



# ***Snowy 2.0 Exploratory Works***

*Critical State Significant  
Infrastructure Assessment  
(CSSI 9208)*



February 2018

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### **Cover photo**

Lobs Hole, Department of Planning and Environment 2018

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# Glossary

Abbreviation	Definition
AHD	Australian Height Datum
BCA	Building Code of Australia
CIV	Capital Investment Value
CIP	Community Involvement Plan
Consent	Development Consent
Council	Snowy Valley Council
Department	Department of Planning and Environment
DPI	Department of Primary industries
EIS	Environmental Impact Statement
EPA	Environment Protection Authority
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EP&A Regulation	<i>Environmental Planning and Assessment Regulation 2000</i>
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
EPI	Environmental Planning Instrument
EPL	Environment Protection Licence
ESD	Ecologically Sustainable Development
FRNSW	Fire and Rescue NSW
LEP	Local Environmental Plan
Minister	Minister for Planning
OEH	Office of Environment and Heritage
RMS	Roads and Maritime Services
RtS	Response to Submissions
SEARs	Secretary's Environmental Assessment Requirements
Secretary	Secretary of the Department of Planning and Environment
SEPP	State Environmental Planning Policy
SRD SEPP	<i>State Environmental Planning Policy (State and Regional Development) 2011</i>
SSD	State Significant Development
SSI	State Significant Infrastructure



# Executive Summary

## Background

Snowy Hydro Limited (Snowy Hydro) is proposing to expand the existing Snowy Mountains Hydro-electric Scheme (Snowy Scheme) through the development of a pumped hydro-electric storage and generation project (known as Snowy 2.0).

Snowy 2.0 involves linking the Talbingo and Tantangara reservoirs within the existing Snowy Scheme and developing a 2,000 megawatt (MW) underground power station between the two reservoirs.

The underground power station for Snowy 2.0 would be located in a large cavern (240 m long, over 30 m wide and 50 m high) approximately 850 m below ground level. This would be one of the largest underground caverns for any hydro-electric power project anywhere in the world.

Given the scale and complexity of Snowy 2.0, it has been broken down into five stages, including:

- Exploratory Works (the subject of this application);
- Main Works (construction and operation of the underground hydroelectric power station); and
- three Transmission Connections (to connect the power station with major load centres in NSW).

## Project

Exploratory works to gain an understanding of the geological conditions at the proposed location of the underground power station are a necessary precursor to the development of the broader Snowy 2.0 project.

The geology of the area is different to other parts of the Snowy Scheme, and it is fundamental to the final design of Snowy 2.0 to determine the rock properties and structural geology of the proposed location for the power station.

Consequently, Snowy Hydro is seeking approval to carry out a range of exploratory works on the site as the initial stage of the broader Snowy 2.0 project. The Exploratory Works would involve:

- establishment of a tunnel approximately 3.1 km in length at the likely location of the underground power station; and
- ancillary infrastructure to facilitate its construction including portal construction pad, excavated material management, temporary accommodation camp, roadworks and barge infrastructure on Talbingo Reservoir.

Importantly, if the Main Works are not approved or do not proceed, the infrastructure associated with the Exploratory Works would be decommissioned and the site rehabilitated in consultation with the National Parks and Wildlife Service (NPWS).

The Exploratory Works would be primarily located within the Kosciuszko National Park (KNP) in an area known as Lobs Hole, which has historically been used for grazing and mining, and is now used as a remote campground.

The Exploratory Works would create over 200 jobs during construction and involve a capital investment of \$325 million. The construction period is 34 months with 26 months for construction of the tunnel.

## Statutory Context

On 7 March 2018, the Minister for Planning declared Snowy 2.0 to be Critical State Significant Infrastructure (CSSI) under sections 5.12(4) and 5.13 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

The declaration acknowledges that Snowy 2.0 is critical to the State for environmental, economic or social reasons, and means that the NSW Minister for Planning is the approval authority for all stages of the project, including the proposed Exploratory Works.

Snowy Hydro has lodged an application and Environmental Impact Statement (EIS) for the Exploratory Works under Part 5, Division 5.2 of the EP&A Act. The Main Works and the Transmission Connections will be subject to separate applications and detailed in separate Environmental Impact Statements.

On 10 July 2018, the Commonwealth Assistant Minister for the Environment (as delegate) determined the Exploratory Works is not a controlled action and therefore does not require any further assessment or approval under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

## **Strategic Context**

### Energy Context

The NSW energy system and broader National Electricity Market (NEM) is facing a number of challenges including rising energy costs, energy security and reliability issues, and a transition away from coal-fired base load power to intermittent renewable wind and solar power.

These challenges have been recognised in the 2017 *Independent Review into Future Security of the National Electricity Market* (known as the Finkel Review) which identified large scale pumped hydro as an important generation technology for improving security and reliability in the NEM.

The final report from the NSW Energy Security Taskforce published in December 2017 also recognised the potential of pumped hydro energy storage to contribute to the security and reliability of the grid.

The development of Snowy 2.0 would increase the generation capacity of the existing Snowy Scheme by almost 50%, providing an additional 2,000 MW, and making 350,000 MW hours of storage available to the NEM, which is enough to supply up to 3 million homes for a week. It is also equivalent to the average amount of electricity output from a large coal fired power station and represents an additional 40% of the total peaking capacity in the NSW energy system.

Snowy 2.0 therefore has the potential to:

- place downward pressure on electricity prices by increasing competition in the generation of electricity during peak times;
- improve security and reliability by dispatching electricity in peak periods or to respond to disruptions to the electricity network; and
- contribute significantly to NSW's transition to renewable energy and facilitate reduced reliance on other forms of non-renewable electricity generation.

### Existing Snowy Scheme

The Department notes that the Snowy Scheme is a unique project in Australia and was established prior to the gazettal of the KNP. The Scheme has been operating successfully in the KNP in accordance with a range of administrative and management arrangements for many years, and similar arrangements would be put in place for Snowy 2.0, if it proceeds.

The KNP operates under a Plan of Management prepared in accordance with the *National Parks and Wildlife Act 1974* (NPW Act). The project is located in the north western part of the KNP, outside the declared Wilderness Areas, in a part of the park used for low intensity recreational activities.

Snowy Hydro has a number of arrangements with NPWS for the existing Snowy Scheme that have been in place since 2002. These arrangements allow Snowy Hydro to occupy and operate the Snowy Scheme within the KNP, and include the Snowy Park Lease, a Roads Maintenance Agreement and the Snowy Management Plan.

Prior to the Exploratory Works proceeding, Snowy Hydro would require a new lease for the project from the NSW Minister for the Environment under the NPW Act, and the existing management plans and agreements would need to be updated and revised to incorporate the Exploratory Works.

The Department recognises that there is potential to develop pumped hydro generation capacity in other locations outside National Parks. However, the potential to connect the Talbingo and Tantangara Reservoirs to generate electricity was recognised when the Snowy Scheme was first developed, and the key elements of the current proposal reflects plans prepared by Snowy Hydro in the early 1990s. Snowy 2.0 could maximise the potential of existing assets to generate electricity and does not require any additional dams to be constructed.

### Project Setting

The site is largely located within the Lobs Hole area of the KNP, which is in a relatively isolated location in the north western end of the KNP and is currently used as a public camping area known as Ravine Campground. The area has been subject to disturbance associated with the former town, grazing, cultivation and mining. Talbingo Reservoir is located largely in the KNP, except for the northern end of the reservoir which is on Snowy Hydro land.

Adjacent to the proposed works is the Yarrangobilly River, a major regional watercourse that flows through Lobs Hole into Talbingo Reservoir. The river is an ecologically sensitive area with habitat for several threatened species and also contains areas of high archaeological potential. Talbingo Reservoir also provides habitat for native and threatened fish species (including species that have been restocked in the reservoir).

There are several karst areas throughout the KNP characterised by gorges, caves, irregular hydrological systems and small-scale landscape features. The Yarrangobilly and Cooleman Plain karst areas, located about 8 km north and 70 km north east of Lobs Hole respectively are regarded as nationally significant.

The nearest towns and regional centres to the project are Talbingo, Tumut, Cooma, Cabramurra and Adaminaby, with the township of Talbingo located immediately north of Talbingo Reservoir. Originally established as a construction camp for the original Snowy Scheme workers, the majority of properties are now owned privately.

Talbingo provides tourist accommodation, other services and a public school and is a popular destination during the summer months with visitors using the Talbingo Reservoir and other nearby water bodies for recreation (boating and swimming). It also acts as a base for visitors of the Selwyn Snowy Resort in winter.

### **Engagement**

The Department exhibited the application and Environmental Impact Statement for the Exploratory Works from 23 July 2018 until 20 August 2018 and received 59 submissions. This included 8 submissions from government agencies, 4 from special interest groups and 47 from the general public.

The Department also held a number of meetings with government agencies, community and environment groups including The Colong Foundation for Wilderness, National Parks Association and the Talbingo Progress Association, and visited the site on a number of occasions.

None of the government agencies objected to the project but made a number of recommendations and comments that have been considered by the Department in its assessment of the project and the recommended conditions of approval.



Of the 51 public submissions, there were 16 submissions supporting the project and an equal number objecting to the project, including 3 special interest groups. The remainder provided comments on the project.

Those supporting the project focused on the benefits of renewable energy and the economic benefits for the region, including Talbingo.

Those objecting to the project raised concerns about the impacts associated of additional infrastructure in a National Park and the associated impacts on the biodiversity, recreational and conservation values of the KNP.

Submissions from local residents also expressed concern about impacts to the tourism and loss of recreation opportunities in Talbingo and at Talbingo Reservoir.

## **Assessment and Evaluation**

The Department has assessed the merits of the project in accordance with the requirements of the EP&A Act and applicable NSW Government policies and guidelines.

### Project Design

Snowy Hydro has sought to avoid and minimise the impacts of the project, particularly on the KNP. These measures include:

- locating the Exploratory Works and supporting infrastructure in existing disturbed areas within the KNP;
- transporting plant and equipment by barge across Talbingo reservoir to avoid the need for additional road upgrades within the KNP;
- using existing roads and access tracks wherever possible and designing necessary road upgrades to avoid impacts on threatened species and geodiversity features; and
- removing all excavated rock stockpiles from the site and selecting locations within Talbingo reservoir for subaqueous emplacement of this material that would minimise impacts on water quality and aquatic species.

While the Department and NPWS support the design of the project to avoid and minimise impacts, the assessment indicates that the project would result in a range of residual impacts.

### Impacts on Kosciuszko National Park

The Department acknowledges the concerns of some members of the community and a number of environment groups about the expansion of the Snowy Scheme within the National Park, particularly on the biodiversity, recreational and conservation values of the Park.

The establishment of the Exploratory Works would require clearing of up to 95 ha of native vegetation and modification of up to 5 – 10% of key fish habitat within Talbingo Reservoir, potential impacts from sedimentation, water discharges, management of excavated material and impacts to heritage items, and removal of areas of fossil beds and boulder streams.

However, based on its assessment, the Department considers that these impacts would not be significant and can be effectively managed, mitigated and/or offset in accordance with applicable policies and guidelines to achieve an acceptable environmental outcome.

In this regard, the Department has recommended a comprehensive and precautionary suite of conditions to ensure the project complies with relevant criteria and standards. The conditions require Snowy Hydro to prepare a range of management plans in consultation with NPWS relating to biodiversity, water quality, heritage, traffic and rehabilitation.

The Department has also recommended that Snowy Hydro be required to pay \$10.5 million to NPWS to offset the impacts of the project on the KNP.

These funds would be used by NPWS to implement conservation measures for threatened species and ecological communities impacted by the project, offset the loss of recreational values of Lobs Hole, and improve overall catchment health within the KNP.

#### Impacts outside Kosciuszko National Park

The Department notes the concerns of the local residents about the impacts of the project on tourism, traffic impacts along Miles Franklin Drive through Talbingo and potential loss of recreation opportunities in parts of the Talbingo Reservoir that are outside the KNP.

Snowy Hydro would need to close the existing spillway recreational area for the barge transport infrastructure during the construction of the project. In addition, there would be occasional temporary restrictions (1 to 2 hours) on access to the nearby boat ramp access outside peak times of use.

To address these impacts, Snowy Hydro is proposing to construct a replacement recreational area near the existing boat ramp, including a new enclosed swimming area, pontoon facilities for boats, and improved access for people with disabilities. Importantly, apart from the temporary restrictions on the use of the boat ramp, there would be no need to close access for recreational boats to the reservoir itself during the construction of the project.

To ensure interactions between the project and recreational users of the reservoir and road users of Miles Franklin Drive and Link Road are appropriately managed, the Department has recommended that Snowy Hydro be required to prepare a Traffic Management Plan in consultation with Snowy Valleys Council and the Roads and Maritime Service to minimise the traffic safety impacts of the development and prepare a program for constructing the new recreational facilities to minimise disruption associated with the closure of the existing facilities.

While the Department acknowledges the concerns of the local community, it considers that the replacement facilities along with the implementation of the management plan would ensure there would be no material loss of recreational opportunities for local residents or visitors to the area during the construction of the project and the project would not result in significant impacts on road network capacity, efficiency or safety.

### **Summary**

The Exploratory Works are a necessary precursor to realise the potential benefits of the broader Snowy 2.0 project, as they will provide critical geological information for the detailed design of the underground power station.

The Exploratory Works would also provide direct and indirect economic benefits to the Snowy Mountains region, including capital investment of \$325 million and the creation of 200 construction jobs.

With the implementation of the mitigation, management and substantial offsetting measures recommended by the Department, the assessment shows that these works can be undertaken without any significant impacts on the biodiversity, recreational and conservation values of the KNP.

The proposed Snowy 2.0 would add 2,000 MW of dispatchable generation to the NEM, with potential to strengthen the security and reliability of the network.

If Snowy 2.0 does not proceed, the infrastructure associated with the Exploratory Works would be removed, the area rehabilitated, and the land restored to its current use within the KNP.

On balance, the Department therefore considers that benefits of the Exploratory Works outweigh its impacts, and the project should be approved, subject to the recommended conditions.





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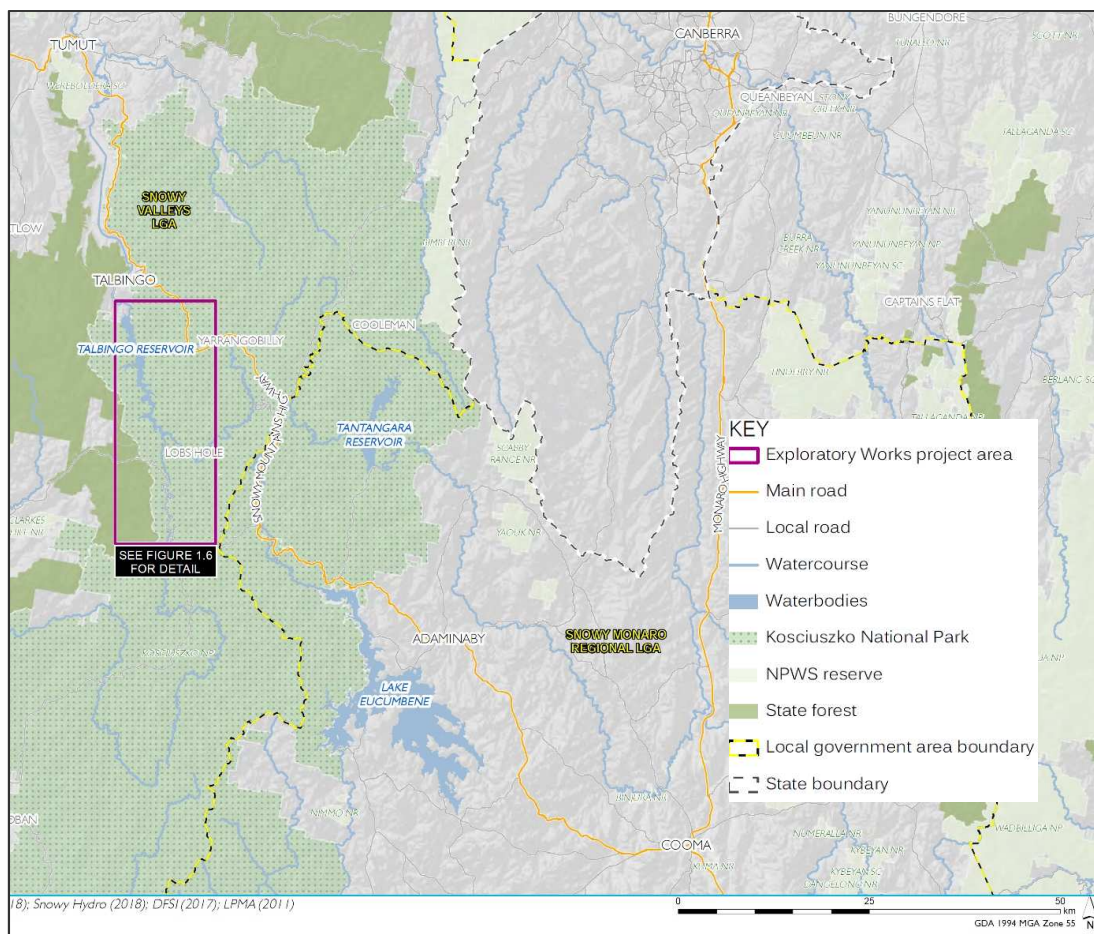
# 1. Introduction

Snowy Hydro Limited (Snowy Hydro, the Proponent) is proposing to expand the existing Snowy Mountains Hydro-electric Scheme (Snowy Scheme) through the development of a pumped hydro-electric storage and generation project (known as Snowy 2.0).

Snowy 2.0 involves linking the Talbingo and Tantangara reservoirs within the Snowy Scheme and developing a 2,000 megawatt (MW) underground power station between the two reservoirs. TransGrid is also proposing to develop a number of transmission lines to connect the hydro-electric power station with major load centres in NSW.

Snowy Hydro is seeking approval to undertake Exploratory Works (the project) which are required to gain an understanding of the geological conditions at the proposed underground power station. This is a necessary precursor to the development of the main works and transmission lines which will be submitted and assessed in stages (see **Section 2.1**).

The Exploratory Works are located in the Lobs Hole area of Kosciuszko National Park (KNP) and the northern end of Talbingo Reservoir. Lobs Hole is adjacent to the south reaches of Talbingo Reservoir, approximately 45 kilometres (km) south of Tumut and 65 km north-west of Cooma. The project is located within the Snowy Valleys local government area (see **Figure 1**).



**Figure 1** | Regional/Local Context Map



## 2. Project

### 2.1. Broader Snowy 2.0 Project

The broader Snowy 2.0 project has five stages:

- Exploratory Works (the subject of this application): exploratory geotechnical investigations;
- Main Works: construction and operation of an underground hydroelectric power and pump station capable of supplying approximately 2,000 MW of hydroelectric power, and construction of water and access tunnels, surge tank and intake and outlet structures at and between the two reservoirs;
- three Transmission Connections:
  - construction and operation of new transmission lines from Snowy 2.0 out of the KNP to Nurenmerenmong;
  - construction and operation of new electricity transmission lines between the new substation at Nurenmerenmong and an existing substation at Bannaby (north of Marulan) and augmentation of the existing substation at Bannaby;
  - construction and operation of new transmission lines between an existing substation at Khancoban and a location on the NSW-Victorian border generally south-west of Khancoban.

### 2.2. Exploratory Works Project

The Exploratory Works are a necessary precursor to the development of the broader Snowy 2.0 project. A comprehensive geological investigation at depth is necessary to understand excavation conditions, water seepage, rock bedding and faulting conditions, particularly to inform the location and design of the Snowy 2.0 Main Works power station cavern.

The Exploratory Works involve:

- the establishment of a tunnel about 3.1 km in length at the likely location of the underground power station; and
- supporting infrastructure to facilitate its construction including portal construction pad, management of excavated material, temporary accommodation camp to accommodate the construction workforce, roadworks and barge infrastructure on Talbingo Reservoir to access the site.

Operation and continued use of the exploratory tunnel (as part of a new power station) would be the subject of separate approvals for the Main Works. If the Main Works are not approved or do not proceed, the infrastructure associated with the Exploratory Works would be decommissioned and the site rehabilitated in consultation with the National Parks and Wildlife Service (NPWS).

The Exploratory Works would largely be located within Kosciuszko National Park, with some road upgrades and construction of barge access ramps proposed at the northern end of Talbingo Reservoir outside the KNP.

The project is described in full in the Environmental Impact Statement (EIS) (see Appendix B) as amended by the development application amendments (see Appendix C). The major components of the project are summarised in **Table 1** and shown on **Figure 2 to 3**.

**Table 1** | Main components of the Exploratory Works

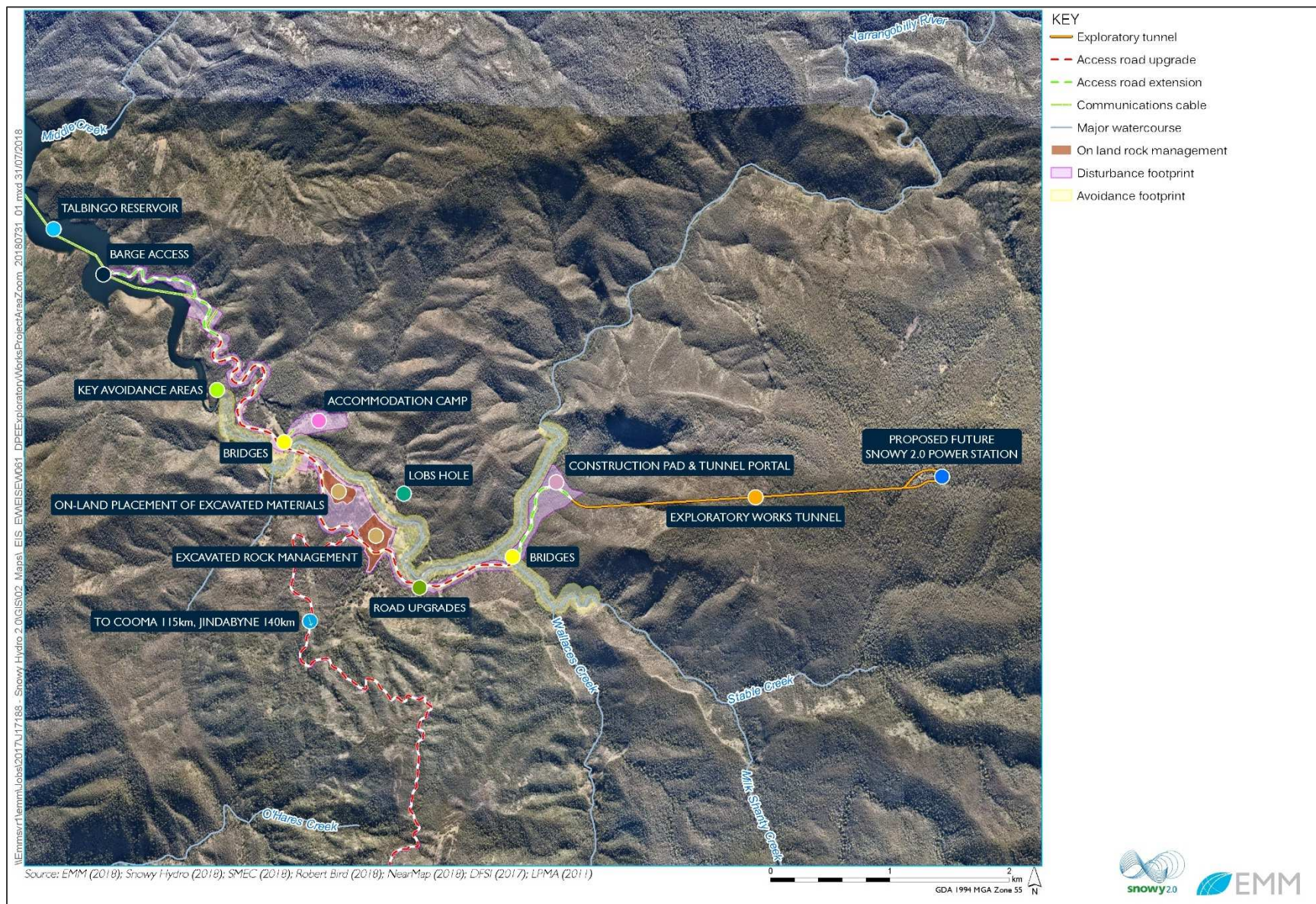
Aspect	Description
<b>Project Summary</b>	<ul style="list-style-type: none"> <li>Establishment of a 3.1 km exploratory tunnel with tunnel portal at its western end</li> <li>Portal construction pad including concrete batching plant, site offices, maintenance workshops, equipment storage areas, fuel storage facility, magazine (explosives), laydown and temporary stockpiling areas</li> <li>Accommodation camp for up to 152 people including sewage and water treatment plants</li> <li>Road upgrades, new access roads and two watercourse crossings</li> <li>Barge access infrastructure on Talbingo Reservoir at Talbingo Spillway (north western end) and inside the KNP at Middle Bay (south eastern end)</li> <li>Excavated rock management of up to 750,000 m<sup>3</sup> spoil material, including temporary stockpiling at two temporary on-land emplacement areas (eastern and western), with material to be removed offsite within 5 years of completion</li> <li>Subaqueous placement of excavated and dredged material in Talbingo Reservoir</li> <li>Power, communications and water supply services to supply the construction pad</li> <li>New recreational facilities at the Talbingo boat ramp, including pontoons, beach area, swimming area, picnic facilities and amenities and all abilities parking spaces</li> </ul>
<b>Road upgrades</b>	<ul style="list-style-type: none"> <li>Upper Lobs Hole Ravine Road – 7.5 km – upgrade with no widening</li> <li>Lower Lobs Hole Ravine Road – 6 km upgrade with widening</li> <li>Lobs Hole Road – 7.3 km upgrade with widening</li> <li>Mine Trail Road – 2.2 km upgrade with widening</li> <li>Spillway Road – 3 km to provide two-way access to the proposed Talbingo barge ramp;</li> <li>Temporary construction road between Wallaces Creek and the tunnel portal until Mine Trail Road extension is complete</li> <li>Mine Trail Road extension – new road</li> <li>Middle Bay Road – new road</li> <li>Wallaces Creek Bridge on Mine Trail Road – new bridge</li> <li>Camp Bridge on Lobs Hole Road – new bridge</li> </ul>
<b>Navigation Channel</b>	<ul style="list-style-type: none"> <li>Dredging within Talbingo Reservoir to facilitate ramp construction and navigation channel with a depth of 534.7 m AHD and minimum width of 50 m</li> </ul>
<b>Over-dimensional and heavy vehicle transport routes</b>	<ul style="list-style-type: none"> <li>Up to 24 barge movements per day between Talbingo barge ramp and Middle Bay barge ramp</li> <li>Up to 44 two-way heavy vehicle movements per day between 9 – 10 am on the Snowy Mountains Highway, Link Road and Lobs Hole Ravine route</li> <li>Up to five over-dimensional vehicle movements per day</li> </ul>
<b>Public access closures</b>	<ul style="list-style-type: none"> <li>Lobs Hole Ravine Road from the Blue Creek Trail intersection (north) and Link Road (in the south)</li> <li>Talbingo Spillway and recreational area</li> </ul>
<b>Construction</b>	<ul style="list-style-type: none"> <li>Approximately 34 month construction period;</li> <li>Exploratory tunnel (approximately 26 months) – 24 hours per day, 7 days per week</li> <li>Roads and infrastructure – 12 hours per day, 5 days per week</li> <li>Accommodation camp – 16 hours per day, 7 days per week</li> </ul>
<b>Employment</b>	<ul style="list-style-type: none"> <li>Construction workforce of up to 201 full time equivalent personnel</li> </ul>
<b>Capital Investment Value</b>	\$325 million





**Figure 2 | Project Layout**





**Figure 3** | Project Layout (Lobs Hole area)

### 2.3. Project Design

Snowy Hydro has sought to avoid and minimise the impacts of the project, particularly on the KNP. These measures include:

- locating the Exploratory Works outside declared Wilderness Areas and focusing the works in Lobs Hole which has a history of disturbance including grazing, settlement, agriculture and mining;
- transporting plant and equipment by barge across Talbingo reservoir to avoid the need for additional road upgrades within the KNP;
- using existing roads and access tracks where possible and designing road upgrades to avoid impacts on threatened species and geodiversity features;
- removing all excavated rock stockpiles from the site and selecting locations within Talbingo reservoir for subaqueous emplacement of this material that would minimise impacts on water quality and aquatic species; and
- providing an improved recreational area adjacent to the boat ramp to replace the swimming area that would be closed on the north western side at the spillway including a new enclosed swimming area, pontoon facilities for water vessels and improvements to foreshore access, beach area and 2 all abilities parking spaces.



## 3. Strategic Context

### 3.1. Energy Context

The NSW energy system and broader National Electricity Market (NEM) is facing a number of challenges including rising energy costs, deterioration in energy security and reliability, and a transition away from coal-fired base load power to intermittent renewable wind and solar power.

These challenges have been recognised in the 2017 *Independent Review into Future Security of the National Electricity Market* (known as the Finkel Review) which identified large scale pumped hydro as an important generation technology for improving security and reliability in the NEM.

The final report from the NSW Energy Security Taskforce published in December 2017 also recognised the potential of pumped hydro energy storage to contribute to the security and reliability of the grid.

The development of Snowy 2.0 would increase the generation capacity of the existing Snowy Scheme by almost 50% and provide 350,000 MW hours of storage capacity for the NEM. Snowy 2.0 therefore has the potential to:

- increase generation competition during peak times, and hence place downward pressure on electricity prices;
- improve security and reliability by dispatching electricity in peak periods or to respond to disruptions to the electricity network; and
- diversify the electricity supply and contribute significantly to NSW's transition to renewable energy and facilitating reduced reliance on other forms of non-renewable electricity generation.

### 3.2. Existing Snowy Scheme

The Department notes that the Snowy Scheme is a unique project in Australia and was established prior to the gazettal of the KNP. The Scheme has been operating successfully in the KNP in accordance with a range of administrative and management arrangements for many years, and similar arrangements would be put in place for Snowy 2.0, if it proceeds.



The KNP operates under a Plan of Management prepared in accordance with the *National Parks and Wildlife Act 1974* (NPW Act). The project is located in the north western part of the KNP outside the declared Wilderness Areas in a part of the park used for low intensity recreational activities.

Snowy Hydro has a number of arrangements with NPWS for the existing Snowy Scheme that have been in place since 2002. These arrangements allow Snowy Hydro to occupy and operate the Snowy Scheme within the KNP, and include the Snowy Park Lease, a Roads Maintenance Agreement and the Snowy Management Plan.

Prior to the project proceeding, Snowy Hydro would require a new lease for the project from the NSW Minister for the Environment under the NPW Act, and the existing management plans and agreements would need to be updated and revised to incorporate the Exploratory Works.

The Department recognises that there is potential to develop pumped hydro generation capacity in other locations outside National Parks. The potential to connect the Talbingo and Tantangara Reservoirs to generate electricity was recognised when the Snowy Scheme was first developed, and the key elements of the current proposal reflects plans prepared by Snowy Hydro in the early 1990s. Snowy 2.0 could maximise the potential of existing assets to generate electricity and does not require any additional dams to be constructed.

### 3.3. Project Setting

The site is largely located within the Lobs Hole area of the KNP with works and activities also located in Talbingo Reservoir and infrastructure on the northern and southern ends of the reservoir.

#### **Lobs Hole Ravine area**

Lobs Hole Ravine is located in a relatively isolated location in the northern western end of the KNP and adjacent to, and crossing Yarrangobilly River and Wallaces Creek. Lobs Hole is currently used as a public camping area known as Ravine Campground.

Lobs Hole has historically been subject to disturbance associated with the former town, grazing, cultivation and mining. A copper mine operated in Lobs Hole for approximately 50 years until 1917 and is a source of known contamination. Traces of these past activities can be found on site and the former copper mine is also considered a geoheritage site.

Yarrangobilly River (and its tributary Wallaces Creek) is a major regional watercourse that flows into the Talbingo Reservoir with stream flows all year round and stream baseflows provided by groundwater. Yarrangobilly Creek and Wallaces Creek are adjacent to the tunnel portal, on-land emplacement area and accommodation camp.

Yarrangobilly River is an ecologically sensitive area with habitat for Booroolong Frog, Murray Crayfish and Macquarie Perch (threatened species). It also contains areas of high archaeological potential for Aboriginal cultural heritage.

#### **Talbingo Reservoir**

Talbingo Reservoir is located largely in the KNP, except for the northern end of the reservoir which is on Snowy Hydro land. The reservoir is located within the Murrumbidgee River catchment and was built between 1968 and 1971, formed from the reaches of the Yarrangobilly River, the Tumut River and their tributaries.

The reservoir is operated by Snowy Hydro under the Snowy Park Lease with water levels fluctuating throughout the year, largely from the operation of the Snowy Scheme. Plain Creek Bay, Cascade Bay and Ravine Bay, the sites proposed for subaqueous emplacement of spoil material, have maximum depths of between 25 to 35 m below the reservoirs maximum operating level (MOL).

Talbingo Reservoir contains native and threatened (including species that have been restocked in the reservoir) and pest plant and fish.

### **Karst Features**

There are eight separate karst areas throughout the KNP characterised by gorges, caves, irregular hydrological systems and small-scale landscape features.

The Yarrangobilly and Cooleman Plain karst areas, located about 8 km north and 70 km north east of the project area respectively, are regarded as nationally significant for their geological, hydrological and zoological values. The Ravine karst area surrounds Lobs Hole Ravine Road about 1 km south of the proposed tunnel portal and considered to have national or regional significance under the KNP plan of management.

The Yarrangobilly Caves, located 8 km north east of the project site, are a tourist feature in the KNP with caves open to the public and accommodation including Caves House (see **Figure 4**). Yarrangobilly Caves is also a high priority Groundwater Dependent Ecosystem.

### **Towns and Regional Centres**

The nearest towns and regional centres to the project are Talbingo, Tumut, Cooma, Cabramurra, Tumbarumba and Adaminaby (see **Figure 1**).

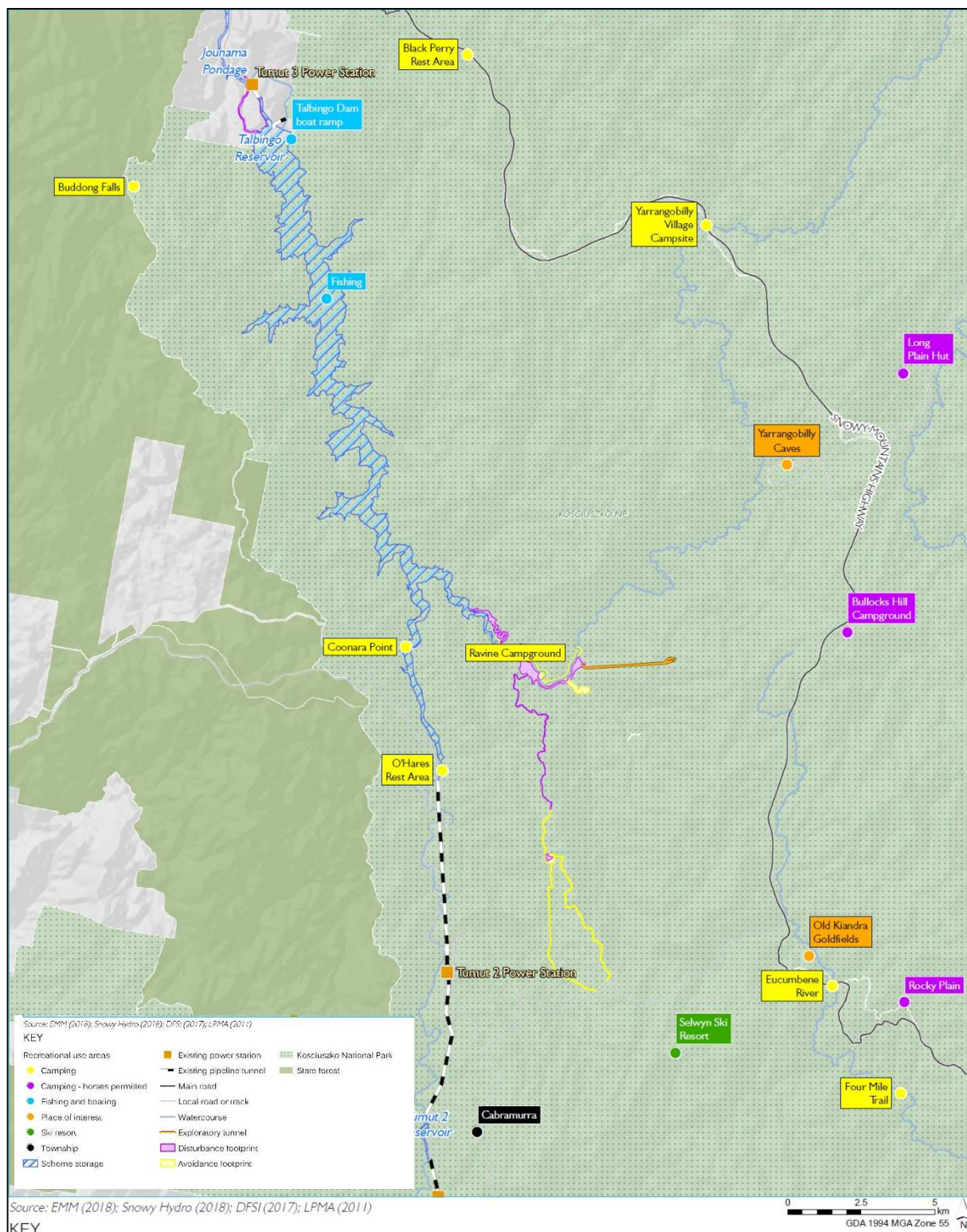
The project is located near the major transport route of the Snowy Mountains Highway, which extends north south approximately 2 km east of Talbingo and 10 km east of Lobs Hole.

Tumut and Cooma are the main regional centres located 45 km north and 95 km south respectively from the project. The Snowy Mountains Highway connects these two centres through Adaminaby.

Cabramurra is located 18 km south of the project and was established as a construction camp for the original Snowy Scheme workers and is owned and operated by Snowy Hydro. Tumbarumba is located 35 km to the west of the project but is not intersected by transport routes for the project.

The township of Talbingo is located immediately north of Talbingo Reservoir. It was established as a construction camp for the original Snowy Scheme workers, but the majority of properties are now owned privately. The town provides tourist accommodation, other services and a public school.

The township's population (approximately 226 permanent population) increases during the summer months with visitors using the Talbingo Reservoir and other nearby water bodies for recreation (boating and swimming). It also acts as a base for visitors of the Selwyn Snow Resort in winter.



**Figure 4 | Kosciuszko National Park setting**



## 4. Statutory Context

### 4.1. Critical State Significant Infrastructure

On 7 March 2018, the Minister determined that the Snowy 2.0 and Transmission Project was essential to the State for economic and environmental reasons because it would provide security and enhance the reliability of the east coast electricity market and increase the amount of renewable energy generated in NSW.

The Minister made an order declaring the project to be State significant infrastructure and Critical State significant infrastructure under sections 5.12(4) and 5.13 of the EP&A Act.

Consequently, the Minister is the approval authority for all stages of the project, including these Exploratory Works.

### 4.2. National Parks and Wildlife Act 1974

KNP operates under a plan of management prepared in accordance with the *National Parks and Wildlife Act 1974* (NPW Act) to ensure the protection and maintenance of natural and cultural values, and public appreciation within the park.

The KNP Plan of Management sets out the values of the KNP as:

- being unique as it contains Australia's highest mountains, unique glacial landscapes and unusual assemblages of plants and animals;
- having a rich Aboriginal and European history; and
- having a variety of recreational uses and is Australia's pre-eminent skiing destination due to the presence of snow fields and alpine resorts.

The plan of management includes a schedule of 'Significant Natural and Cultural Features' of the KNP, including species and communities of flora and fauna, Yarrangobilly Caves and karst formations, Yarrangobilly River, and Aboriginal and European cultural heritage items, geodiversity (rocks and landforms).

The KNP plan of management has been prepared in accordance with the *National Parks and Wildlife Act 1974* (NPW Act) and operations within the park must be undertaken in accordance with the plan.

### 4.3. Snowy Hydro Corporatisation Act 1997

Under the *Snowy Hydro Corporatisation Act 1997* (Corporatisation Act) which came into force on 28 June 2002, the then Snowy Mountains Hydro-Electric Authority became Snowy Hydro Limited and provided Snowy Hydro with arrangements to enable the ongoing operation of the Snowy Scheme.

It provided for:

- the grant of the Snowy Park Lease to undertake the operation of the Scheme inside the National Park notwithstanding the provisions of the *National Parks and Wildlife Act 1974*; and
- the grant of a water licence under the *Water Management Act 2000*, which authorised it to continue to use the water in the Scheme to collect, store, divert, generate with and release water;
- all necessary planning approvals.

The existing Snowy Scheme operates under an additional plan of management, the Snowy Management Plan made under the NPW Act to govern the activities of the Snowy Scheme in the National Park. Should the project proceed, the Snowy Management Plan would need to be reviewed and updated as required.



The works required for this application within the KNP are not covered by the existing Snowy Park Lease. Amendments to the Corporatisation Act were assented to on 28 November 2018 allowing additional lease/s to be granted for the Snowy 2.0 project and a plan of management made for Snowy 2.0. A deed of agreement for a lease for Snowy 2.0 was executed by the Minister for the Environment and Snowy Hydro on 18 December 2018.

#### **4.4. Protection of Environment Operation Act 1997**

The Environment Protection Authority (EPA) advised an Environment Protection Licence (EPL) would be issued for the project in accordance with the *Protection of the Environment Operations Act 1997*. The EPL would be for the scheduled activities of Land Based Extractive Industries and Water Based Extractive Activities, and including the following:

- the operation and discharge from the sewage treatment plant and process water treatment plant;
- subaqueous disposal of spoil and dredging;
- discharges from erosion and sediment controls (within the licensed premises).

The EPL would cover a defined area (licensed premises) covering the works in the Lobs Hole area and subaqueous disposal of spoil and dredging but excluding road upgrades along Lobs Hole Road from the intersection of Mine Trail Road to Link Road and Spillway Road.

#### **4.5. Environmental Planning Instruments**

Other than the *State Environmental Planning Policy (State and Regional Development) 2011* identifying the project as CSSI, no environmental planning instruments substantially govern the carrying out of the project by virtue of the project being CSSI. Notwithstanding, consideration was given to Environmental Planning Instruments (EPIs) that would have applied:

- State Environmental Planning Policy No. 33: Hazardous and Offensive Development (SEPP 33): consideration of a project's potential to cause hazards or be offensive. The EIS included an assessment of potential hazards and proposed measures for storage, handling and transport of dangerous goods.
- SEPP No. 44 – Koala Habitat Protection (SEPP 44): Targeted surveys did not identify the presence of Koalas and considered the site was not core Koala habitat under SEPP 44.
- SEPP No 55 – Remediation of Land (SEPP 55): remediation of contaminated land for the purpose of minimising the risk to human health and the environment. The EIS included a contamination assessment.

#### **4.6. Commonwealth Approvals**

The Proponent made a referral for the project to the Federal Government under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). On 10 July 2018, the Commonwealth Assistant Minister for the Environment (as delegate) determined the Exploratory Works is not a controlled action.



## 5. Engagement

### 5.1. Department's Engagement

After receiving the Environmental Impact Statement (EIS), the Department:

- advertised the exhibition in the Sydney Morning Herald, Daily Telegraph, The Australian, Tumbarumba Times, Tumut & Adelong Times and The Monaro Post;
- publicly exhibited the EIS from 23 July 2018 until 20 August 2018 (28 days):
  - on its major projects website;
  - at Snowy Valleys Council (Tumbarumba and Tumut offices);
  - at Snowy Monaro Council (Cooma, Berridale, Bombala and Jindabyne offices);
  - at Nature Conservation Council office; and
- notified relevant State government authorities in writing.

The Department's engagement is detailed in Table 2 below.

**Table 2 |** Department's engagement

Date	Description	Attendees
3 April 2018	Site visit	Snowy Hydro, NPWS, OEH, EPA, Commonwealth DOEE,
12 April 2018	Planning focus meeting	Snowy Hydro, NPWS, OEH, EPA, Commonwealth DOEE, DOI, RMS, Snowy Valleys Council, Snowy Monaro Regional Council, Department of Education, Department of Premier & Cabinet
3 May 2018	Project briefing for special interest groups	National Parks Association The Colong Foundation for Wilderness
10 May 2018	Project briefing for local government	Snowy Valleys Council Snowy Monaro Regional Council Local Chambers of Business and Progress Associations
11 May 2018	Project briefing to NPWS Regional Advisory Council	NPWS Regional Advisory Council
1-2 August 2018	Community Information Sessions	General public Talbingo Progress Association Talbingo residents
1-2 August 2018	Project briefing for local government	Snowy Valleys Council Snowy Monaro Regional Council
23 November 2018	Follow up briefing to NPWS Regional Advisory Council	NPWS Regional Advisory Council

## 5.2. Summary of Submissions

During the exhibition period of the EIS, the Department received a total of 59 submissions, including 8 from government agencies, 4 from special interest groups and 47 from the general public.

Sixteen of 51 public submissions (around 30%) objected to the project, including 3 special interest groups. The majority (85%) of public submissions objecting were more than 50 km from the project.

Sixteen of the 51 public submissions supported the project, all within 5 km of the project.

**Table 3** | Summary of Submissions

Submitters	Number	Position
<b>Public Authority</b>	<b>8</b>	
Environment Protection Authority, Office of Environment and Heritage, Fire and Rescue NSW, Rural Fire Service, Roads and Maritime Services, Heritage Council of NSW, Department of Industry, Snowy Valley Council, Snowy Monaro Regional Council		
<b>Special Interest Groups</b>	<b>4</b>	
National Parks Association of NSW, Nature Conservation Council, The Colong Foundation for Wilderness	3	Object
Australasian Cave and Karst Management Association	1	Comment
<b>Community</b>	<b>47</b>	
	1	Object
• < 5 km	16	Support
	6	Comment
	1	Object
• 5 – 50 km	0	Support
	0	Comment
	11	Object
• > 50 km	0	Support
	9	Comment
<b>TOTAL</b>	<b>59</b>	

## 5.3. Response to Submissions

Snowy Hydro submitted a Response to Submissions Report (October 2018) that is publicly available on the Department's website (see also **Appendix E**).

Additional information was also provided by Snowy Hydro to:

- further revise the layout and extent of the new swimming area on the north eastern shore of the Talbingo Reservoir as was proposed in the RTS to be fully contained on Snowy Hydro land and to include all abilities parking spaces;
- provide an assessment of significance for the Murray Crayfish; and
- amend the application to include drilling of groundwater bores for water supply.

## 5.4. Key Issues – Government Agencies

The **Office of Environment and Heritage (OEH)** including **National Parks and Wildlife Service (NPWS)** acknowledged Snowy Hydro's efforts to avoid impacts to known natural and culturally significant areas and supports the preparation of an offset strategy focused on improving the biodiversity and conservation values of the Kosciuszko National Park.

OEH (and NPWS) advised that:

- it did not support the permanent on-land emplacement of spoil or dredge material within the KNP; and
- it recommended that there be no impact to the boulder streams or fossil beds in the Ravine Karst system around Lobs Hole Ravine Road.

Snowy Hydro subsequently:

- committed to the eastern on-land emplacement area being temporary, no dredged material be placed on-land and moving spoil material off-park within 5 years of completion of the project should the broader Snowy 2.0 project not proceed.
- commissioned geodiversity specialists to review the design options in this area and have reduced the disturbance footprint to improve the geodiversity outcomes.

OEH provided further advice on the options assessed in relation to the geodiversity areas. These matters are further discussed in **section 6.2**.

NPWS has also provided confirmation to the Department of the proposed framework for offset fund (see **section 6.2**).

The **Environment Protection Authority (EPA)** advised that based on additional information provided in the RTS, including how the project would comply with relevant water quality objectives, expected discharge quality of treated wastewater and design of stormwater controls, it considers the potential water quality impacts can be appropriately managed through an Environment Protection Licence (EPL) or in accordance with the *Protection of the Environment Operations Act 1997*. These matters are further discussed in **section 6.2** and **6.5**.

The **Roads and Maritime Services (RMS)** advised that upgrades to the existing intersection treatment at either the intersection of Miles Franklin Drive or Link Road with the Snowy Mountain Highway are not required. RMS recommended regular maintenance of the transport routes, and the implementation of standard traffic control and management measures

The **Department of Industry (DOI)** advised that sufficient water supply would need to be secured by Snowy Hydro for the project, and that additional groundwater monitoring would need to augment baseline monitoring. DOI acknowledged the baseline information provided in addition to the RTS on baseline aquatic ecology including the sampling and assessment of Murray Crayfish. DOI requested additional monitoring for Murray Crayfish, if approved. DOI considered that the subaqueous emplacement of excavated material required would result in a loss and/or modification of habitat and require an offset under its policy, *Policy and Guidelines for fish habitat conservation and management* (2013). These matters are further discussed in **section 6.2**.

**Snowy Valleys Council** has confirmed that it accepts the proposed management measures for traffic and transport. These matters are further discussed in **section 6.3**. Council also advised that the Talbingo and Tumbarumba waste facilities managed by Council would not have enough capacity for the project and alternate landfill sites would be required (see **section 6.5**) and requested the closures of the spillway be communicated to the community (see **section 6.4**).

Council also:

- expressed a preference for the accommodation camp to remain as a tourism facility at the completion of the project. The Department notes that NPWS prefers the accommodation camp to be removed at the end of the project and the area be rehabilitated;
- suggested an additional barge access point at O'Hares Campsite could reduce the use of the proposed barge ramp at the Talbingo spillway. The Department notes that the application provides only two barge access points (Talbingo Spillway and Middle Bay) and does not include any infrastructure at O'Hares campsite.
- expressed concern that the Tumut Hospital would not meet the emergency needs of the project and upgrades should be expedited. The Department notes that to reduce strain on local services, Snowy Hydro has proposed a self-contained emergency services facility be established at Lobs Hole (see **section 6.4**).

**Snowy Monaro Regional Council** advised that it had concerns regarding traffic movements of oversized loads though the Cooma CBD (including roundabouts). These matters are further discussed in **section 6.3**.

Council also expressed concern about management of waste and recycling and noted that consideration would need to be given to the annual license limits for any waste facilities that may be intended to receive waste from the project. These matters are discussed further in **section 6.5**.

## 5.5. Key Issues – Community

The public submissions supporting the project focused on the benefits of renewable energy and the economic benefits for the region, including Talbingo.

Those objecting to the project raised concerns about the impacts associated with having infrastructure in a National Park and the associated impacts on the biodiversity, recreational and conservation values of the KNP.

Submissions from local residents also expressed concern about impacts to the tourism and loss of recreation opportunities in Talbingo and at Talbingo Reservoir.

**Table 4 |** Summary of key matters raised in submissions by the general public

<b>Kosciuszko National Park</b>
<ul style="list-style-type: none"><li>• incompatibility with locating the project inside Kosciuszko National Park and what alternative technologies and projects were considered</li><li>• impacts to historic cultural heritage items in Lobs Hole and Ravine</li><li>• impacts to tufa deposits, fossil sequences and Karsts at Ravine</li><li>• deterioration of water quality in the reservoir from the discharge of treated wastewater, dredging and subaqueous placement of excavated rock</li></ul>
<b>Social and economic impacts to Talbingo</b>
<ul style="list-style-type: none"><li>• loss of access to Talbingo spillway, the enclosed swimming area, picnic area and Talbingo boat ramp</li><li>• lack of consultation with Talbingo residents and business owners</li><li>• ability for local emergency services such as Tumut Hospital to service the community</li></ul>
<b>Traffic</b>
<ul style="list-style-type: none"><li>• safety impacts to residents and visitors in Talbingo from the additional heavy vehicle traffic</li><li>• suitability of Miles Franklin Drive for heavy vehicles and impacts to road maintenance</li><li>• potential interaction of barge movements with recreational water craft</li></ul>
<b>Assessment of the Snowy 2.0 and Transmission Project</b>
<ul style="list-style-type: none"><li>• cumulative impacts of the project including grid connection needs to be considered upfront</li><li>• more time should be provided for the public exhibition of the EIS</li></ul>

## 5.6. Key Issues – Special Interest Groups

The **National Parks Association (NPA)**, **Nature Conservation Council (NCC)** and **The Colong Foundation for Wilderness** expressed concern about:

- incompatibility of development within Kosciuszko National Park;
- impacts of the project including aquatic ecology, threatened fauna, offsets, recreation; and
- proposed offsets and management measures.

Each of these concerns has been addressed in detail in **section 6** of this report.

Both of these groups raised concern about the assessment of the overall Snowy 2.0 project in stages through separate EISs. While the Department acknowledges these concerns the planning legislation allows for proponents to stage the assessments of complex projects. In addition, this application is a stand-alone stage and does not rely on the Main Works or transmission connection progressing. This application assumes the site would require rehabilitation to remove all infrastructure.

The NPA and NCC also challenged the consideration of alternatives to achieve the same renewable energy generation outside the national park. In that regard, the Department notes that the focus of the assessment is on the development that is the subject of the application and while an assessment is required of alternatives to elements of a project, it is not necessary for an EIS of an energy project to incorporate an exhaustive analysis of every potential alternative for providing energy to NSW consumers.

In addition, the **Australasian Cave and Karst Management Association Inc. (ACKMA)** also expressed concern about the impact to Karst and cave systems, fossil beds and boulder streams near the project and impacts to biodiversity, impacts of disposal of tunnel spoil and restrictions on public access to the Ravine area. These matters are discussed further in **section 6.2**).





## 6. Assessment

### 6.1. Introduction

The Department has assessed the merits of the project in accordance with the requirements of the EP&A Act and applicable NSW Government policies and guidelines.

The Department acknowledges that Snowy Hydro has included a number of aspects in the design of the Exploratory Works project to avoid and minimise impacts, including locating key infrastructure in existing disturbed areas and using existing roads within Kosciuszko National Park.

The Department also acknowledges Snowy Hydro's efforts to respond to concerns raised in agency and community submissions throughout the assessment, which has resulted in changes to the project that would further reduce potential impacts.

The Department has undertaken a comprehensive assessment of the full range of potential impacts, both within the KNP and outside the KNP.

Based on this assessment, the Department considers that the project may result in a range of residual impacts, which are assessed in detail in later sections of this report. The key residual impacts are:

- Kosciuszko National Park – particularly in relation to vegetation clearing and potential water impacts from emplacement of excavated material (see **section 6.2** of this report);
- traffic and transport – particularly in relation to roads outside the KNP, including Miles Franklin Drive, and roads within Cooma and Tumut (see **section 6.3**); and
- social and economic – particularly in relation to recreational and tourism impacts on Talbingo Reservoir, and workforce accommodation impacts (see **section 6.4**).

The Department has also provided a summary of its assessment of all other issues in **Table 8** (see **section 6.5**).

### 6.2. Kosciuszko National Park

#### 6.2.1. Introduction

Community and special interest group submissions from NCC, NPA and The Colong Foundation for Wilderness and ACKMA, raised concerns about the location of the project within the KNP and impacts to the values of the park.

In particular, these submissions expressed concerns about potential impacts on:

- biodiversity (terrestrial and aquatic) within the KNP, including clearing of vegetation;
- Yarrangobilly River and Talbingo Reservoir from emplacement of material and pollution events;
- geodiversity, including caves, tufa deposits and fossil beds; and
- recreation, including the closure of the campground and access to certain areas of the park.

## 6.2.2. Biodiversity

### Introduction

The key biodiversity issues for the Exploratory Works relate to clearing of vegetation and impacts to fish habitat in Yarrangobilly River and Talbingo Reservoir.

Community and special interest group submissions expressed concern about the impacts of the project including threatened fauna, aquatic ecology and proposed offsets and management measures. Submissions from NPA and NCC also raised concern about the potential impact on the Smoky Mouse, Boorolong Frog, and Gang-gang Cockatoo.

The EIS includes a specialist terrestrial biodiversity impact assessment undertaken by EMM and specialist aquatic biodiversity impact assessment undertaken by Cardno.

The biodiversity assessment was undertaken in accordance with the *Biodiversity Conservation Act 2016* and the Biodiversity Assessment Method (BAM). The aquatic assessment has been undertaken in accordance with the *Fisheries Management Act 1994* (FM Act).

The project was determined by the Commonwealth Department of Environment not be a controlled action under the EPBC Act and no further assessment is required under that Act.

OEH noted in its advice for the project that:

*"A strong emphasis was placed on avoiding impacts to known naturally and culturally significant areas [and]... that this has resulted in a design which should mitigate impacts on these areas."*

OEH also considered that the biodiversity assessment provided a comprehensive inventory of the biodiversity values and thorough assessment of the likely impacts.

### Terrestrial Biodiversity

The Exploratory Works would involve clearing of 95 ha of vegetation. The vegetation would be cleared from two key areas within the KNP (Lobs Hole Ravine Road and Lobs Hole) and one area outside the KNP (northern end of Talbingo Reservoir).

There would be no clearing of listed endangered ecological communities (EECs) under the NSW *Threatened Species Conservation Act 1995* (TSC Act) or the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). No threatened flora species were recorded during targeted surveys.

However, the clearing of vegetation generates 1,865 ecosystem credits under the Biodiversity Offsets Payment Calculator. OEH confirmed that the assessment of impacts was undertaken in accordance with the BAM and was satisfied with the extent of the assessment and the calculation of the credits required.

**Table 5** provides details of the vegetation proposed to be cleared and the vegetation communities and associated plant community types (PCT).

**Table 5 |** Vegetation Clearing

Plant Community	PCT	Area (ha)	Ecosystem credits required
Broad-leaved Sally grass - sedge woodland on valley flats and swamps in the NSW South Western Slopes Bioregion and adjoining South Eastern Highlands Bioregion	285	5.4	182
Brittle Gum - peppermint open forest of the Woomargama to Tumut region, NSW South Western Slopes Bioregion	296	41.9	925
Ribbon Gum - Narrow-leaved (Robertsons) Peppermint montane fern - grass tall open forest on deep clay loam soils in the upper NSW South Western Slopes Bioregion and western Kosciuszko escarpment	300	8.1	164
Riparian Blakely's Red Gum - Broad-leaved Sally woodland - tea-tree - bottlebrush - wattle shrubland wetland of the NSW South Western Slopes Bioregion and South Eastern Highlands Bioregion	302	5.1	112
Red Stringybark - Broad-leaved Peppermint - Nortons Box heath open forest of the upper slopes subregion in the NSW South Western Slopes Bioregion and adjoining South Eastern Highlands Bioregion	311	2.8	62
Broad-leaved Peppermint - Candlebark shrubby open forest of montane areas, southern South Eastern Highlands Bioregion and South East Corner Bioregion	729	16	364
Norton's Box - Broad-leaved Peppermint open forest on footslopes, central and southern South Eastern Highlands Bioregion	999	0.6	13
Snow Gum - Mountain Gum shrubby open forest of montane areas, South Eastern Highlands Bioregion and Australian Alps Bioregion)	1196	2.8	43
<b>Total</b>			<b>1,865</b>

The project also has the potential to affect 10 threatened fauna species recorded in the project area through clearing of habitat. Five of these 10 species are identified as species credit species and a total of 2,060 credits are required to offset these impacts (see **Table 6**).

**Table 6 |** Threatened Fauna Impacts

Species (Common Name)	BC Act	EPBC Act	Species Credit Species	Species Credits Required
<b>Birds</b>				
Gang-gang Cockatoo	Vulnerable	-	Yes	24
Masked Owl	Vulnerable	-	Yes	24
<b>Mammals</b>				
Eastern Pygmy-possum	Vulnerable	-	Yes	1,961
Smoky Mouse	Critically Endangered	Endangered	Yes	6
<b>Amphibians</b>				
Booroolong Frog	Endangered	Endangered	Yes	45
<b>Total</b>				<b>2,060</b>

The Department has recommended conditions requiring Snowy Hydro to prepare and implement a Biodiversity Management Plan to protect and monitor terrestrial biodiversity including specific measures to minimise the impacts on Smoky Mouse and Booroolong Frog and protect vegetation and fauna habitat outside the approved disturbance area, minimise native vegetation clearing in the approved disturbance area, minimise the loss of key fauna habitat and undertake pre-clearance surveys of fauna.

## Aquatic Ecology

Talbingo Reservoir provides habitat for non-native and native fish, including the threatened Murray Crayfish.

The emplacement of material and dredging in the Talbingo Reservoir would modify a small area of key fish habitat (5 – 10 %) in the bed of the reservoir comprising soft sediments and wood debris.

Murray Crayfish, a threatened aquatic fauna species listed as vulnerable under the FM Act, was the only threatened species recorded in surveys. Snowy Hydro concluded that as it is not significant habitat area, individuals would be relocated, and the final material emplacement could provide habitat and refuge for Murray Crayfish; the impact on this species would be minimised. Both DPI Fisheries and the Department consider that the project is unlikely to have a significant impact on Murray Crayfish populations and a Species Impact Statement was not required.

The *Policy and Guidelines for fish habitat conservation and management* (DPI, 2013) requires that there be 'no net loss' of key fish habitat and impacts are to be offset by rehabilitation and if significant, through environmental compensation. The Department considers that the measures to minimise impacts by maximising the relocation of individuals and rehabilitation of habitat at the conclusion of subaqueous emplacement would result in no net loss of key fish habitat.

The Department has recommended conditions to include contingency measures, which would be implemented if the Planning Secretary considers that, after reviewing monitoring, the development shows significant impact on Murray Crayfish. Should monitoring show the development has had a significant impact on the Murray Crayfish in the Talbingo Reservoir, impacts must be offset to the satisfaction of the Planning Secretary.

The Department has also recommended conditions requiring:

- the development and implementation of an Aquatic Habitat Management Plan that includes measures to protect aquatic habitat outside the approved disturbance area and minimise the loss of key aquatic habitat, minimise impacts to Threatened species, relocate large mobile invertebrates, salvage woody debris and implement a program to restore and enhance the aquatic habitat following development;
- the development and implementation of Surface Water, Dredge Management Plan and Excavated Material Management Plans to protect aquatic habitat from the potential impacts from the generation and dispersion of sediment.

In addition, the Department has recommended a condition requiring the design of the permanent and temporary bridges be done in accordance with *Why do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings* (DPI) and to minimise in stream works between October to January during the migratory period of the Macquarie Perch.

## Biodiversity Offsets

The Department recognises that while Snowy Hydro has sought to avoid impacts through the design of the project, there would be a residual impact to terrestrial biodiversity.

The offset options for terrestrial biodiversity under the BC Act allow retirement of like-for-like credits, funding a biodiversity conservation action and payment into the Biodiversity Conservation Fund.

The retirement of like-for-like credits and payment into the Biodiversity Conservation Fund are not appropriate mechanisms to address the impacts of the project. This is because they address impacts to biodiversity on private land and not in conservation areas such as national parks and it would not allow funds to be directly allocated for works in the KNP.

Snowy Hydro has proposed funding biodiversity conservation actions that would be site-specific and carried out in the KNP. This approach is allowed for in the regulatory framework of the EP&A Act and BC Act that provides flexibility for how a consent authority (in this case the Minister) conditions offsets for CSSI projects.

Snowy Hydro has calculated the equivalent value of the conservation actions as \$5.5 million under the Biodiversity Offsets Payment Calculator. The Department and OEH support the assessment of impacts and the value calculated for the credits.

NPWS would carry out conservation actions for biodiversity within the KNP on behalf of Snowy Hydro to improve catchment health in the areas of the KNP where the project is impacting, and that benefit the threatened species and ecological communities impacted by the Exploratory Works.

NPWS has proposed that this mechanism would have governance and public reporting arrangements to ensure accountability for the use of the funds specifically within the KNP.

Snowy Hydro has developed a Biodiversity Offset Strategy, in consultation with OEH and NPWS, demonstrating that there are biodiversity conservation actions that would conserve or enhance biodiversity including threatened species and ecological communities. NPWS would develop a detailed plan of management actions, defining specific sites and outcomes and monitoring that would be implemented by NPWS.

Snowy Hydro proposed that the required biodiversity credits would be refined before any development is carried out. The Department considers that while there may be further refinements to the reduce the area of impact (and consequently the number of offset credits required), it is appropriate given the location of the impacts in a national park to secure a commitment for the offset that is reflected in the conditions to provide upfront funding for conservation actions.

### Summary

Snowy Hydro has sought to avoid, mitigate, manage and / or offset the residual impacts of the project.

The Department has recommended a broad suite of conditions to manage and offset biodiversity values recognising the impacts to biodiversity within the KNP. These include conditions requiring Snowy Hydro to:

- pay \$5.5 million to NPWS for NPWS to carry out biodiversity conservation actions within the KNP on behalf of Snowy Hydro;
- prepare and implement a Biodiversity Management Plan to protect and monitor terrestrial biodiversity;
- prepare and implement an Aquatic Habitat Management Plan to protect and monitoring aquatic biodiversity and design structures in accordance with relevant guidelines and to minimise impacts to fish;
- offset impacts to Murray Crayfish in the Talbingo Reservoir if monitoring shows the development has had a significant impact; and
- rehabilitate the site to the satisfaction of NPWS in accordance with a Rehabilitation Management Plan to remove all infrastructure, restore land to its pre-existing standard or better.

### **6.2.3. Surface Water**

#### Introduction

The Exploratory Works would be located close to Yarrangobilly River and within the Talbingo Reservoir.

As the Yarrangobilly River flows through relatively undisturbed national park, both the Department and EPA consider that the river has a high conservation value.

However, the Talbingo Reservoir is considered a slightly-moderately disturbed ecosystem, as the water level is controlled by Snowy Hydro and the reservoir is used for recreational activities such as boating, fishing, water skiing and canoeing.

The potential surface water impacts from the Exploratory Works relate to:

- subaqueous emplacement of excavated material;
- temporary on-land emplacement of excavated material;
- discharge of treated process water and wastewater; and
- stormwater and runoff.

#### Subaqueous emplacement of excavated material

Large quantities of material (approximately 750,000 m<sup>3</sup>) would be generated by the tunnelling for the project.

Snowy Hydro has identified that there is significant 'dead storage' within Talbingo Reservoir to accommodate the excavated material and proposes emplacement of material in designated areas in Talbingo Reservoir in Plain Creek Bay, Cascade Bay and Ravine Bay.

A total of 81 ha (0.81 km<sup>2</sup>, approximately 5 – 10 % of the Reservoir) of the bed of the Reservoir is identified for the emplacement area for excavated material from tunnelling and the material dredged to create the barge ramps and navigation channel.

Snowy Hydro commenced baseline monitoring of the Talbingo Reservoir in March 2018 and is ongoing. This information would be used to inform water quality criteria and trigger values that would be set by EPA in the EPL. Water quality objectives for the Talbingo Reservoir would take account of protection of aquatic ecosystems and also public boating, and primary contact activities such as swimming

An initial trial placement of 50,000 m<sup>3</sup> would be implemented to ensure that appropriate water quality criteria is being met. To minimise and mitigate potential impacts, Snowy Hydro has proposed the following measures:

- geochemical testing of material to confirm suitability for subaqueous emplacement;
- selection of emplacement locations with consideration of aquatic ecology, available water depth and potential for resuspension; and
- placement of material at least 3 m below minimum operating level to reduce potential for resuspension and to minimise the impacts to aquatic habitats.

The Department and EPA consider that the proposed measures would minimise the impact of the emplacement of material within the Reservoir. The Department has also recommended conditions to:

- prepare a Excavated Material Management Plan to minimise the impacts on water quality impacts aquatic habitat and species; and
- submit a report of trial placement (50,000 m<sup>3</sup>) to confirm the impacts and effectiveness of the trial and whether more excavated material can be placed in the designated subaqueous emplacement area in Plain Creek Bay or the trial may be extended to Cascade Bay and Ravine Bay.

#### Temporary on-land emplacement

Excavated material would also be stored temporarily in the eastern and western emplacement areas located adjacent to the Yarrangobilly. To minimise and mitigate potential impacts, Snowy Hydro propose the following measures:

- no dredge material would be placed in the on-land emplacement;
- only excavated material that is non-reactive, would be re-used and has low geochemical risk would be placed in the western emplacement area; and



- material would be removed within 3 years of completion of the project to a location outside the KNP and the area rehabilitated.

The Department and EPA consider that the proposed measures would minimise the impact of the on-land emplacement areas. The Department has also recommended conditions to:

- conduct testing of the excavated material and handle, store and/or dispose of it accordingly;
- develop and implement suitable procedures for handling, storing and disposing unsuitable material;
- only place excavated material in the western emplacement stockpile that is non-reactive, has low geochemical risk and will be reused.

#### Water discharges

Water requiring treatment would be generated from:

- process water from tunnelling (discharge rate is estimated in predictive modelling to be up to 0.45 ML/day) including groundwater inflows captured from the tunnel excavations, water used underground during construction, wash down and eastern emplacement area seepage; and
- wastewater from the accommodation camp (0.048 ML/day).

All process water would be treated. Snowy Hydro estimates after treatment, approximately 95% of this process water generated would then be reused for dust suppression and concrete production.

Snowy Hydro estimates that the remaining 5% of this process water (up to 4.9 ML/month) would be discharged during phases when the process water generation exceeds the reuse requirements such as during the phase of construction when groundwater inflow is at its highest or the need for dust suppression is at its lowest such as wet weather or during winter.

The treated wastewater and process water would be blended and discharged through a controlled pipeline and diffuser arrangement on the bed of the Yarrangobilly arm of the Talbingo Reservoir licensed by the EPA.

EPA considers that Snowy Hydro have demonstrated that the water quality criteria can be met at the edge of the mixing zone and this would be a key design driver for the wastewater treatment plant.

The Department has recommended conditions to design, install and/or maintain wastewater and sewage treatment plant to ensure no discharges to surface waters, except in accordance with an EPL or in accordance with Section 120 of the POEO Act.

#### Stormwater and sediment runoff

Stormwater discharge from construction areas (including access roads and bridges, construction portal, accommodation camp and emplacement area) has the potential to impact water quality in the Yarrangobilly River.

Discharge to Yarrangobilly River from construction areas in Lobs Hole Ravine (including haul roads, accommodation camp, portal on-land emplacement) would be regulated by EPA through the EPL. The Department's recommended conditions reflect that surface water discharge would need to comply except in accordance with an EPL or with section 120 of the POEO Act.

Snowy Hydro supplemented the stormwater, sediment and erosion controls and discharge regimes following feedback from EPA. In particular, additional measures were proposed around Yarrangobilly River. EPA requested further consideration of sealing roads adjacent to Yarrangobilly River to further reduce sediment laden discharge. Sealing roads would not be reasonable as these haul roads would be used intensively, particularly for hauling excavated material between the portal and on-land emplacement area.

The Department and EPA consider that surface water runoff can be adequately managed through the proposed system of control measures and treatment.

#### Summary

The residual surface water impacts of the Exploratory Works relate to emplacement of excavated material, treated water discharges, and sediment and stormwater runoff. Snowy Hydro has proposed management measures to minimise and mitigate each of these potential impacts.

The Department has also recommended a range of additional controls to ensure that the subaqueous emplacement trial demonstrates the impacts and effectiveness of the trial and whether the trial is extended to all of the excavated material and if additional measures are required.

Further, both subaqueous emplacement and water discharges would be regulated by the EPA through an EPL to protect the Yarrangobilly River and Talbingo Reservoir. The Department has recommended conditions that prevent discharges to surface and groundwater, except in accordance with an EPL or in accordance with Section 120 of the POEO Act.

With these strict measures in place, the Department considers that the project can be managed to minimise the impact on surface water quality and quantity with a detailed program of monitoring and should monitoring identify any adverse impact, contingency measures would be triggered.

#### **6.2.4. Geodiversity**

There are fossil beds, boulder streams and Karst systems (limestone formations) that may be affected by the proposed upgrades to Upper Lobs Hole Road (see **Figures 5, 6 and 9**) or the blasting activities at the northern end of the portal construction pad.

The EIS includes detailed specialist impact assessments of assessment of the potential impacts to geodiversity undertaken by EMM, by Dr Ian Percival and Dr Bradley Opdyke.

#### Fossil Beds

A fossil bed, referred to as the Lick Hole Formation and part of the Ravine Beds, is located around Lobs Hole Ravine Road, approximately 1 km south of the portal and extends into the ridge and some 500 m beneath the road surface.

Dr Ian Percival considered in his assessment that regionally and state-wide, the palaeontological significance of the Lick Hole Formation is relatively restricted.



**Figure 5** | Fossil bed on Upper Lobs Hole Road – looking upslope



**Figure 6** | Boulder stream on Upper Lobs Hole Road - looking downslope

The construction of the original Lobs Hole Road exposed these fossil beds and the Exploratory Works would impact these fossil beds. Snowy Hydro considered 3 options for the upgrade of the road to address different potential design solutions to meet safety requirements to be included in a narrow area of road (see **Table 7**).

**Table 7** | Summary of Lobs Hole Upgrade Options around fossil beds

Option		Construction impact
1	Gabion wall with fill	13,445 m <sup>3</sup> excavated with substantial lowering of the current road and excavation into the fossil beds and extended valley side fill
2	Cut into existing face	4,630 m <sup>3</sup> excavated impacting ridge side of the road only by approximately 2 to 2.5m
3	Post and panel	8,020 m <sup>3</sup> excavated with little or no fill on the valley side and minimal disturbance of the outcrop on the ridge side

Dr Percival concluded that all 3 options were acceptable given the context and significance of the fossil beds but recommended option 2 as it provided the best opportunity to minimise impact by recovering valuable fossil material.

OEH support the management measures for the fossil beds proposed by Snowy Hydro in the RTS. However, in addition, OEH consider, and the Department agrees, that the impact to the fossil beds should be minimised and considered that the upgrade should be limited to option 2 in order to minimise the impact on the fossil beds. The Department has reflected this in its recommended conditions.

#### Boulder Streams

Lobs Hole Ravine Road passes through 3 areas of boulder streams that are remnants of rock glaciers that date to between 22,000 and 16,000 years ago. They are listed in the KNP plan of management as a significant natural and cultural feature. The construction of the original Lobs Hole Road caused impacts to these boulder streams.

Dr Opdyke considered that any impacts to the boulder streams from the widening of Lobs Hole Ravine Road could be minimised by minimising the amount of cut. Snowy Hydro have proposed management measures to minimise the impact to the boulder streams by widening the road on the upslope side and providing drainage under the road to prevent water build up above the road.

The Department and OEH consider that the mitigation measures proposed by Snowy Hydro (as updated in the RTS) minimise the potential impacts to the boulder streams. The Department has reflected this in its recommended conditions.

#### Karst Systems

There are two karst systems relevant to the Exploratory Works, the Yarrangobilly Karst system and Ravine Karst system.

The Yarrangobilly Karst system (including the Yarrangobilly Caves), is about 8 km north east of the project and is listed as a significant natural and cultural feature in the KNP Plan of Management.

The EIS assessment determined that the caves are highly unlikely to experience impacts from the project due to low permeability rocks, local groundwater recharge supporting the caves, and the distance to the caves from the project.

Snowy Hydro has committed to documenting any limestone intercepted through the construction of the exploratory tunnel, and where appropriate would pre-grout areas of expected high groundwater inflow to prevent potential changes in the local hydrology including flow within any unidentified karst features.

The Department has recommended conditions to investigate any unidentified karst features discovered during the tunnel works.

The Ravine Karst system is the area surrounding Lobs Hole Ravine Road and the tufa deposits are considered to have national or regional significance under the KNP Plan of Management.

Tunnelling/blasting activities at the tunnel portal entrance are generally more than 850 m from the Ravine Karst system with the closest works at the northern end of the portal construction pad (approximately 700 m from the Ravine Karst). The Department has recommended conditions to minimise impacts to the tufa deposits, monitor and include measures if monitoring shows an impact to these features.

### Summary

The Department considers that any impacts to fossil beds and boulder streams would be minimal and can be minimised or managed through the measures proposed by Snowy Hydro. Further, the Department has recommended conditions requiring Snowy Hydro to:

- minimise the impact of the development on the fossil beds and boulder streams;
- carry out a detailed investigation of any unidentified karst features intercepted during the tunnel works; and
- prepare a Historic and Natural Heritage Management Plan to include monitoring and a contingency plan to manage any unpredicted impacts and their consequences for tufa deposits and any unidentified karst features are intercepted during tunneling.

### **6.2.5. Heritage**

#### Historic Heritage

Lobs Hole has a history of European settlement since the early 1800's involving grazing, pastoralism, prospecting and mining, with a copper mine operating for approximately 50 years until 1917. The Washington Hotel, in the north-west area of Lobs Hole, is the only structural remains left above ground at Lobs Hole and the project has been designed to avoid this heritage site.

The Lobs Hole historical area is considered a place of local significance for its historical, technological, social and research values. Within this area, the assessment grouped heritage items into complexes relating to mining, pastoralism, settlement, industry and transport.

The assessment predicted direct impacts to 58 of the 128 historic heritage items identified within the study area.

Snowy Hydro has detailed specific management measures for each heritage item and the Department and Heritage Council support the proposed management measures. The Department has reflected these commitments in its recommended conditions.

The Department considers that with these measures in place, the project is unlikely to result in a significant impact on historic heritage values. Further, the Department considers the level and area of disturbance would not materially affect the environmental significance values of either of the national heritage places.

The Department has recommended conditions requiring Snowy Hydro to prepare and implement a Historic and Natural Heritage Management Plan including:

- an archaeological research design and excavation methodology for identified items of archaeological heritage significance;

- an archival research program;
- protecting specific heritage items located within the approved development area;
- protecting identified European heritage items and any items located outside of the approved development area;
- minimising and managing impacts of the project on European heritage within the disturbance footprint.

#### Aboriginal Heritage

The project area is located in the lands of the Wolgalu people and has been subject to high levels of past disturbance following European settlement and mining in Lobs Hole, and the construction of Talbingo Reservoir at Talbingo.

The assessment identified 21 Aboriginal object locales that would be disturbed by the project, of which:

- 7 locales of moderate to high local significance located at the eastern emplacement area and Lower Lobs Hole Ravine Road;
- 3 locales of low to moderate local significance located at the Mine Trail Road upgrades; and
- 11 locales of low local significance located within the Middle Bay Wharf access road, the accommodation camp, Upper Lobs Hole Ravine Road and the eastern emplacement area.

In addition to management of the individual objects, a broader archival research program would be undertaken for the entire Lobs Hole landscape to capture the overall values of the site and include oral and historical research.

The Department and OEH support the proposed management measures proposed by Snowy Hydro. The Department has recommended conditions requiring Snowy Hydro to prepare and implement an Aboriginal Heritage Management Plan including measures:

- to avoid, minimise and manage impacts in accordance with the Aboriginal Cultural Heritage Assessment Report; and
- for additional archaeological excavations and the management of any further Aboriginal cultural heritage values which may be identified.

#### **6.2.6. Recreation**

The Exploratory Works are located in a relatively isolated location in the northern western end of the KNP.

However, Lobs Hole is currently used as a public camping area known as Ravine Campground. The Exploratory Works would result in the closure of the Ravine Campground for the duration of the project and an associated loss of recreation opportunities.

There are also a number of public roads within the park adjacent to the Exploratory Works that would be closed to the public for the duration of the project for public safety. While this may affect recreational opportunities for some visitors in the KNP, it also has the benefit of ensuring that the majority of the project would not be visible to the public.

The Department also notes that there is the potential that workers, in particular those staying at the accommodation camp who are between shifts, may use nearby areas for recreation and have impacts on areas that are not currently heavily used for recreation.

The Department has recommended conditions to include a Worker – Recreational Management Plan to include measures that would be implemented to minimise the impacts particularly of recreational activities of workers staying in the accommodation camp on the values of the park.



### 6.2.7. Conservation

The Department and NPWS support the design of the project to avoid and minimise impacts on the natural and cultural values (including biodiversity, geodiversity, and heritage values) of the KNP.

While the Department has recommended a comprehensive and precautionary suite of conditions including a range of management plans relating to biodiversity, water, geodiversity and heritage, the assessment indicates that the project may result in residual impacts on the KNP from the:

- impact to the unique setting of an iconic national park from the presence of additional infrastructure and construction in the KNP; and
- closure of an area of the park to the community and associated loss of recreation opportunities during works in the project location including the closure of Ravine campground and surrounding roads.

Snowy Hydro has offered, and NPWS has agreed, to a payment to NPWS of around \$5 million to offset the direct and indirect impacts to an iconic national park with unique natural, cultural and recreational values. The Department notes that this is in addition to the \$5.5 million offset proposed for biodiversity impacts.

NPWS would carry out actions within the KNP on behalf of Snowy Hydro to improve catchment health in the KNP and achieve strategic conservation outcomes in the extended the KNP landscape and enhance the natural and cultural and reactional values of the KNP.

NPWS has proposed that governance and public reporting arrangements would be implemented to manage the funds and ensure accountability for the use of the funds within the KNP.

NPWS has confirmed that this offset could be used for programs within the KNP such as:

- extending existing programs and collaborations such as the Alpine Research Hub and established reports such as *Caring for our Australian Alps Catchments* (Worboys et al 2011), to enable the development of best practice adaptive management programs;
- supplementing current, and initiating new, conservation programs to assist threatened flora and fauna species, many of which are endemic to the KNP;
- improving the control of pest fauna and flora in the KNP;
- improving strategic fire management in the KNP;
- undertaking further studies into the Aboriginal and Historic heritage values of the KNP to enhance the broader community's awareness of these values;
- improving land management in and around the Exploratory Works area to enhance weed and pest control programs; and
- offset the impacts on recreational users from the closure of the Ravine Campground and adjacent roads including improvements to existing campground in the vicinity of the Exploratory Works area.

The key actions would be developed further by NPWS into a plan detailing management actions, sites, outcomes and monitoring that would be implemented by NPWS.

### 6.2.8. Summary

The establishment of the Exploratory Works would require clearing of up to 95 ha of native vegetation and modification of up to 5 – 10% of key fish habitat within Talbingo Reservoir, potential impacts from sedimentation, water discharges, management of excavated material and impacts to heritage items, and removal of areas of fossil beds and boulder streams.

However, based on its assessment, the Department considers that these impacts would not be significant and can be effectively managed, mitigated and/or offset in accordance with applicable policies and guidelines to achieve an acceptable environmental outcome.

In this regard, the Department has recommended a comprehensive and precautionary suite of conditions to ensure the project complies with relevant criteria and standards. The conditions require Snowy Hydro to prepare a range of management plans in consultation with NPWS relating to biodiversity, water quality, heritage, traffic and rehabilitation.

The Department has also recommended that Snowy Hydro be required to pay \$10.5 million to NPWS to offset the impacts of the project on the KNP.

### **6.3. Traffic and Transport**

#### **6.3.1. Introduction**

Several submissions from Talbingo residents raised concerns about the volume of heavy vehicle traffic proposing to use Miles Franklin Drive on a 24 hour, 7 days a week basis. Another key issue raised in submissions is the potential interaction between recreational water users and the proposed barge movements on Talbingo Reservoir.

#### **6.3.2. Transport Routes and Site Access**

Heavy vehicles would be used to transport plant and equipment required for the Exploratory Works to the site. The main transport route for the project would go through Cooma via the Snowy Mountains Highway to Link Road and Lobs Hole Ravine Road, with vehicles approaching Lobs Hole from the south (see **Figure 7**).

Snowy Hydro has also proposed supplementary transport route for oversized vehicles and the transportation of bulky and heavy equipment utilising barges on Talbingo Reservoir. This route would go through Tumut via the Snowy Mountains Highway, Miles Franklin Drive and Spillway Road to the new barge ramp proposed at the Talbingo spillway. From there, barges would approach Lobs Hole from the north, travelling approximately 22 km on the reservoir to the proposed barge ramp at Middle Bay.

The Snowy Mountains Highway is a State Road with seasonal traffic numbers, with peak traffic volumes coinciding with the ski season during the winter months. Link Road is a rural road connecting the highway with Cabramurra which houses Snowy Hydro staff. Link Road also provides access to the Selwyn Ski Resort and experiences peak traffic volumes in winter.

Miles Franklin Drive which connects Talbingo and the Tumut 3 Power Station with the highway is a local road managed by Snowy Valleys Council and Crown Lands.

Talbingo Reservoir is accessible to trailerable craft which limits recreational vessels to typically less than 7.5 m in length. Peak boating demand on Talbingo Reservoir is estimated at 75 vessels per day, with typical daily demand at less than 10 per day. The main boat ramps providing access to the reservoir include the public boat ramp adjacent to the reservoir wall at the northern end of the reservoir, a public boat ramp near the confluence of the Tumut River and Talbingo Reservoir on Elliot Way to the south, and an unformed boat ramp at Middle Bay.

#### **6.3.3. Traffic Volumes and Impacts**

##### Road

Over the 34-month construction period, most traffic movements associated with the Exploratory Works would be contained on roads within the KNP which would be closed to the public (see **Figure 9**). This would include the closure of Lobs Hole Ravine Road from the Blue Creek Trail intersection (in the north) to Link Road (in the south), which would remove access to Ravine campground and access to the Middle Bay boat ramp.

Outside of the KNP, Spillway Road would be closed, removing public access to the Talbingo Spillway recreation area.

On the external road network, peak movements of up to 44 heavy vehicles per day and 423 vehicles per month are predicted, with the peak movements expected to occur between 9 – 10 am. Workers would travel to and from site by bus with designated pick-up locations and schedules to be detailed in the Traffic Management Plan.

Oversized vehicle movements are required during site establishment, exploratory tunnelling and construction of barge infrastructure. Each of these three phases would require approximately one month of oversized deliveries and involve up to 30 oversized vehicle movements, with a daily peak of up to 5 oversized vehicle movements per day.

The Department considers the transport routes have sufficient capacity to accommodate the predicted 44 heavy vehicle movements per day which would not impact the level of service of the road network. However, the Department considers the proposed use of Miles Franklin Drive on a 24-hour, 7 days a week basis is not warranted as the low volume of traffic required to service the project can be scheduled during standard construction hours.

As such, the Department has recommended restricting construction activities outside the KNP to Monday to Saturday between 7 am to 6 pm. The exception being for oversized vehicles that travel under permit from RMS and Council which may need to occur outside standard hours.

If excavated rock material is not suitable for sub-aqueous emplacement within Talbingo Reservoir, the material would need to be disposed at an appropriately licenced facility within 5 years of the conclusion of the project. That disposal method is not the subject of this application and would be subject to further assessment and approvals.

#### Marine

The EIS assessment predicts up to 24 barge movements per day transporting equipment and materials between the Talbingo barge ramp and Middle Bay barge ramp. The transport barges would be modular flat top barges approximately 50 m long and 20 m wide and propelled by tugs.

Measures to minimise traffic safety impacts to recreational water users at Talbingo Reservoir would be prepared in consultation with the Maritime Division of RMS as part of the Traffic Management Plan. All operators and vessels are required to comply with marine safety legislation.

#### **6.3.4. Recommended Conditions**

The Department has recommended conditions of approval requiring Snowy Hydro to:

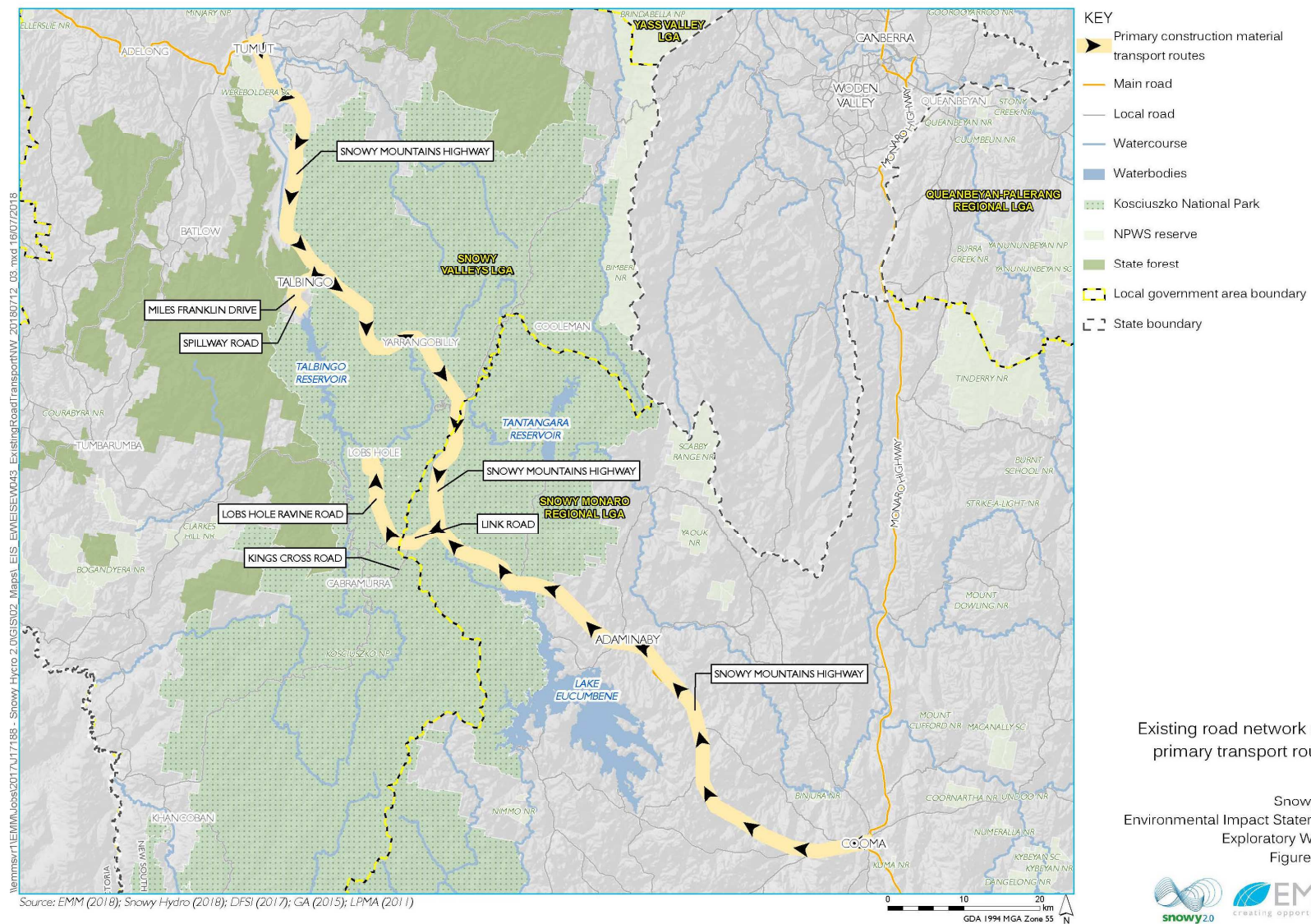
- maximise the use of barge infrastructure on the Talbingo Reservoir to deliver heavy machinery, construction equipment and materials to the site;
- prepare and implement a Traffic Management Plan in consultation with RMS, NPWS and Councils that includes:
  - o provisions to minimise the safety impacts of the project on road users on Miles Franklin Drive and Link Road and recreational water users in the Talbingo Reservoir;
  - o minimising the number of workers using private vehicles to get to and from the site;
  - o notifying the local community about development-related traffic impacts;
  - o scheduling the use of heavy vehicles to minimise convoy length or congestion on Miles Franklin Drive and Link Road; and
  - o restricting over-dimensional and heavy vehicles to Snowy Mountains Highway, Miles Franklin Drive and Spillway Road; or Snowy Mountains Highway, Link Road, and Lobs Hole Ravine Road; and
  - o undertaking dilapidation surveys and rehabilitating or make good any impacts from the project.

Subject to the recommended conditions, the Department considers that the project would not result in significant impacts on road network capacity, efficiency or safety.

#### **6.3.5. Summary**

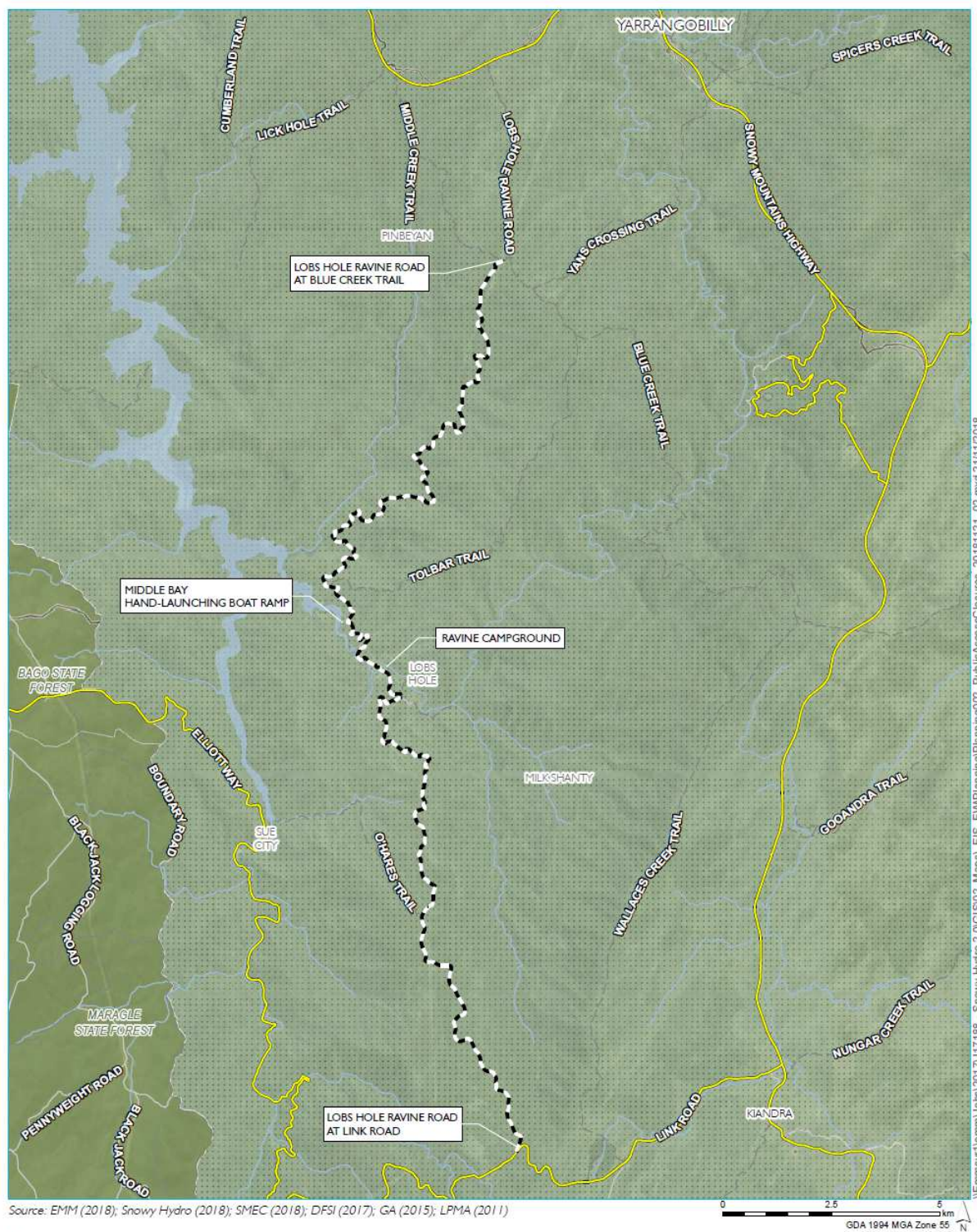
The Department notes the concerns of the local residents about the impacts of the traffic impacts along Miles Franklin Drive through Talbingo and recreational boats users on Talbingo Reservoir.

To ensure interactions between the project and recreational users of the reservoir and road users of Miles Franklin Drive and Link Road are appropriately managed, the Department has recommended that Snowy Hydro be required to prepare a Traffic Management Plan in consultation with Snowy Valleys Council and the Roads and Maritime Service to minimise the traffic safety impacts of the development.



**Figure 7 | Transport routes**





Project access closure

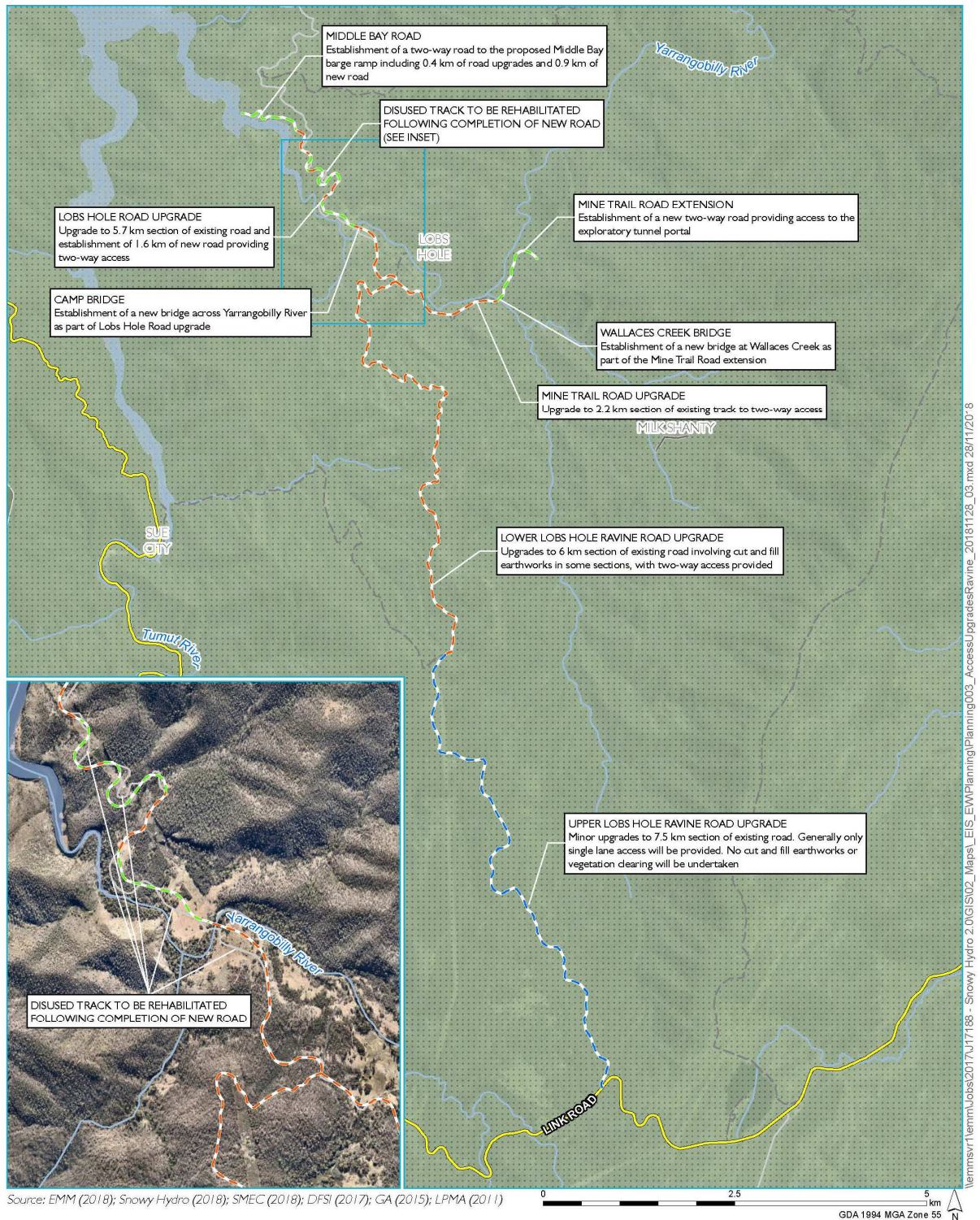
Snowy 2.0  
Exploratory Works

Figure 2



**Figure 8 | Road closures in the KNP**





**Figure 9** | Road upgrades in the KNP

## **6.4. Social and Economic**

### **6.4.1. Introduction**

As the nearest town to the project, Talbingo is located between the Blowering Dam and Talbingo Reservoir and close to Kosciuszko National Park. The township is a destination for recreational opportunities with close to a quarter of residents are employed in accommodation and food services, with administrative and support services, and the construction industries being the next largest employers.

Submissions from residents of Talbingo identified Talbingo Reservoir as a major attraction for visitors to the town.

Snowy Hydro currently provides the public with a recreational area at the reservoir spillway which has a picnic area, enclosed swimming area and car parking. Residents are concerned that tourism would be impacted if access to Talbingo Reservoir is closed. Submissions also expressed concern about the adequacy of the new replacement swimming area proposed by Snowy Hydro and the lack of all abilities access and parking close to the swimming area.

### **6.4.2. Recreation**

Snowy Hydro propose to close the Talbingo Spillway due to public safety considerations for the duration of the project. There would also be occasional temporary restrictions (1-2 hours) for the boat ramp during the project primarily at the start of the project and avoiding the peak visitor periods.

To offset these impacts, Snowy Hydro has proposed a new recreational area within its land on the north eastern side of the reservoir to replace the swimming area that would be closed on the north western side at the spillway. This includes establishment of a new enclosed swimming area, pontoon facilities for water vessels and improvements to foreshore access, beach area and 2 all abilities parking spaces.

The Department acknowledges that Snowy Hydro has offered public access to its operational land for recreation for both the existing and new swimming area. The new facilities replace those that would be closed and Snowy Hydro has accommodated the concerns of the community and included two all abilities parking spaces.

The Department accepts that the new swimming area is smaller than the existing area but considers that it still provides substantial replacement recreational opportunities on Snowy Hydro land. The Department understands that Snowy Hydro has consulted with RMS Maritime and consider that space in the parking area is restricted at a limited number of times in the year and does not warrant further amendments.

The Department also acknowledges the concern of the community about access to the boat ramp, however it notes that the boat ramp is not proposed to be permanently closed. Consequently, the Department considers that the tourism opportunities would remain substantially the same for visitors and residents of Talbingo.

### **6.4.3. Workforce**

The project would require a long-term workforce of up to 200 personnel over the life of the works, comprising 180 employed for the Exploratory Works and 20 employed in the accommodation camp. Workers would operate on a swing schedule with up to 164 personnel working on site at any one time. The initial workforce would be housed in Cabramurra or Talbingo until the accommodation camp in Lobs Hole is built.

It is expected that the majority of the workforce would be fly-in fly-out or drive-in drive-out workers, with up 30 % of the workforce coming from the local area and region. Given the 34 month construction period, Snowy Hydro estimated a small portion of workers from outside the region would relocate to the local area.

Neither Council expressed concern about these potential levels of accommodation that may be needed beyond the fly-in -fly-out workforce.

Snowy Valleys Council in their submission advised that an upgrade to facilities at Tumut Hospital would be required to meet the emergency needs of the Exploratory Works. Snowy Hydro propose a self-contained emergency services at Lobs Hole. These services are also available at Cabramurra. The Department does not consider that additional services are required for the project.

#### **6.4.4. Economic**

The project has a capital investment value of around \$325 million over a three-year period.

It is anticipated the economic activity in the region would benefit with approximately \$2.92 million in annual direct and indirect regional output.

Snowy Hydro proposes to engage with the selected contractor for the project to ensure its approach to employment would pursue a preference for local employment by providing advance information about the approach to workforce sourcing, recruitment policies of local people and working with recruitment, education and training providers in the local area.

#### **6.4.5. Recommended Conditions**

The Department has recommended inclusion of the following conditions to ensure that social and economic impacts are minimised, and benefits are realised for the local area:

- Snowy Hydro must prepare a detailed plan for the new swimming area and amenities in consultation with Snowy Valleys Council and NPWS, including a construction program that would minimise disruptions associated with the closure of the existing recreational area.
- Snowy Hydro would need to notify the community in advance when planned closures of Snowy Hydro's operational areas including the Talbingo spillway, swimming enclosure and picnic area and restrictions to waterway access on the reservoir; and
- Prior to installing the barge infrastructure at the northern end of Talbingo Reservoir, Snowy Hydro must prepare a detailed plan for the new recreational area at the Talbingo Boat Ramp in consultation with Snowy Valley Council and NPWS.

#### **6.4.6. Summary**

The Department supports Snowy Hydro's proposal for new facilities at the Talbingo boat ramp to offset the closure of Talbingo Spillway located on Snowy Hydro land. Further, the Department has recommended Snowy Hydro consider the merits of incorporating small areas of the KNP into the plan to enhance the new recreational area.

The Exploratory Works present additional employment opportunities for the region, and aligns with the skillsets available in Talbingo with a large portion of residents employed in the services and construction industry.

The Department considers that management measures proposed in the recommended conditions would minimise further impacts to amenity from traffic through Talbingo township.



## 6.5. Other Issues

**Table 8** | Summary of other issues raised

Issue	Findings	Recommended Conditions
Groundwater	<ul style="list-style-type: none"> <li>There are three groundwater units within the project area including:               <ul style="list-style-type: none"> <li>Localised unconsolidated shallow Quaternary gravels episodically recharged through rainfall/flooding;</li> <li>Shallow groundwater associated with weathered fractured rock (5 – 30 m below ground level); and</li> <li>Deep ground water associated with fractured rock that would be intercepted by the tunnel.</li> </ul> </li> <li>Tunnelling has the potential to cause local depressurisation of groundwater resources, altering the local groundwater flow system and reducing baseflow to connected waterways.</li> <li>Snowy Hydro proposes to shotcrete lined and incorporate a groundwater management system to prevent further ingress in areas of groundwater inflow.</li> <li>Minor impacts to baseflow to the Yarrangobilly River during construction (0.14 – 0.18%) and following construction (0.67 – 2.29 %) are predicted as groundwater reaches a new equilibrium. These are considered acceptable under the thresholds set by the <i>NSW Aquifer Interference Policy</i>.</li> <li>The impacts to water quantity through groundwater inflows, changes to groundwater levels and consequential impacts to surface water have been modelled and concluded that there would be minor impacts.</li> <li>These impacts are predicted to be negligible and unlikely to affect the groundwater dependent ecosystems associated with the colluvial areas along the Yarrangobilly River and its tributaries.</li> <li>Snowy Hydro have committed to continuing groundwater monitoring and to installing additional monitoring wells to establish a baseline.</li> <li>Groundwater take would not exceed 340 ML/yr. Snowy Hydro would secure sufficient groundwater entitlement prior to ensure it has sufficient water for all stages of development. Up to 219 ML/yr would be extracted from the Ravine Beds for construction purposes.</li> </ul>	<ul style="list-style-type: none"> <li>Prepare and implement a Water Management Plan including establishing detailed baseline monitoring and trigger levels for investigating adverse groundwater impacts and a program of monitoring inflows into the tunnel, groundwater dependent ecosystems and impacts of the development.</li> </ul>
Flooding	<ul style="list-style-type: none"> <li>The majority of the activities are located outside flood prone areas with the exception of Camp and Wallaces bridges, a portion of the Western emplacement area, and the water management basin for the portal construction pad.</li> <li>Snowy Hydro have committed to design and construct the bridges in accordance with the relevant Austroads Standards and the Western emplacement area design to minimise the risk of being impacted by floodwater during a 0.2% AEP event.</li> <li>The Department considers the risk of impacts from flooding can be appropriately managed through design of these elements.</li> </ul>	<ul style="list-style-type: none"> <li>Ensure that the permanent bridges over Wallace Creek and Yarrangobilly River are designed and constructed to comply with the relevant requirements of the Austroads Standards (such as elevating them above the 1% AEP flood level).</li> </ul>



Issue	Findings	Recommended Conditions
Noise	<ul style="list-style-type: none"> <li>Most of the project is within the Lobs Hole area of the KNP remote from residential receivers. The nearest receivers are recreation areas, none of which would be subject to noise impact levels above the 'noise affected' criterion of 60 dB(A) in the EPA's <i>Interim Construction Noise Guideline</i> (ICNG).</li> <li>Several submissions raised concerns about traffic noise from heavy vehicles travelling along Miles Franklin Drive in Talbingo outside regular construction hours.</li> <li>One dwelling (R2), in Talbingo would be Noise Affected (2 – 5 dB(A) above the NML) during the upgrade of a portion of Spillway Road should these works be undertaken outside of the recommended standard construction hours. These levels are well below the highly noise affected criteria of 75 dB(A) and would be short term.</li> <li>Snowy Hydro have committed to mitigate noise impacts to R2 in line with recommendations provided in the ICNG. Should an exceedance of NML be recorded, Snowy Hydro proposed the implementation of additional mitigation measures, such as limiting upgrades of Spillway Road to standard construction hours or entering into a negotiated agreement with the property owner.</li> <li>The noise assessment predicted receivers along Miles Franklin Drive would experience increases of up to 4.5 dB(A) from construction traffic, noise levels would comply with day criteria (7 am to 10 pm) set for residential land uses in the <i>NSW Road Noise Policy</i> (DECCW 2011) for sub-arterial roads.</li> <li>Snowy Hydro has proposed use of Miles Franklin Drive for heavy vehicle traffic would occur 24 hours a day, seven days a week. The Department does not consider that this has been justified through an assessment of the potential noise impacts. Consequently, the Department does not agree that heavy vehicle traffic should use Miles Franklin Drive 24 hours a day, seven days a week.</li> <li>Snowy Hydro has committed to minimising and managing noise impacts by implementing the noise mitigation work practices set out in the EPA's <i>Interim Construction Noise Guideline</i>.</li> </ul>	<ul style="list-style-type: none"> <li>Restrict construction hours in areas outside the KNP to: <ul style="list-style-type: none"> <li>Monday to Saturday 7 am – 6 pm;</li> <li>no works on Sundays and NSW public holidays; and</li> <li>with works outside these hours allowed in certain limited circumstances or unless otherwise agreed by the Planning Secretary.</li> </ul> </li> <li>Minimise the construction noise of the activity, including any associated traffic noise.</li> <li>Ensure that the noise generated by any construction activities is managed in accordance with the best practice requirements outlined in the <i>Interim Construction Noise Guideline</i> (DECC, 2009), or its latest version.</li> </ul>
Blasting	<ul style="list-style-type: none"> <li>The excavation of the exploratory tunnel would involve smooth blasting, which is a series of closely spaced charged drill holes fired simultaneously without fracturing the adjacent rock.</li> <li>A quantitative blasting assessment concluded that blast impacts on the nearest residential receivers in Talbingo is highly unlikely as they are located well outside the blast offset distances required to maintain acceptable emission levels.</li> <li>Four historic heritage items (R28 Pise ruin, R72 Stone Furnace, R78 Pine Tree and R118 Ravine Cemetery) are located within the blast offset distance which would exceed the peak particle velocity criteria. Impacts to these heritage items have been assessed and Snowy Hydro propose a program of archival recording, test excavation and salvage as necessary.</li> </ul>	<ul style="list-style-type: none"> <li>Manage blasting operations to comply with relevant criteria at any residence on privately-owned land.</li> <li>Limit blasting on the surface of the site between 9 am to 5 pm Monday to Sunday.</li> <li>Allow blasting underground at any time.</li> </ul>

Issue	Findings	Recommended Conditions
Air quality	<ul style="list-style-type: none"> <li>Low levels of airborne dust would be generated from ground disturbance activities during site establishment, road works and from the handling and transportation of excavated material;</li> <li>The predicted concentrations of particulate matter (PM<sub>10</sub>, PM<sub>2.5</sub>), total suspended particles and deposited dust levels at the accommodation camp would not exceed the relevant EPA assessment criteria specified in the <i>Approved Methods for the Modelling and Assessment of Air Pollutants NSW</i> (EPA 2016).</li> <li>The assessment predicted the potential to approach 24-hour average PM<sub>10</sub> concentration to approach criteria at the accommodation camp if airborne dust contribution is high and the background is elevated on a particular day. However, the Department notes that the accommodation camp is for project works only.</li> <li>Mitigation measures proposed by Snowy Hydro include: <ul style="list-style-type: none"> <li>keeping haul routes watered;</li> <li>restricting vehicle speeds;</li> <li>ceasing certain operations during adverse weather conditions; and</li> <li>monitoring air quality prior to and during construction activities to inform the management of the proposed activities.</li> </ul> </li> <li>The Department and the EPA consider the proposed dust mitigation measures to be appropriate.</li> </ul>	<ul style="list-style-type: none"> <li>Minimise the dust, odour, fume, and blast emissions of the development.</li> <li>Minimise the surface disturbance of the site.</li> </ul>
Contamination	<ul style="list-style-type: none"> <li>There are potential areas of existing contamination from the former copper mine in Lobs Hole, areas of potential for naturally occurring asbestos and the potential for works to contaminate land.</li> <li>Concentrations of heavy metals within Lobs Hole including arsenic, copper, nickel and zinc were found at concentrations exceeding the relevant ecological investigation levels, but less than the applicable human health criteria.</li> <li>Snowy Hydro sought to avoid impacts from potential contamination from the former copper mine by designing the eastern rock emplacement area to avoid these areas except for the adit of the former mine.</li> <li>Groundwater bores required for construction water supply would also be located within the former copper mine site. All soil, rock and water intercepted through drilling would be contained in above ground tanks and transported to a licensed waste disposal facility.</li> <li>The potential for acid rock drainage from excavated material would be treated by placing and compacting layers of limestone (or other suitable acid consuming material) in each layer in the on-land emplacement.</li> <li>A site-specific asbestos management plan would be implemented for minor surface works at a specific section of Lobs Hole Ravine Road.</li> </ul>	<ul style="list-style-type: none"> <li>Develop and implement suitable procedures for handling, storing of any potentially acid forming material, asbestiform mineral fibres and contaminated material.</li> <li>Prepare and implement an unexpected finds protocol if works intercept areas of unknown naturally occurring asbestos.</li> </ul>

Issue	Findings	Recommended Conditions
Bushfire	<ul style="list-style-type: none"> <li>The KNP Plan of Management requires fire protection strategies for all lease areas.</li> <li>The EIS included a Bushfire Hazard and Risk Assessment.</li> <li>OEH recommended a wildfire refuge be established, a village protection plan is prepared, and that OEH fire management operations, including hazard reduction can continue during construction. .</li> </ul>	<ul style="list-style-type: none"> <li>Include suitable asset protection measures into the final design of the development.</li> <li>Ensure any fire trails or asset protection zones associated with the development are wholly contained within the approved disturbance area.</li> <li>Prepare and implement an Emergency Plan including measures to minimise the risk of bushfires on site; protect the assets on site from bushfires.</li> </ul>
Waste	<ul style="list-style-type: none"> <li>Both Councils advised that the management of waste and recycling would need to consider the annual license limits for any waste facilities that may be intended to receive waste from the project.</li> <li>Waste streams such as bio-solids produced by the wastewater treatment plant, construction waste from the concrete batching plant, remediation of contaminated sites, packaging material, general waste from the accommodation camp and office facilities would be created by the Exploratory Works.</li> <li>Snowy Hydro have committed to handle and dispose of waste in accordance with the <i>Protection of the Environment Operations Act 1997</i> at a suitably licensed waste facility.</li> <li>The Department considers that waste can be managed with consultation between Snowy Hydro and Councils, particularly regarding selection of an appropriate waste facility with enough capacity to receive and process this waste</li> </ul>	<ul style="list-style-type: none"> <li>Minimise waste generated by the development.</li> <li>Classify all waste generated on site in accordance with the waste classification guidelines.</li> <li>Store and handle all waste generated on site in accordance with its classification.</li> <li>Ensure all waste is disposed of off-site at appropriately licensed facilities.</li> </ul>



## 7. Evaluation

### Introduction

Under the EP&A Act, the Department is required to undertake a 'triple-bottom' line assessment that balances the likely environmental, social and economic impacts of the project.

This section of the report is a summary of the Department's overall evaluation of the project.

### Project Design

Snowy Hydro has sought to avoid and minimise the impacts of the project, particularly on the KNP. These measures include:

- locating the Exploratory Works and supporting infrastructure in existing disturbed areas within the KNP;
- transporting plant and equipment by barge across Talbingo reservoir to avoid the need for additional road upgrades within the KNP;
- using existing roads and access tracks wherever possible and designing necessary road upgrades to avoid impacts on threatened species and geodiversity features; and
- removing all excavated rock stockpiles from the site and selecting locations within Talbingo reservoir for subaqueous emplacement of this material that would minimise impacts on water quality and aquatic species.

### Statutory Context

Snowy 2.0 was declared CSSI under the EP&A Act acknowledging that it is critical to the State for environmental, economic or social reasons.

The existing Snowy Scheme has been operating successfully in the KNP in accordance with a range of administrative and management arrangements for many years, and similar arrangements would be put in place for Snowy 2.0, if it proceeds.

Snowy Hydro has a number of arrangements with NPWS for the existing Snowy Scheme that have been in place since 2002. These arrangements allow Snowy Hydro to occupy and operate the Snowy Scheme within the KNP, and include the Snowy Park Lease, a Roads Maintenance Agreement and the Snowy Management Plan.

Prior to the Exploratory Works proceeding, Snowy Hydro would require a new lease for the project from the NSW Minister for the Environment under the NPW Act, and the existing management plans and agreements would need to be updated and revised to incorporate the Exploratory Works.

### Strategic Context

The NSW energy system and broader NEM is facing a number of challenges including rising energy costs, energy security and reliability issues, and a transition away from coal-fired base load power to intermittent renewable wind and solar power. In addition, the 2017 Finkel Review identified large scale pumped hydro as an important generation technology for improving security and reliability in the NEM.

The Department acknowledges that the proposed Snowy 2.0 would expand the Snowy Scheme to add 2,000 MW of dispatchable large scale pumped hydro generation to the NEM, with potential to strengthen the security and reliability of the network.

The existing Snowy Scheme operates in the KNP, established prior to the gazettal of the KNP, under a number of arrangements with NPWS, including the Snowy Park Lease and the Snowy Management Plan. A new lease for the Exploratory Works from the NSW Minister for the Environment under the NPW Act, would be required prior to the project proceeding, and the existing management plans and agreements would need to be updated and revised to incorporate the Exploratory Works.

The potential to connect the Talbingo and Tantangara Reservoirs to generate electricity was recognised when the Snowy Scheme was first developed, and the key elements of the current proposal reflects plans prepared by Snowy Hydro in the early 1990s. Snowy 2.0 could maximise the potential of existing assets to generate electricity and does not require any additional dams to be constructed.

## Submissions

The 51 public submissions, including special interest groups, were equally divided between objections, comments and support.

Those supporting the project focused on the benefits of renewable energy and the economic benefits for the region, including Talbingo. Those objecting to the project raised concerns about the impacts associated of additional infrastructure in a National Park and the associated impacts on the biodiversity, recreational and conservation values of the KNP.

Submissions from local residents also expressed concern about impacts to the tourism and loss of recreation opportunities in Talbingo and at Talbingo Reservoir.

Special interest groups, NCC, NPA, The Colong Foundation for Wilderness and ACKMA, expressed concern about the location of the project within the KNP and impacts to the values of the park.

None of the government agencies objected to the project but made a number of recommendations and comments that have been considered by the Department in its assessment of the project and the recommended conditions of approval.

## Likely impacts

The Department acknowledges the concerns of some members of the community and a number of environment groups about the expansion of the Snowy Scheme within the National Park, particularly on the biodiversity, recreational and conservation values of the Park.

The Department acknowledges there would be impacts including vegetation clearing, modification of fish habitat in the Talbingo Reservoir, potential impacts to water quality and impacts to heritage items, fossil beds and boulder streams in the KNP. The Department has recommended a comprehensive and precautionary suite of conditions to ensure the project complies with relevant criteria and standards and including a range of management plans.

Based on its assessment, the Department considers that these impacts would not be significant and can be effectively managed, mitigated and/or offset in accordance with applicable policies and guidelines to achieve an acceptable environmental outcome.

The Department has also recommended that Snowy Hydro be required to pay \$10.5 million to NPWS to offset the impacts of the project on the KNP. These funds would be used by NPWS to implement conservation measures for



threatened species and ecological communities impacted by the project, offset the loss of recreational values of Lobs Hole, and improve overall catchment health within the KNP.

The Department also notes the concerns of the local residents about the impacts of the project on tourism, traffic impacts along Miles Franklin Drive through Talbingo and potential loss of recreation opportunities in parts of the Talbingo Reservoir that are outside the KNP.

The Department recognises that Snowy Hydro is proposing to construct a replacement recreational area near the existing boat ramp and apart from the temporary restrictions on the use of the boat ramp, there would be no need to close access for recreational boats to the reservoir itself during the construction of the project.

While the Department acknowledges the concerns of the local community, it considers that the replacement facilities along with the implementation of the management plan would ensure there would be no material loss of recreational opportunities for local residents or visitors to the area during the construction of the project and the project would not result in significant impacts on road network capacity, efficiency or safety.

## Public Interest

The Exploratory Works are a necessary precursor to realise the potential benefits of the Snowy 2.0 project, as they would provide critical geological information for the detailed design of the underground power station.

If approved, Snowy 2.0 would add 2,000 MW of dispatchable generation to the NEM, with potential to strengthen the security and reliability of the network.

The Exploratory Works would also provide direct and indirect economic benefits to the Snowy Mountains region, including capital investment of \$325 million and the creation of 200 construction jobs.

Through the implementation of the mitigation, management and substantial offsetting measures recommended by the Department, the assessment shows that the Exploratory Works can be undertaken without any significant impacts on the unique environmental, heritage and recreational values of the KNP. As such, the Department considers that the project is in the public interest and should be approved, subject to the recommended conditions.



## 8. Recommendation

It is recommended that the Minister for Planning:

- **considers** the findings and recommendations of this report; and
- **accepts and adopts** all of the findings and recommendations in this report as the reasons for making the decision to grant approval to the application;
- **considers** any advice provided by the Minister having portfolio responsibility for the project;
- **agrees** with the key reasons for approval listed in the notice of decision;
- **grants approval** for the application in respect of SSI 9208 as amended, subject to the conditions in the attached development project approval; and
- **signs** the attached project approval and recommended conditions of approval (see attachment).

Recommended by:

**Nicole Brewer**

Team Leader

Resource and Energy Assessments

5/2/19

Recommended by:

**David Kitto**

Executive Director

Resource Assessments and Business Systems



## ***Appendices***

## Appendix A – List of Documents

*Environmental Impact Statement Exploratory Works for Snowy 2.0*, EMM, July 2018

*Response to Submissions Exploratory Works for Snowy 2.0*, EMM, October 2018

Letter to Department of Planning and Environment from EMM, *Exploratory Works for Snowy 2.0 – Second amendment to Talbingo boat ramp*, 19 November 2018

Letter to Department of Primary Industries (Fisheries) from EMM, *Snowy 2.0 Exploratory Works – Revised assessment of significance for Murray Crayfish*, 17 October 2018

Letter to Department of Planning and Environment from EMM, *Exploratory Works for Snowy 2.0 – Amendment to water supply*, 23 January 2019

## Appendix B – Environmental Impact Statement

See the Department's website at

[http://majorprojects.planning.nsw.gov.au/index.pl?action=view\\_job&job\\_id=9208](http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=9208)



## Appendix C – Additional Information

See the Department's website at

[http://majorprojects.planning.nsw.gov.au/index.pl?action=view\\_job&job\\_id=9208](http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=9208)

## Appendix D – Submissions

See the Department's website at

[http://majorprojects.planning.nsw.gov.au/index.pl?action=view\\_job&job\\_id=9208](http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=9208)

## Appendix E – Submissions Report

See the Department's website at

[http://majorprojects.planning.nsw.gov.au/index.pl?action=view\\_job&job\\_id=9208](http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=9208)

## Appendix F – Community Views

Issue	Consideration
<b>Kosciuszko National Park</b>	<b>Assessment</b>
<ul style="list-style-type: none"> <li>• Impacts on terrestrial and aquatic biodiversity, geodiversity, heritage values, recreation.</li> <li>• Impact of infrastructure on the values of the KNP.</li> <li>• Staging the assessment of the Snowy 2.0 and Transmission Project.</li> </ul>	<ul style="list-style-type: none"> <li>• While Snowy Hydro has sought to avoid and minimise the impacts of the project, particularly on the KNP, the Department acknowledges the works would require clearing of native vegetation, modification of key fish habitat within Talbingo Reservoir, potential impacts from sedimentation, water discharges, management of excavated material and impacts to heritage items and areas of geodiversity.</li> <li>• The Department considers that these impacts would not be significant and can be effectively managed, mitigated and/or to achieve an acceptable environmental outcome.</li> <li>• Planning legislation allows for the assessments of complex projects to be staged. This application is a stand-alone stage and does not rely on Snowy 2.0 Main Works or Transmission Connection progressing and assumes the site would require rehabilitation to remove all infrastructure.</li> </ul>
	<b>Conditions</b>
	<ul style="list-style-type: none"> <li>• The conditions require Snowy Hydro to prepare a range of management plans in consultation with NPWS relating to biodiversity, water quality, heritage, traffic and rehabilitation.</li> <li>• The Department has also recommended that Snowy Hydro be required to pay \$10.5 million to NPWS to offset the impacts of the project on the KNP.</li> <li>• These funds would be used by NPWS to implement conservation measures for threatened species and ecological communities impacted by the project, offset the loss of recreational values of Lobs Hole, and improve overall catchment health within the KNP.</li> </ul>
<b>Talbingo</b>	<b>Assessment</b>
<ul style="list-style-type: none"> <li>• Loss of access to Talbingo spillway recreational area and boat ramp impact interactions between recreational boating and project barging.</li> <li>• Adequacy of proposed new recreational facilities.</li> <li>• Impacts on tourism opportunities in Talbingo and impact of traffic using Miles Franklin Drive.</li> </ul>	<ul style="list-style-type: none"> <li>• Snowy Hydro would need to close the existing spillway recreational area for the barge transport infrastructure, have occasional temporary restrictions on access to the boat ramp. Snowy Hydro is proposing to construct a replacement recreational area. Access for recreational boats to the reservoir would not be closed other than for temporary restrictions.</li> </ul>
	<b>Conditions</b>
	<ul style="list-style-type: none"> <li>• The Department has recommended conditions requiring Snowy Hydro to prepare a detailed plan for the new recreational area and consider the feasibility and merits of incorporating a small area of the KNP to enhance the new recreational area, minimise disruption associated with the closure of the existing facilities; keep the local community informed and minimise disruption associated with the closure of the existing facilities.</li> <li>• While the Department acknowledges the concerns of the local community, it considers that the replacement facilities along with the implementation of</li> </ul>

the management plan would ensure there would be no material loss of recreational opportunities for local residents or visitors.

- The Department considers that with a Traffic Management Plan the project would not result in significant impacts on road network capacity, efficiency or safety.
-



## Appendix G – Recommended Instrument of Approval