two cars are designated to drive to Tumut to purchase food and supplies for everyone staying in Talbingo or accommodation compound. This has minimised traffic impacts on local roads;
- There was an odour issue during the construction phase of another project;
- The real estate company is also in charge of sales and rental in Talbingo. The real estate representative mentioned Talbingo has a Snowy Hydro legacy; the town was left with a high vacancy rate after the Snowy Scheme construction works ceased. Many workers from the original Scheme retired in Talbingo. The town has no doctor but has a good government funded bus service that takes residents to Wagga Wagga;
- Since Snowy 2.0 was announced, Talbingo sold 17 properties in six months (the normal sale rate is around seven properties per year);
- There are currently six flats for rent in Tumut and none of these is furnished rental property; and

- There were no rental properties when a Government funding project was being constructed.. The construction workers were in Tumut for 12 months.

### 3.8.4 Education SLPs

#### i School A

- The current enrolment for this school is approximately 565 students. The enrolment number has been consistent in the last few years;
- The representative believes the school has the capacity for additional students. If the number of students increases, there may be a need to recruit new teachers. The recruitment process would not be difficult. However, many incoming staff find it hard to live in the area so the turnover rate can be an issue;
- The representative has a very positive outlook in regards to Snowy 2.0 and believes that the project may bring a more diversified population in town which will have a positive impact on the community. In particular, should more students enrol at the local schools it will provide a positive mix/influence for local students;
- There is only one high school in Tumut that has year 11 and 12;
- The representative hopes that the Council will improve infrastructure as a result of the project (eg a joint facility for sporting);
- The representative believes the town has good infrastructure and has good restaurants, catering well for seasonal tourism;
- Most of the high school graduates in town go into trades and seek local apprenticeship opportunities. A low number of graduates seek further education after high school;
- Although there is a local TAFE, enrolments in recent times have dropped substantially. It would be good for TAFE if additional people were to move to the area as a result of the project; and.
- The unemployment rate in Tumut is generally high.

#### ii School B

- There are currently 360 students enrolled in this school, 14 full-time teachers, eight part-time teachers and one principal. The school lacks casual teaching staff;
- This school is built to accommodate 14 classes, currently, 13 classes are used. If the number of students increases demountable buildings can be installed to accommodate additional students;
- Students come from a large catchment area, including Talbingo, Cabramurra, Adelong, Batlow, Tumbarumba and Gundagai. Around 90% of students travel by bus and 10% are dropped off by their parents;
- The school recruits teachers through the Department of Education; and
- There are social issues in the community including drugs and alcohol abuse, as well as mental illness.

### 3.8.5 Tourist accommodation SLPs

#### i Tourist accommodation A

- This hotel has 26 rooms, a conference/function room. The busiest time of the year is winter and long weekends, at Easter it is always 100% booked. At other times of the year the occupancy rate is at around 50% or slightly more;
- The hotel currently accommodates short term and long-term visitors;
- The lack of accommodation in Tumut has resulted in a number of workers seeking long-term accommodation in the hotel (eg one occupant has been living there since October 2017 and there are other occupants that have sought six to 12 months accommodation);
- The Tumut accommodation market is highly competitive because of the lack of properties. They have had customers book out rooms for 12 months and pay in advance to secure a room (even when there is no need for a room to be occupied for the entire time). The hotel generally does not offer a special rate for these long-term guests;
- Approximately 80% of the guests are corporate/business customers. This hotel does not rely on the leisure and tourism market as much as other hotels;
- The hotel representative is careful not to book out too many rooms as they have to leave some for regular/returning guests; and
- The representative mentioned he/she has already felt the impact from Snowy 2.0, with a few of the workers already having stayed at the hotel.

#### ii Tourist accommodation B

- This motel has 30 rooms overall including 12 family rooms with kitchen facilities, each accommodating up to six persons; and 18 twin rooms that can accommodate up to three persons each;
- The usual occupancy rate is approximately 60% to 70%;
- This year, workers are sometimes staying for a few months at a time;
- In some instances, the hotel offers lower rates/special deals for long-term visitors;
- On weekends the motel is about 80% to 90% full and on some days is at 100%;
- The representative advised that a new snowmaking machine is being released on the snowfields this year, so they are expecting more visitors than usual;
- Caravan parks are usually busier as they have much lower rates, the motels cannot compete with caravan parks;
- Recently, a worker stayed at this motel for a long time due to lack of accommodation in town;
- The range of guests that stay at this motel include workers and individuals from the leisure market, about 50% are large groups and normally stay three to four days;

- In their experience, workers prefer to stay in self-contained family rooms with a kitchen so they do not need to spend money on dining out/meals; and
- There are ample car parking spaces around the motel; parking for trucks is also provided.

### iii Tourist accommodation C

- This motel has 19 rooms with cooking facilities in two rooms. There are twin rooms and basic triple rooms. There is a conference room that has also been used by businesses for events;
- The guests are primarily recreational groups (eg mountain bikers, golfers). The motel has previously accommodated construction workers and contractors. The representative advises to book in advance, with Easter normally booked out two years in advance. There are also many walk-in guests;
- The occupancy rate varies, generally averaging over 68% in the last few years;
- Tumut does not rely on snow recreational users during winter. Talbingo and Adaminaby have places that hire snow gear and so these places do a lot better during the winter months;
- The local rental market has been impacted hugely in the last 12 months;
- The representative is very positive about the project as they see potential workers and families moving into the area. Tumut could easily accommodate a larger population; and
- When a large project near Tumut commenced years ago, there was an influx of workers and the town excelled. This is why there are many hotels/motels in town;

## 3.8.6 Community organisation SLPs

### i Community organisation A

- There is no public transport in Tumut;
- The locals would like to see Snowy 2.0 using local produce from surrounding towns;
- Employment is generally good in Tumut, the local timber industry is a big contributor;
- Tumut has a good community radio which provides regular updates about traffic, accidents, and emergencies in the area (FM 96.3). The representative mentioned that construction worker should be encouraged to tune in, it will give them an idea of bushfires, road works, accidents, etc;
- Tumut has a strong church community; there are many places of worship which provide a basis for spirituality in the town;
- The representative believes that the local community would welcome Snowy 2.0. However, so far there has been a bit of scepticism among the local community whether the project will proceed or not;
- Local transport infrastructure (roads) has been upgraded;
- Crime is mainly associated with drug usage, and recently there has been some vandalism. The local police have a good relationship with the local community;



- There are some events and attractions in Tumut, such as the autumn festival, the local brewery and the large labyrinth;
- Hospitality wise, there are no high-quality restaurants in town. People often travel to other towns to dine for special occasions and stay overnight; and
- Should accommodation camps be established for the project, it could provide opportunities for local businesses to start food vans/coffee vans.

## Appendix E

### Sample interview questions

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Please note: actual questions asked in the interview may vary due to different responses given by each service level provider. Below is a general guideline of the sample survey questions used during interview.

### **Survey Questions for Child care**

1. What is the occupancy rate of your child care centre?
2. Do you think there is an increasing demand of child care in this community?
3. Do you think there is sufficient number of child care service in this community?
4. Do you have capacity to accept more children?
5. How many full time equivalent staff do you have?
6. If you were to accept more children, do you have to recruit new staff?
7. Do you have any concerns about the effect that the project could have on the child care services of this community?

### **Survey Questions for Hospital**

1. How many doctors do you have?
2. Do you think this hospital offer all the services required, health wise, for the community?
3. What are some problems, associated with health of the population in your community?
4. How many hospital beds do you have? What is the proportion of occupied hospital bed?
5. What types of operations are performed in this hospital?
6. Do you think this hospital has reached its full capacity?
7. Do you have to send patient to nearby town to undertake surgery and procedure?
8. If the population of the community increases, do you think the existing level of hospital service has the capacity to accommodate?
9. Do you think hospital in this community need improvement at all?

### **Survey Questions for Medical centre**

1. How many doctors are there in this medical practice?
2. Are there after-hour GPs?
3. In average, how many patients do you see a week? Does the number fluctuate during summer and winter seasons?
4. Do you think this medical practice has reached its full capacity?
5. Do patients tend to walk-in, or make an appointment in advance?
6. Do you have to send patients to nearby towns to see specialist services?
7. In average, how many patients per week do you sent to the hospital?
8. Do you have any concerns about the effect that the project could have on the medical services in the community?

### **Survey Questions for Real estate**

1. What is the housing and rental market like in your community?
2. Did you notice any reaction in the real estate market after the announcement of Snowy 2.0?
3. Do you think this reaction is good or bad?
4. Do you think housing is affordable in your community?
5. If the population of the community increases, do you think this will have an impact on the real estate market?
6. What is the housing and rental market like when there was a similar project (large project) happened in the community years ago?

### **Survey Questions for School**

1. How many students are there in your school?
2. How many teachers are there in your school?
3. Is the number of teachers sufficient?
4. If the number of student increases, is it easy to recruit new teacher?
5. If new people come to your settlement/catchment, will it result in overcrowded class?
6. What is the condition of school premises? What improvements should be made?



7. Is the school fee affordable?
8. What is the proportion of school graduates go to university, technical and professional college, apprenticeship, or workforce?
9. Do many school graduates live and work in this community after finishing education?
10. Do many students seek education/further education elsewhere after completing high school?
11. Do many people return to this community after finishing education elsewhere?

#### **Survey Questions for Tourist accommodation**

1. How many rooms are there in your tourist accommodation?
2. What is the average occupancy rate throughout the year?
3. When is peak season? When is off-peak season?
4. Do you tend to have more walk-in guests or those who book in advance?
5. What is your main guest type? Corporate/business, trades, leisure, group guest?
6. Do you have regular guest and return guest throughout the year?
7. If there is an increase in corporate/business and construction worker guest type, will this have an impact on your business? Do you see this good or bad?
8. Do you accept long term guest?
9. Do you have any concerns about the effect that the project could have on the hospitality market in this community?



## Appendix F

### Risk assessment framework

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IMPACT LEVEL	HIGH		MEDIUM		LOW	
CONSEQUENCE	Catastrophic	Massive	Major	Moderate	Minor	Negligible
Population Change	♦ Greater than 15 per cent permanent population change in a region	♦ Greater than 10 per cent permanent population change in a region	♦ Greater than 5 per cent permanent population change in a local area	♦ Temporary population change in a local area of less than 20 per cent	♦ Temporary but insignificant population change in a local area	♦ Negligible population change in a local area
				or		
				♦ Permanent population change in a local area of less than 5 per cent		
Sense of Community	♦ Permanent and significant reduction in sense of community due to greater than 15 per cent permanent population change in a region	♦ Temporary but significant reduction in sense of community due to greater than 10 per cent permanent population change in a region	♦ Permanent and significant reduction in sense of community due to greater than 5 per cent permanent population change in a local area	♦ Temporary but significant reduction in sense of community due to temporary but significant population change in a local area	♦ Temporary but insignificant reduction in sense of community due to temporary but insignificant population change in a local area	♦ Negligible change in sense of community within a local area
				or		
				♦ Permanent but insignificant reduction in sense of community due to permanent population change in a local area of less than 5 per cent		

IMPACT LEVEL	HIGH		MEDIUM		LOW	
CONSEQUENCE	Catastrophic	Massive	Major	Moderate	Minor	Negligible
Industry Viability	♦ Industry is no longer viable in the local area	♦ Significant threat to viability industry or local areas	♦ Commercial loss due to long term reduction in access to supplies/resources	♦ Commercial loss due to localised medium term reduction in access to supplies/resources	♦ Commercial loss due to localised short term reduction in access to supplies/resources	♦ No measurable impacts on other industries
	or	or	or	or	or	
	♦ Extinction of relevant natural resources in local areas	♦ All relevant natural resources in designated local areas are endangered	♦ Commercial loss due to permanent loss of access to 10–20 per cent of supplies/resources	♦ Commercial loss due to permanent loss of access to less than 10 per cent of supplies/resources	♦ Commercial loss due to temporary loss of access to any part of designated local fishing areas	
	or	or				
	♦ Permanent loss of access local supplies/resources	♦ Permanent loss of access to more than 20 per cent of designated local supplies/resources				
Recreational Impact	♦ Permanent loss of ability to use all recreational areas within a region	♦ Permanent loss of ability to use 20 per cent or more of recreational areas within a region	♦ Permanent loss of ability to use all local recreational areas	♦ Permanent loss of ability to use 20 per cent or more of local recreational areas	♦ Temporary loss of ability to use less than 20 per cent of local recreational areas	♦ No measurable impacts on recreational use
	or	or	or	or	or	or
	♦ Permanent loss of ability to use all tourist accommodation within a region	♦ Permanent loss of ability to use 50 per cent or more of tourist accommodation within a region	♦ Permanent loss of ability to use all tourist accommodation within the local area	♦ Temporary loss of ability to use more than 20 per cent of local recreational areas	♦ Permanent loss of ability to use less than 20 per cent of local recreational areas	♦ No measurable impacts on tourist accommodation
				or	or	
				♦ Permanent loss of ability to use 50 per cent of tourist accommodation within the local area	♦ Temporary loss of ability to use less than 50 per cent of tourist accommodation within the local area	



IMPACT LEVEL	HIGH		MEDIUM		LOW	
CONSEQUENCE	Catastrophic	Massive	Major	Moderate	Minor	Negligible
Impact on Public Amenity	♦ Permanent and significant reduction in public amenity in a region as a result of project factor	♦ Temporary but significant reduction to public amenity in a region as a result of project factor	♦ Permanent and significant reduction in public amenity in a local area as a result of project factor	♦ Permanent but insignificant reduction in public amenity in a local area as a result of project factor	♦ Temporary but insignificant reduction in public amenity in a local area as a result of project factor	♦ No measurable impacts on public amenity due to project factor
Impact on community services and infrastructure	♦ Permanent and significant reduction to the capacity of regional community services and infrastructure	♦ Temporary but significant reduction to the capacity of regional community services and infrastructure	♦ Permanent and significant reduction to the capacity of local community services and infrastructure	♦ Permanent but insignificant reduction to the capacity of local community services and infrastructure	♦ Temporary but insignificant reduction to the capacity of local community services and infrastructure	♦ No measureable impacts on capacity of community services and infrastructure
				or		
				Temporary but significant reduction to the capacity of local community services and infrastructure		
Health and Well-being	♦ >1 fatality	♦ 1 fatality	♦ No fatality AND (1 permanent disability	♦ No fatality AND No permanent disability AND (Non-permanent injuries requiring hospitalisation for 1-2% of population at risk	♦ No fatality AND No permanent disability AND (Non-permanent injuries requiring hospitalisation for 1-5 persons	♦ No fatality AND No permanent disability AND No non-permanent injuries requiring hospitalisation AND No acute health effect requiring hospitalisation AND No evacuation
	or	or				
	♦ >5 permanent disabilities	♦ 2-5 permanent disabilities				
	or	or	or	or	or	or

IMPACT LEVEL	HIGH		MEDIUM		LOW	
CONSEQUENCE	Catastrophic	Massive	Major	Moderate	Minor	Negligible
Health and Well-being Cont'd	♦ Non-permanent injuries requiring hospitalisation for 5-10% of population at risk	♦ Non-permanent injuries requiring hospitalisation for 2-5% of population at risk	♦ Non-permanent injuries requiring hospitalisation for >1-2% of population at risk	♦ Acute health effect requiring hospitalisation for 1-2% of population at risk AND No evacuation	♦ No acute health effect requiring hospitalisation) AND No evacuation	♦ No chronic health effect requiring medical treatment
	or	or	or	or	or	or
	♦ Acute health effect requiring hospitalisation for >5-10% of population at risk	♦ Acute health effect requiring hospitalisation for >2-5% of population at risk	♦ Acute health effect requiring hospitalisation for >1-2% of population at risk	♦ Chronic health effect requiring medical treatment for 1-2% of population at-risk*	♦ Chronic health effect requiring medical treatment for about 0-1% of population at-risk	♦ < \$100,000 of health cost due to hazard
	or	or	or	or	or	or
	♦ Chronic health effect requiring medical treatment for 10-15% of population at-risk*	♦ Chronic health effect requiring medical treatment for 5-10% of population at-risk	♦ Evacuation is necessary) OR Chronic health effect requiring medical treatment for 2-5% of population at-risk	♦ >\$500,000 - \$1,000,000 of health cost due to hazard	♦ \$100,000 - \$500,000 of health cost due to hazard	♦ Demand exceeds capacity of health services by 0-1%
	or	or	or	or	or	
	♦ >\$10,000,000 of health cost per hazard	♦ >\$5,000,000 - \$10,000,000 of health cost due to hazard	♦ >\$1,000,000 - \$5,000,000 of health cost due to hazard	♦ Demand exceeds capacity of health services by >10-20%	♦ Demand exceeds capacity of health services by >1-10%	
	or	or	or			
	♦ Demand exceeds capacity of health services by >40% at any point of time	♦ Demand exceeds capacity of health services by >30-40%	♦ Demand exceeds capacity of health services by >20-30%			

Source: Coakes Consulting