snowy 2.0

Exploratory Works

Community Information Booklet
April/May 2018

INTRODUCTION

Snowy 2.0 is a pumped-hydro expansion of the Snowy Scheme which will supercharge existing generation and large-scale storage capabilities. It will increase the Snowy Scheme's generation capacity by up to 2,000 megawatt (MW), and provide energy storage of 350,000 MW hours.

Snowy 2.0 will link the two existing reservoirs of Tantangara and Talbingo through underground tunnels and there will be a new underground power station, about 850 metres (m) underground, in between with pumping capabilities.

As the benchmark pumped-hydro storage project in Australia, Snowy 2.0 will serve the market and consumers by providing large scale storage and generation to put downward pressure on energy prices and ensure system security and reliability as we move towards a low-emissions future.

In 2017, Snowy Hydro carried out a feasibility study into Snowy 2.0. The feasibility study confirmed the project is technically feasible by identifying a base-case project design, and that the project will be a solid investment for Snowy Hydro who will fund the capital costs. Snowy Hydro's independent Board of Directors carefully considered the feasibility study and approved the project to progress to a final investment decision in late 2018.

On 7 March 2018, the NSW Minister for Planning declared Snowy 2.0 to be Critical State Significant Infrastructure (CSSI). The declaration reflects the critical role that the Snowy 2.0 project will play in providing reliable energy and large-scale storage to NSW as we transition to a low emissions economy.

The CSSI declaration does not give final approval for the project. It is a framework that sets out the robust environmental assessment and approval process that Snowy 2.0 needs to go through before the project can proceed. Approval for Snowy 2.0 will be sought in phases.

> **This first phase seeks approval for a program of exploratory works that will be undertaken in the Lobs Hole area of Kosciuszko National Park (KNP). These works will consist of excavation of a tunnel to the location of the proposed power station cavern, along with associated infrastructure.**

This booklet provides a description of the exploratory works and outlines the approval process required. It also sets out information on the overall Snowy 2.0 project and feedback from of a survey of local communities undertaken last year during the Snowy 2.0 feasibility study.

WHY SNOWY 2.0

In the future, the supply of electricity will be increasingly generated by intermittent renewable sources as coal generation continues to retire. The characteristics of intermittent renewables mean that supply doesn't always match demand, especially when the wind isn't blowing or the sun isn't shining.

The ability to pump and store water means Snowy 2.0 acts like a giant battery by absorbing, storing and dispatching energy. Snowy 2.0 will pump water using electricity at times of low demand (for instance if the wind is blowing in the middle of the night) and store it in the upper reservoir. Then, when energy is needed most, the stored water will be used to generate and dispatch electricity within minutes.

Factors that support the development of Snowy 2.0 include the need for improved system stability, achieving emissions targets (even in the absence of any carbon tax), the limited ability of coal-fired plant to accommodate the intermittency of renewables, and the constraints imposed by gas supply infrastructure. Going forward the National Electricity Market will need significant large-scale storage and when Snowy 2.0 is compared to the alternatives (including battery storage and building gas peaking plants) Snowy 2.0 is by far the cheapest option.

For more information on Snowy 2.0, including a short 3 minute video on the project visit **snowyhydro.com.au/our-scheme/snowy20**

Snowy Hydro power station

EXPLORATORY WORKS

OVERVIEW

The underground power station for Snowy 2.0 consists of multiple large caverns, approximately 850 m below ground level. The largest cavern (for the machine hall) is likely to be about 190m long, 30 m wide and 55 m high. The underground cavern complex is one of, if not the most, challenging areas for the design of Snowy 2.0.

Given this, the purpose of the exploratory works for Snowy 2.0 is to gain a greater understanding of the underground geological conditions at the proposed location of the power station. An access tunnel would be excavated to the top of the cavern complex to enable horizontal investigation probes to be drilled, allowing further investigation of the rock conditions, ground temperature and stress conditions to confirm the suitability of the site for the underground power station.

The exploratory works would involve:

- The establishment of an exploratory tunnel, construction pad and portal at Lobs Hole,
- The establishment of a construction compound and supporting infrastructure,
- The upgrade and establishment of roads to provide access to the proposed construction areas,
- Establishment of barge access infrastructure on Talbingo reservoir,
- Excavated rock management.

Snowy Hydro acknowledges that this work will impact on visitors and recreational users in the Lobs Hole area of KNP. We are working hard to minimise these impacts wherever possible. While most of these impacts will not be permanent the company recognises there will be some disruptions. We are committed to minimising any disruptions and firmly believe that the social, economic and other benefits of the Snowy 2.0 project will outweigh any impacts in the long run.

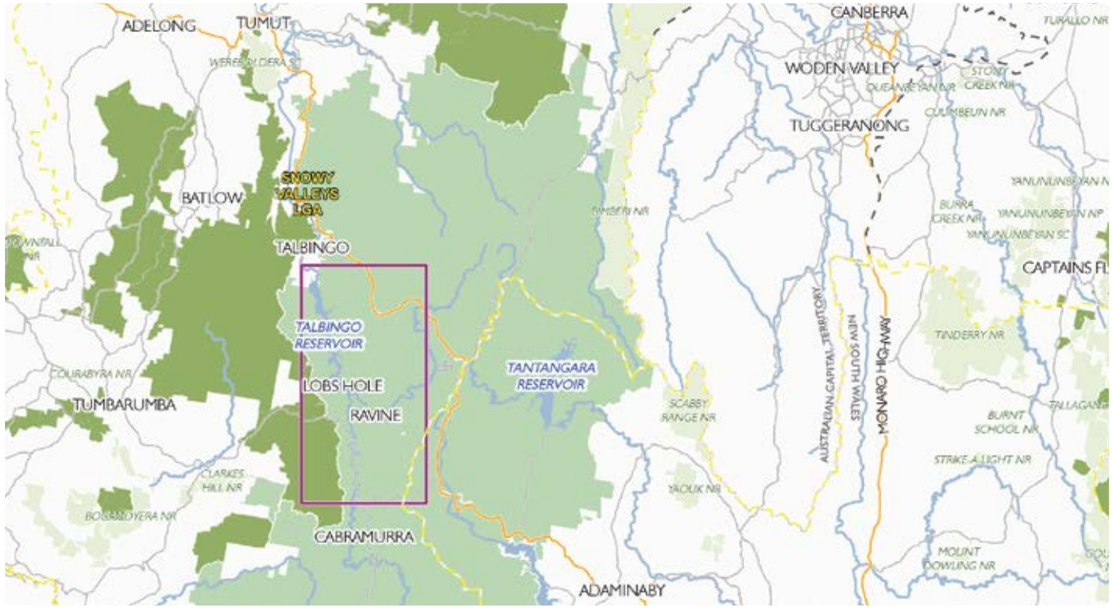
ACCESS TUNNEL

The exploratory tunnel to the site of the proposed underground power station would be between 3 kilometres (km) and 4 km in length. It would be dome shaped with dimensions 8 m high by 8 m wide, and constructed using drill and blast methods in the same way that the original Snowy Scheme was constructed.

The portal to the exploratory tunnel would be located near the Yarrangobilly River, about 1 km east of Lobs Hole.

A construction pad would be established at the entrance or portal with a footprint of between 10,000 and 16,000 square metres.

The exploratory tunnel is intended to ultimately form the main access tunnel for the main project giving us access to the underground power station during the operations of Snowy 2.0.



Regional location of Snowy 2.0 exploratory works

Example of a drill and blasted tunnel at Tumut 2 power station

CONSTRUCTION COMPOUND

A construction compound is proposed at Lobs Hole that would provide all supporting infrastructure for the exploratory works. The compound would include facilities like an accommodation camp, project office, workshops, concrete batching plant, fuel farm, laydown areas for equipment, water treatment plant, and sewage treatment plant. It would also contain areas for the placement of rock excavated during the construction of the exploratory tunnel.

The accommodation camp would house all the workers required for exploratory works (between 50 to 150 workers). The camp would be fully serviced and contain a mess hall and laundry.

During construction, the Lobs Hole area would not be safe for public access and would be temporarily closed to the public. After construction, Lobs Hole will be rehabilitated and returned to its current use.

Aerial shot of Lobs Hole

EXCAVATED ROCK MANAGEMENT

It is estimated that approximately 500,000 to 750,000 cubic metres of rock would be excavated during the exploratory works. This excavated rock is expected to be temporarily stored in the construction compound area at Lobs Hole.

Final excavated rock placement and management will be determined following the scientific and technical investigations being conducted for the project and will be addressed in the Environmental Impact Statement for the main project. Options being considered include beneficial reuse, as well as placement outside KNP or within Scheme reservoirs.

SITE ACCESS WORKS

Access to the work areas will be provided via both vehicle and barge. Vehicle access would be provided via Lobs Hole Ravine Road for movement of personnel and light equipment. Barge access would be provided via Talbingo Reservoir for the transport of bulky and heavy equipment.

Upgrades to roads and tracks in the area, including Lobs Hole Ravine Road, would be required to facilitate access, including some road widening, gravel pavement overlay and provision of guideposts.

Barge access will require the provision of wharf facilities on Talbingo Reservoir both near the dam wall and near Lobs Hole.

For safety reasons, public usage of Lobs Hole Ravine Road would be restricted and returned to public use after construction.

Aerial shot of Lobs Hole Ravine Road

CONSTRUCTION SCHEDULE

Exploratory works are expected to be completed within 18 to 30 months. Road and access works are expected to be completed within six months of commencement which is targeted for late 2018 or early 2019.

A timetable for the construction of the main project will be provided in a future editions of the community information booklet.

PLANNING AND ENVIRONMENTAL APPROVAL PROCESS

NSW APPROVALS

As stated earlier, the NSW Minister for Planning has declared Snowy 2.0 to be CSSI under the provisions of the NSW Environmental Planning and Assessment Act 1979.

Snowy Hydro will prepare an Environmental Impact Statement (EIS) for the exploratory works in accordance with requirements from the NSW Department of Planning and Environment (DPE). This EIS will include detailed assessments of all potential environmental and socioeconomic impacts including potential impacts on biodiversity, heritage, surface and groundwater, park users and local communities.

The EIS will be placed on public exhibition by DPE for a minimum of 28 days. This provides the community with the opportunity to review the EIS and make a written submission to DPE for consideration. After reviewing submissions, Snowy Hydro will prepare a report that responds to the relevant issues raised.

The EIS and final reports will be considered by DPE when making an assessment and recommendation as to whether the exploratory works should proceed or not. Approval from the NSW Minister for Planning is required before Snowy Hydro can commence with the exploratory works.

COMMONWEALTH APPROVALS

A separate approval for exploratory works may be required from the Commonwealth Minister for the Environment and Energy under the Commonwealth Environment Biodiversity and Conservation Act 1999 (EPBC Act).

Scheme reservoir

COMMUNITY FEEDBACK

In November 2017, during the preparation of the feasibility study, Snowy Hydro undertook a survey of community attitudes towards Snowy 2.0.

Both the survey results and also feedback received at community consultation sessions have generally been positive about Snowy 2.0.

Those surveyed identified reliability and affordability of electricity supply as well as facilitating increased renewable energy supplies as the main benefits of the project. Employment opportunities and economic benefits were also highlighted as key positives for local communities.

In addition to these and other benefits that were mentioned, survey respondents also highlighted impacts to the environment and access to KNP as concerns.

This feedback is a vital part of the EIS process and we will continue to work with our local communities to address their concerns and to maximise the opportunities and benefits of Snowy 2.0. Further results of the survey will provided in the EIS.

Community consultation 'drop-in' session at Tumut, November 2017

HOW TO HAVE YOUR SAY

We value your comments and encourage you to complete the community feedback survey.

To complete the survey or to find out more about Snowy 2.0 you can:

- Complete the survey online at **snowyhydro.com.au** or
- Fill out the survey on the following page and return to us at:

  Snowy 2.0 Community Relations

  PO Box 332, Cooma NSW 2630

Or to find out more:

- Visit Snowy Hydro's website at **snowyhydro.com.au** or
- Email your enquiry to **community@snowyhydro.com.au**

FEEDBACK SURVEY

Where do you live? (your closest town)

Email address (for project updates)

If Snowy 2.0 goes ahead, how important are the following issues for you? (Please circle a dot)

	Extremely unimportant ← 1 … 10 → Extremely important
Reliability in the electricity network	
Flora and fauna of KNP	
Recreational experiences within Kosciuszko National Park	
Maximising economic benefits to our communities	
Minimising impacts on the community during construction	

What benefits/positives can you see coming out of Snowy 2.0 if it goes ahead?

Are there any aspects of Snowy 2.0 that concern you?

If you visit and use the Tantangara/Talbingo areas of KNP, please also go online and complete our park visitor survey at **snowyhydro.com.au/our-scheme/snowy20**

snowyhydro.com.au

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