APPENDIX X.2

RECREATIONAL USERS STUDY

Snowy 2.0 Main Works Recreational Users Study

13 September 2019

TRC

This report was prepared by TRC Tourism for EMM for the Snowy 2.0 Environmental Impact Assessment.

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Contents

1 Introduction

1.1 The Project

Snowy Hydro Limited (Snowy Hydro) proposes to develop Snowy 2.0, a large-scale pumped hydro-electric storage and generation project which would increase hydro-electric capacity within the existing Snowy Mountains Hydro-electric Scheme (Snowy Scheme). Snowy 2.0 is the largest committed renewable energy project in Australia and is critical to underpinning system security and reliability as Australia transitions to a decarbonised economy. Snowy 2.0 will link the existing Tantangara and Talbingo reservoirs within the Snowy Scheme through a series of underground tunnels and a new hydro-electric power station will be built underground.

Snowy 2.0 has been declared to be State significant infrastructure (SSI) and critical State significant infrastructure (CSSI) by the former NSW Minister for Planning under Part 5 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) and is defined as CSSI in clause 9 of Schedule 5 of the *State Environmental Planning Policy (State and Regional Development) 2011* (SRD SEPP). CSSI is infrastructure that is deemed by the NSW Minister to be essential for the State for economic, environmental or social reasons. An application for CSSI must be accompanied by an environmental impact statement (EIS).

Separate applications are being submitted by Snowy Hydro for different stages of Snowy 2.0 under Part 5, Division 5.2 of the EP&A Act. This includes the preceding first stage of Snowy 2.0, Exploratory Works for Snowy 2.0 (the Exploratory Works) and the stage subject of this current application, Snowy 2.0 Main Works (the Main Works). In addition, an application under Part 5, Division 5.2 of the EP&A Act is also being submitted by Snowy Hydro for a segment factory that will make tunnel segments for both the Exploratory Works and Main Works stages of Snowy 2.0.

The first stage of Snowy 2.0, the Exploratory Works, includes an exploratory tunnel and portal and other exploratory and construction activities primarily in the Lobs Hole area of the Kosciuszko National Park (KNP). The Exploratory Works were approved by the former NSW Minister for Planning on 7 February 2019 as a separate project application to DPIE (SSI 9208).

This Recreational Users Study has been prepared to accompany an application and supporting EIS for the **Snowy 2.0 Main Works**. As the title suggests, this stage of the project covers the major construction elements of Snowy 2.0, including permanent infrastructure (such as the underground power station, power waterways, access tunnels, chambers and shafts), temporary construction infrastructure (such as construction adits, construction compounds and accommodation), management and storage of excavated rock material and establishing supporting infrastructure (such as road upgrades and extensions, water and sewage treatment infrastructure, and the provision of construction power). Snowy 2.0 Main Works also includes the operation of Snowy 2.0.

Snowy 2.0 Main Works is shown in Figure 2.1. If approved, the Snowy 2.0 Main Works would commence before completion of Exploratory Works.

The Snowy 2.0 Main Works do not include the transmission works proposed by TransGrid (TransGrid 2018) that provide connection between the cableyard and the NEM. These transmission works will provide the ability for Snowy 2.0 (and other generators) to efficiently and reliably transmit additional renewable energy to major load centres during periods of peak demand, as well as enable a supply of renewable energy to pump water from Talbingo Reservoir to Tantangara Reservoir during periods of low demand. While the upgrade works to the wider transmission network and connection between the cableyard and the network form part of the CSSI declaration for Snowy 2.0 and Transmission Project, they do not form part of this application and will be subject to separate application and approval processes, managed by TransGrid. This project is known as the HumeLink and is part of AEMO's Integrated System Plan.

With respect to the provisions of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), on 30 October 2018 Snowy Hydro referred the Snowy 2.0 Main Works to the Commonwealth Department of the Environment and Energy (DEE) and, on a precautionary basis, nominated that Snowy 2.0 Main Works has potential to have a significant impact on MNES and the environment generally.

On 5 December 2018, Snowy 2.0 Main Works were deemed a controlled action by the Assistant Secretary of the DEE. It was also determined that potential impacts of the project will be assessed by accredited assessment under Part 5, Division 5.2 of the EP&A Act. This accredited process will enable the NSW Department of Planning, Industry and Environment (DPIE) to manage the assessment of Snowy 2.0 Main Works, including the issuing of the assessment requirements for the EIS. Once the assessment has been completed, the Commonwealth Minister for the Environment will make a determination under the EPBC Act.

1.2 Project Location

Snowy 2.0 Main Works are within the Australian Alps, in southern NSW, about mid-way between Canberra and Albury. Snowy 2.0 Main Works is within both the Snowy Valleys and Snowy Monaro Regional local government areas (LGAs).

The nearest large towns to Snowy 2.0 Main Works are Cooma and Tumut. Cooma is located about 50 kilometres (km) south east of the project area (or 70 km by road from Providence Portal at the southern edge of the project area), and Tumut is located about 35 km north west of the project areas (or 45 km by road from Tumut 3 power station at the northern edge of the project area). Other townships near the project area include Talbingo, Cabramurra, Adaminaby and Tumbarumba. Talbingo and Cabramurra were built for the original Snowy Scheme workers and their families, while Adaminaby was relocated in 1957 to make way for the establishment of Lake Eucumbene.

The location of Snowy 2.0 Main Works with respect to the region is shown in Figure 1.1.

The pumped hydro-electric scheme elements of Snowy 2.0 Main Works are mostly underground between the southern ends of Tantangara and Talbingo reservoirs, a straight-line distance of 27 km. Surface works will also occur at locations on and between the two reservoirs. Key locations for surface works include:

- **Tantangara Reservoir** - at a full supply level (FSL) of about 1,229 metres (m) to Australian Height Datum (AHD), Tantangara Reservoir will be the upper reservoir for Snowy 2.0 and include the headrace tunnel and intake structure. The site will also be used for a temporary construction compound, accommodation camp and other temporary ancillary activities;

- **Marica** - this site will be used primarily for construction including construction of vertical shafts to the underground power station (ventilation shaft) and headrace tunnel (surge shaft), and a temporary accommodation camp;

- **Lobs Hole** - the site will be used primarily for construction but will also become the main entrance to the power station during operation. Lobs Hole will provide access to the Exploratory Works tunnel, which will be refitted to become the main access tunnel (MAT), as well as the location of the emergency egress, cable and ventilation tunnel (ECVT), portal, associated services and accommodation camp; and

- **Talbingo Reservoir** - with a FSL of about 546 m AHD, Talbingo Reservoir will be the lower reservoir for Snowy 2.0 and will include the tailrace tunnel and water intake structure. The site will also be used for temporary construction compounds and other temporary ancillary activities.

Works will also be required within the two reservoirs for the placement of excavated rock and surplus cut material. Supporting infrastructure will include establishing or upgrading access tracks and roads and electricity connections to construction sites.

Most of the proposed pumped hydro-electric and temporary construction elements and most of the supporting infrastructure for Snowy 2.0 Main Works are located within the boundaries of KNP, although the disturbance footprint for the project during construction is less than 0.25% of the total KNP area. Some of the supporting infrastructure and construction sites and activities (including sections of road upgrade, power and communications infrastructure) extends beyond the national park boundaries. These sections of infrastructure are primarily located to the east and south of Tantangara Reservoir. One temporary construction site is located beyond the national park along the Snowy Mountains Highway about 3 km east of Providence Portal (referred to as Rock Forest).

The project is described in more detail in Chapter 2.

1.2.1 Project Area

The project area for Snowy 2.0 Main Works has been identified and includes all the elements of the project, including all construction and operational elements. The project area is shown on Figure 2.1. Key features of the project area are:

- the water bodies of Tantangara and Talbingo reservoirs, covering areas of 19.4 square kilometres (km2) and 21.2 km2 respectively. The reservoirs provide the water to be utilised in Snowy 2.0;

- major watercourses including the Yarrangobilly, Eucumbene and Murrumbidgee rivers and some of their tributaries;
- KNP, within which the majority of the project area is located. Within the project area, KNP is characterised by two key zones: upper slopes and inverted treelines in the west of the project area (referred to as the 'ravine') and associated subalpine treeless flats and valleys in the east of the project area (referred to as the 'plateau'); and
- farm land southeast of KNP at Rock Forest.

The project area is interspersed with built infrastructure including recreational sites and facilities, main roads as well as unsealed access tracks, hiking trails, farm land, electricity infrastructure, and infrastructure associated with the Snowy Scheme.

1.3 Proponent

Snowy Hydro is the proponent for the Snowy 2.0 Main Works. Snowy Hydro is an integrated energy business – generating energy, providing price risk management products for wholesale customers and delivering energy to homes and businesses. Snowy Hydro is the fourth largest energy retailer in the NEM and is Australia's leading provider of peak, renewable energy.

1.4 Purpose of this report

This Recreational User Study supports the EIS for the Snowy 2.0 Main Works (the Project). It documents the recreational user impacts assessment methods and results, the initiatives built into the project design to avoid and minimise associated impacts, and the mitigation and management measures proposed to address any residual impacts not able to be avoided.

Table 1. Relevant matters raised

Requirement	Section addressed
An assessment of the social impacts of the project on:	
- users of the Kosciuszko National Park, including recreational fishing, bushwalking, camping and boating	Measures recommended to manage the impacts on users of the Kosciuszko National Park are provided in Table X of this report.
- a strategy to offset the impacts of the project on users of the Kosciuszko National Park	Measures recommended to manage recreational impacts during construction and operation are provided at Chapter 4 of this report.

To inform preparation of the SEARs, the DPIE invited relevant government agencies to advise on matters to be addressed in the EIS. These matters were taken into account by the Secretary for DPIE when preparing the SEARs.

There are three other projects related to Snowy 2.0 Main Works, they are:

- Snowy 2.0 Exploratory Works (SSI-9208) – a Snowy Hydro project with Minister's approval;
- Snowy 2.0 Transmission Connect Project (SSI-9717) – a project proposed by TransGrid; and
- Snowy 2.0 – Segment Factory (SSI-10034) – a project proposed by Snowy Hydro.

While these projects form part of the CSSI declaration for Snowy 2.0, they do not form part of Snowy Hydro's application for Snowy 2.0 Main Works. These related projects are subject to separate application and approval processes. However, cumulative impacts have been considered in this report where relevant.

1.5 Related Projects

There are three other projects related to Snowy 2.0 Main Works, they are:

- Snowy 2.0 Exploratory Works (SSI-9208) – a Snowy Hydro project with Minister's approval;
- Snowy 2.0 Transmission Connect Project (SSI-9717) – a project proposed by TransGrid; and
- Snowy 2.0 – Segment Factory (SSI-10034) – a project proposed by Snowy Hydro.

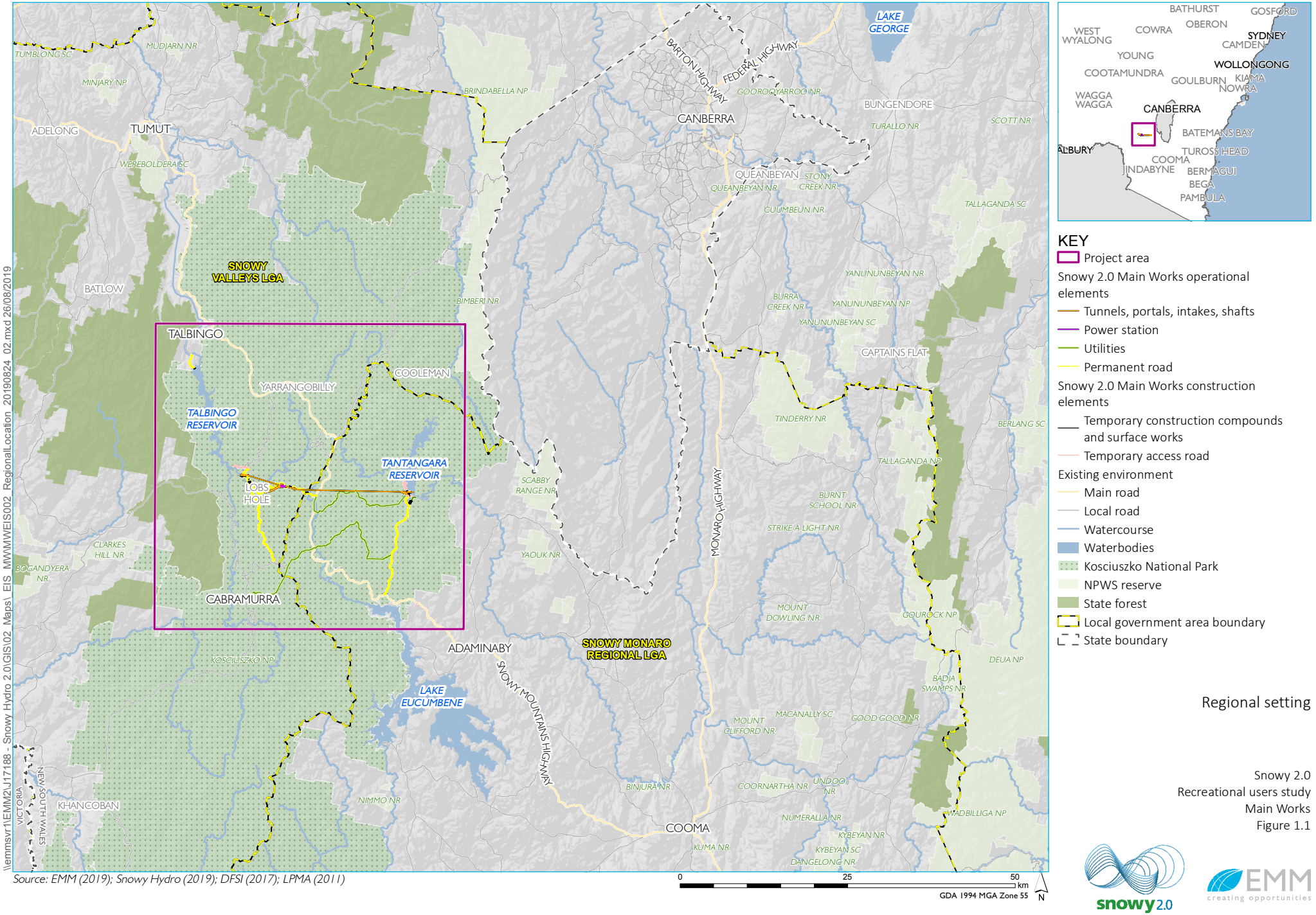
While these projects form part of the CSSI declaration for Snowy 2.0 and Transmission Project, they do not form part of Snowy Hydro's application for Snowy 2.0 Main Works. These related projects are subject to separate application and approval processes. Staged submission and separate approval is appropriate for a project of this magnitude, due to its complexity and funding and procurement processes. However, cumulative impacts have been considered in this report where relevant.

1.6 Other Relevant Reports

This Recreational User Study has been prepared with reference to other technical reports that were prepared as part of the Snowy 2.0 Main Works EIS. The other relevant reports referenced in this Recreational User Study are listed below.

- Aboriginal cultural heritage assessment (NSW Archaeology 2019) – Appended to the EIS;
- Air quality and greenhouse gas impact assessment (EMM 2019) – Appended to the EIS;
- Aquatic ecology assessment (Cardno 2019) – Appended to the EIS;
- Biodiversity development assessment (EMM 2019) – Appended to the EIS;
- Bushfire risk and hazard assessment (EcoLogical 2019) – Appended to the EIS;
- Cenozoic geodiversity report (Troedson 2019 – Appended to the EIS;
- Contamination assessment (EMM 2019) – Appended to the EIS;
- Economic assessment (Gillespie 2019) – Appended to the EIS;

- Groundwater assessment (EMM 2019) – Appended to the EIS;
- Hazard and risk assessment (Sherpa 2019) – Appended to the EIS;
- Heritage assessment and statement of heritage impact (NSW Archaeology 2019) – Appended to the EIS;
- Navigation assessment (RHDHV 2019) – Appended to the EIS;
- Noise and vibration impact assessment (EMM 2019) – Appended to the EIS;
- Paleozoic geodiversity report (Percival 2019) – Appended to the EIS;
- Reservoir assessment overview (RHDHV 2019) – Appended to the EIS;
- Social impact assessment – (Elton Consulting 2019) – Appended to the EIS;
- Soils and land assessment (EMM 2019) – Appended to the EIS;
- Surface water assessment (EMM 2019) – Appended to the EIS;
- Traffic and Transport Assessment Report (SCT 2019) – Appended to the EIS; and
- Water assessment (EMM 2019) – Appended to the EIS.



KEY

- Project area

Snowy 2.0 Main Works operational elements

- Tunnels, portals, intakes, shafts
- Power station
- Utilities
- Permanent road

Snowy 2.0 Main Works construction elements

- Temporary construction compounds and surface works
- Temporary access road

Existing environment

- Main road
- Local road
- Watercourse
- Waterbodies
- Kosciuszko National Park
- NPWS reserve
- State forest
- Local government area boundary
- State boundary

Regional setting

Snowy 2.0
Recreational users study
Main Works
Figure 1.1

Source: EMM (2019); Snowy Hydro (2019); DFSI (2017); LPMA (2011)

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2 Description of the Project

This chapter provides a summary of the Snowy 2.0 Main Works project. It outlines the functional infrastructure required to operate Snowy 2.0, as well as the key construction elements and activities required to build it. A more comprehensive detailed description of the project is provided in Chapter 2 (Project description) of the EIS, which has been relied upon for the basis of this technical assessment.

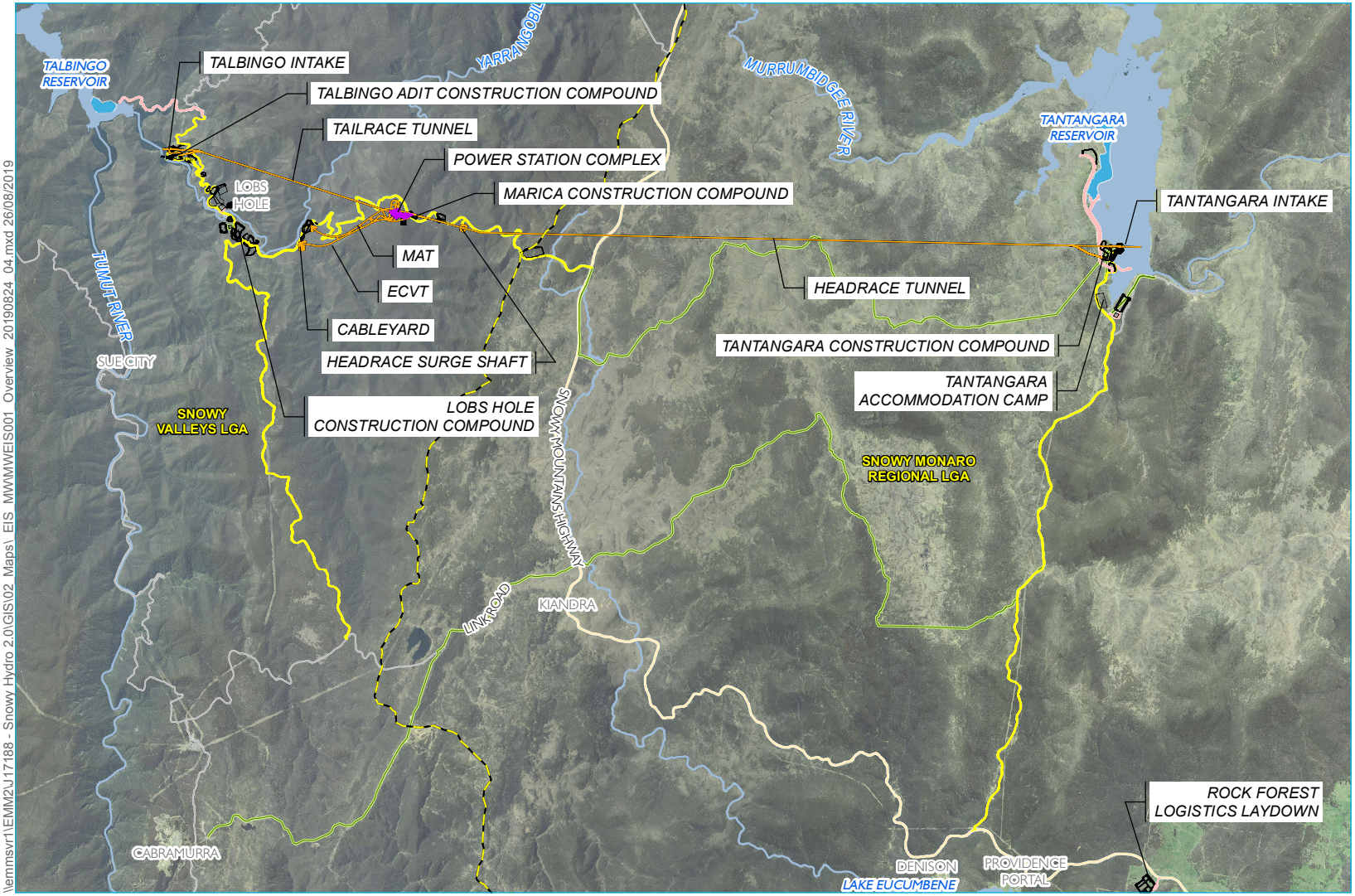
2.1 Overview of Snowy 2.0

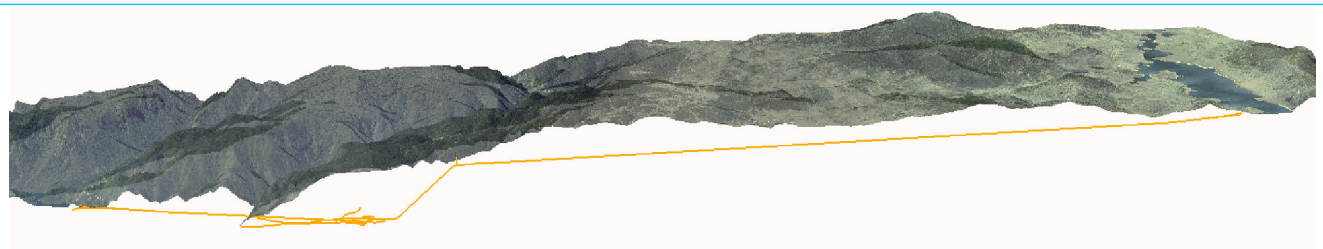
Snowy 2.0 will link the existing Tantangara and Talbingo reservoirs within the Snowy Scheme through a series of underground tunnels and a new hydro-electric power station will be built underground. An overview of Snowy 2.0 is shown on Figure 2.1, and the key project elements of Snowy 2.0 are summarised in Table 2.1.

Table 2.1 Overview of Snowy 2.0 Main Works

Project element	Summary of the project
Project area	The project area is the broader region within which Snowy 2.0 will be built and operated, and the extent within which direct impacts from Snowy 2.0 Main Works are anticipated.
Permanent infrastructure	Snowy 2.0 infrastructure to be built and operated for the life of the assets include the: • intake and gate structures and surface buildings at Tantangara and Talbingo reservoirs; • power waterway tunnels primarily comprising the headrace tunnel, headrace surge structure, inclined pressure tunnel, pressure pipelines, tailrace surge tank and tailrace tunnel; • underground power station complex comprising the machine hall, transformer hall, ventilation shaft and minor connecting tunnels; • access tunnels (and tunnel portals) to the underground power station comprising the main access tunnel (MAT) and emergency egress, communication, and ventilation tunnel (ECVT); • establishment of a portal building and helipad at the MAT portal; • communication, water and power supply including the continued use of the Lobs Hole substation; • cable yard adjacent to the ECVT portal to facilitate the connection of Snowy 2.0 to the NEM; • access roads, permanent bridge structures and barge launch ramps needed for the operation and maintenance of Snowy 2.0 infrastructure; and • fish control structures on Tantangara Creek and near Tantangara Reservoir wall.
Temporary infrastructure	Temporary infrastructure required during the construction phase of Snowy 2.0 Main Works are: • construction compounds, laydown, ancillary facilities and helipads; • accommodation camps for construction workforce; • construction portals and adits to facilitate tunnelling activities; • barge launch ramps; • water and wastewater management infrastructure (treatment plants and pipelines);

Project element	Summary of the project
	• communication and power supply; and • temporary access roads.
Disturbance area	The disturbance area is the extent of construction works required to build Snowy 2.0. The maximum disturbance area is about 1,680 hectares (ha), less than 0.25% of the total area of KNP. Parts of the disturbance area will be rehabilitated and landformed and other parts will be retained permanently for operation (operational footprint).
Operational footprint	The operational footprint is the area required for permanent infrastructure to operate Snowy 2.0. The maximum operational footprint is about 99 ha. This is 0.01% of the total area of KNP.
Tunnelling and excavation method	The primary tunnelling method for the power waterway is by tunnel boring machine (TBM), with portals and adits using drill and blast methods. Excavation for other underground caverns, chambers and shafts will be via combinations of drill and blast, blind sink, and/or raise bore techniques.
Excavated rock management	Excavated rock will be generated as a result of tunnelling activities and earthworks. The material produced through these activities will be stockpiled and either reused by the contractor (or NPWS), placed permanently within Tantangara or Talbingo reservoirs, used in final land forming and rehabilitation of construction pads in Lobs Hole, or transported offsite.
Construction water and wastewater management	Water supply for construction will be from the two existing reservoirs (Talbingo and Tantangara) and reticulated via buried pipelines (along access roads). Raw water will be treated as necessary wherever potable water is required (eg at accommodation camps). Water to be discharged (comprising process water, wastewater and stormwater) will be treated before discharge to the two existing reservoirs (Talbingo and Tantangara) as follows: • treated process water will be reused onsite where possible to reduce the amount of discharge to reservoirs, however excess treated water will be discharged to the reservoirs; • collected sewage will be treated at sewage treatment plants to meet the specified discharge limits before discharge and/or disposal; and • stormwater will be captured and reused as much as possible.
Rehabilitation	Rehabilitation of areas disturbed during construction including reshaping to natural appearing landforms or returning to pre-disturbance condition, as agreed with NPWS and determined by the rehabilitation strategy. This includes construction areas at Lobs Hole which comprise surplus cut materials that are required for the construction. Areas to be used by Snowy Hydro in the long-term may be re-shaped and rehabilitated to maintain access and operational capabilities (eg intakes and portal entrances).
Construction workforce	The construction workforce for the project is expected to peak at around 2,000 personnel.
Operational life	The operational life of the project is estimated to be 100 years.
Operational workforce	The operational workforce is expected to be 8-16 staff, with fluctuations of additional workforce required during major maintenance activities.
Hours of operation	Construction of Snowy 2.0 will be 24/7 and 365 days per year. Operation of Snowy 2.0 will be 24/7 and 365 days per year.
Capital investment value	Estimated to be $4.6 billion.





KEY

Existing environment

- Main road
- Local road
- Watercourse
- Waterbodies
- Local government area boundary

Snowy 2.0 Main Works operational elements

- Tunnels, portals, intakes, shafts
- Power station
- Utilities
- Permanent road

Snowy 2.0 Main Works construction elements

- Temporary construction compounds and surface works
- Temporary access road
- Indicative rock emplacement area

Source: EMM (2019); Snowy Hydro (2019); DFSI (2017); LPMA (2011)

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Snowy 2.0 project elements

Snowy 2.0
Recreational users study
Main Works
Figure 2.1

snowy 2.0

EMM creating opportunities

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2.2 Construction of Snowy 2.0

A number of construction activities will be carried out concurrently, and across a number of different sites. Specific details on these activities as well as an indicative schedule of construction activities is provided in Chapter 2 (Project description) of the EIS. This section summarises the key construction elements of the project.

Table 2.2 provides an overview of the construction elements, their purpose and location within the Project area.

Table 2.2 Snowy 2.0 construction elements

Construction element	Purpose	Location
Construction sites	Due to the remoteness of Snowy 2.0, construction sites are generally needed to: • Provide ancillary facilities such as concrete batching plants, mixing plants and on-site manufacturing; • Store machinery, equipment and materials to be used in construction; • Provide access to underground construction sites; and • Provide onsite accommodation for the construction workforce.	Each construction site needed for Snowy 2.0 is shown on Figures 2.2 to Figure 2.6.
Substations and power connection	One substation is required to provide permanent power to Snowy 2.0, at Lobs Hole. This substation will be built as part of Exploratory Works with a capacity of 80 mega volt amp (MVA). It will continue to be used for Main Works, however requires the establishment of further power supply cables to provide power to the work sites and TBM at Tantangara, as well as Talbingo, in particular to power the TBMs via the MAT, ECVT, Talbingo and Tantangara portals.	The supporting high voltage cable route mostly follows access roads to each of the work sites, using a combination of aerial and buried arrangements.
Communications system	Communications infrastructure will connect infrastructure at Tantangara and Talbingo reservoirs to the existing communications system at the Tumut 3 power station (via the submarine communications cable in Talbingo Reservoir established during Exploratory Works) and to Snowy Hydro's existing communications infrastructure at Cabramurra.	The cable will be trenched and buried in conduits within access roads. Crossing of watercourses and other environmentally sensitive areas will be carried out in a manner that minimises environmental impacts where possible, such as bridging or underboring.
Water and waste water servicing	Drinking water will be provided via water treatment plants located at accommodation camps. Water for treatment will be sourced from the nearest reservoir. There are three main wastewater streams that require some form of treatment before discharging to the environment, including: • Tunnel seepage and construction wastewater (process water); • Domestic sewer (wastewater); and • Construction site stormwater (stormwater).	Utility pipelines generally follow access roads. Water treatment plants (drinking water) will be needed for the accommodation camps and will be located in proximity. Waste water treatment plants will similarly be located near accommodation camps. Process water treatment plants will be at construction compounds and adits where needed to manage tunnel seepage and water during construction.

Temporary and permanent access roads	Access road works are required to: • provide for the transport of excavated material between the tunnel portals and the excavated rock emplacement areas; • accommodate the transport of oversized loads as required; and • facilitate the safe movement of plant, equipment, materials and construction workers into and out of construction sites. The access road upgrades and establishment requirements are shown on Figure 2.2 to Figure 2.6. These roads will be used throughout construction including use of deliveries to and from site and the external road network. Some additional temporary roads will also be required within the footprint to reach excavation fronts such as various elevations of the intakes excavation or higher benches along the permanent roads.	The access road upgrades and establishment requirements are shown across the project area. Main access and haulage to site will be via Snowy Mountains Highway, Link Road and Lobs Hole Ravine Road (for access to Lobs Hole), and via Snowy Mountains Highway and Tantangara Road (for access to Tantangara Reservoir) (see Figure 2.1).
Excavated rock management	Approximately 9 million m³ (unbulked) of excavated material will be generated by construction and require management. The strategy for management of excavated rock will aim to maximise beneficial reuse of materials for construction activities. Beneficial re-use of excavated material may include use for road base, construction pad establishment, selected fill and tunnel backfill and rock armour as part of site establishment for construction. Excess excavated material that cannot be re-used during construction will be disposed of within Talbingo and Tantangara reservoirs, used in permanent rehabilitation of construction pads to be left in situ in Lobs Hole, or transported for on-land disposal if required.	Placement areas are shown on Figure 2.2 and Figure 2.6.
Barge launch facilities	Barge launch facilities on Talbingo Reservoir will have already been established during Exploratory Works for the placement of the submarine communications cable, and will continued to be used for Main Works for construction works associated with the Talbingo intake structure. The Main Works will require the establishment of barge launch facilities on Tantangara Reservoir to enable these similar works (removal of the intake plug).	Barge launch sites are shown on Figure 2.2 and Figure 2.6.
Construction workforce	The construction workforce will be accommodated entirely on site, typically with a FIFO/DIDO roster. Private vehicles will generally not be permitted and the workforce bused to and from site.	Access to site will be via Snowy Mountains Highway

The key areas of construction are shown on Figure 2.2 to Figure 2.6 and can be described across the following locations:

- **Talbingo Reservoir** – Talbingo Reservoir provides the lower reservoir for the pumped hydro-electric project and will include the tailrace tunnel and water intake structure. The site will also be used for temporary construction compounds and other temporary ancillary activities;

- **Lobs Hole** – this site will be used primarily for construction (including construction of the MAT and ECVT portals and tunnels to the underground power station and the headrace tunnel (and headrace tunnel surge shaft), underground tailrace surge shaft and a temporary accommodation camp);

- **Marica** – the site will be used primarily for construction to excavate the ventilation shaft to the underground power station as well as for the excavation and construction of the headrace surge shaft;

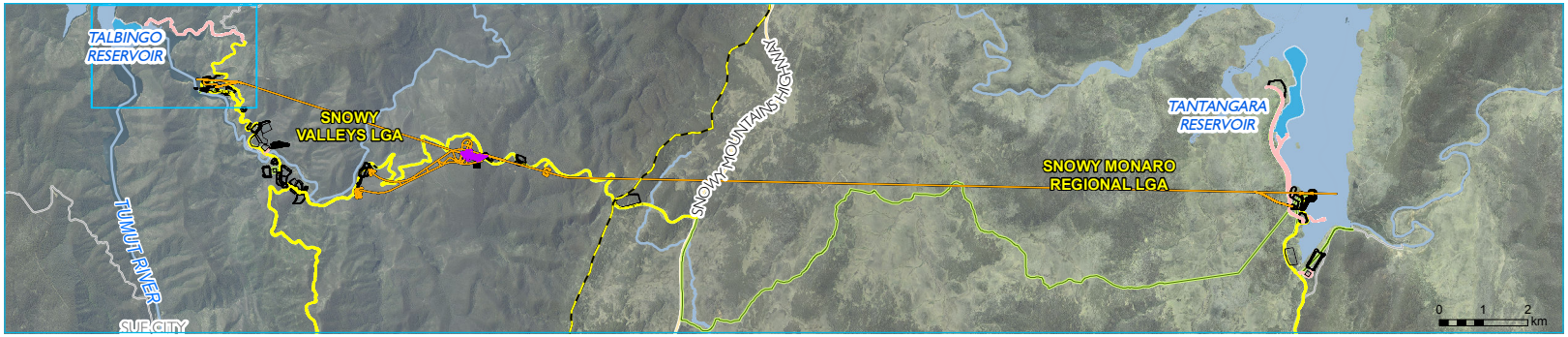
- **Plateau** – the land area between Snowy Mountains Highway and Tantangara Reservoir is referred to as the Plateau. The Plateau will be used to access and construct a utility corridor and construct a fish weir on Tantangara Creek;

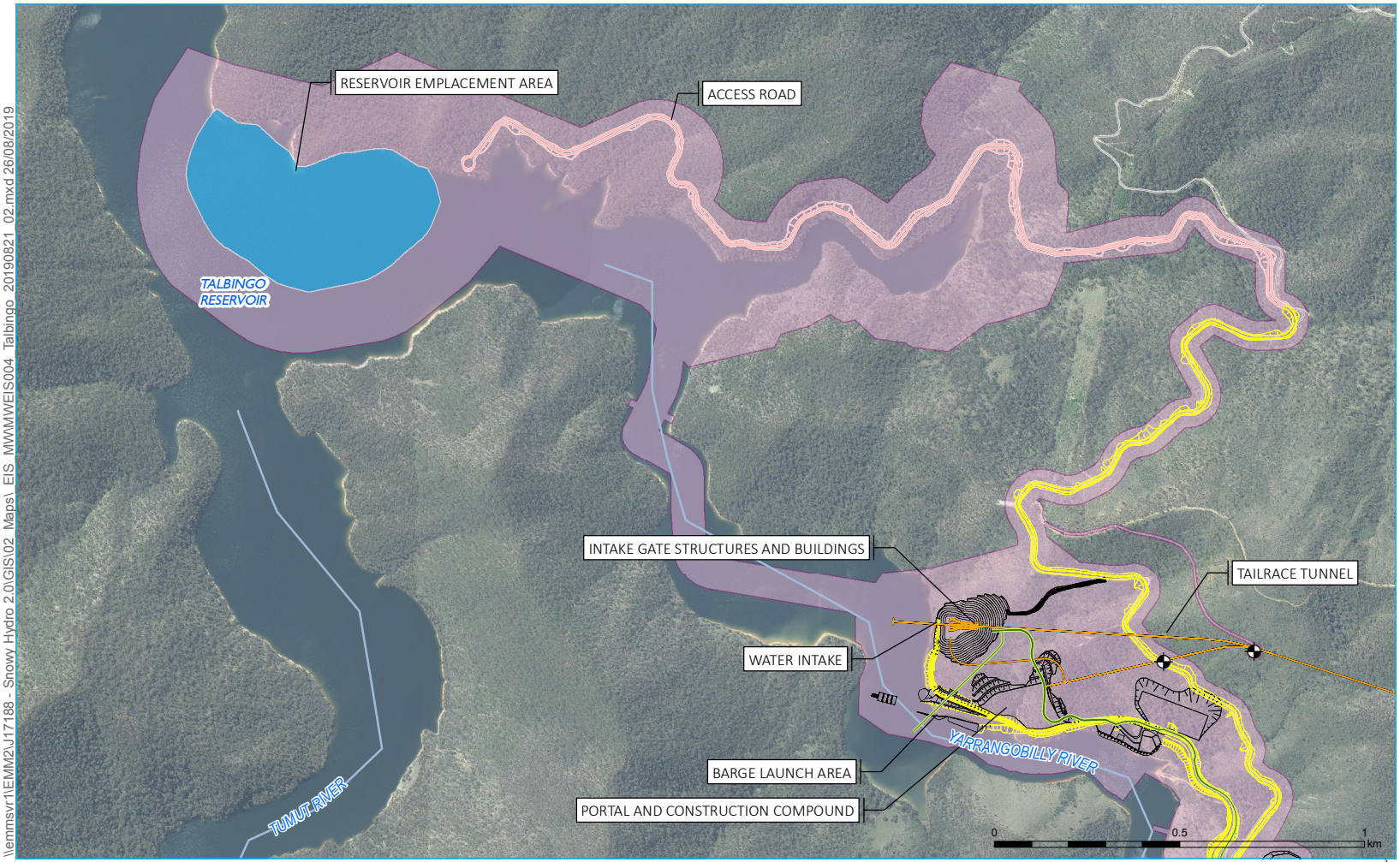
- **Tantangara Reservoir** – Tantangara Reservoir will be the upper reservoir for the pumped hydro project and include the headrace tunnel and intake structure. The site will also be used for a temporary construction compound, accommodation camp and other temporary ancillary activities; and

- **Rock Forest** – a site to be used temporarily for logistics and staging during construction. It is located beyond the KNP along the Snowy Mountains Highway about 3 km east of Providence Portal.

During the construction phase, all work sites will be restricted access and closed to the public. This includes existing road access to Lobs Hole via Lobs Hole Ravine Road. Restrictions to water-based access and activities will also be implemented for public safety and to allow safe construction of the intakes within the reservoirs. Access to Tantangara Reservoir via Tantangara Road will be strictly subject to compliance with the safety requirements established by the contractor.

A key construction element for the project is the excavation and tunnelling for underground infrastructure including the power station, power waterway (headrace and tailrace tunnels) and associated shafts. The primary methods of excavation are shown in Figure 2.8 with further detail on construction methods provided at Appendix D of the EIS.





KEY

Existing environment

- Main road
- Local road
- Watercourse
- Waterbodies
- Local government area boundary

Snowy 2.0 Main Works operational elements

- Tunnels, portals, intakes, shafts
- Power station
- Utilities
- Permanent road

Snowy 2.0 Main Works construction elements

- Temporary construction compounds and surface works
- Temporary access road
- Geotechnical investigation
- Indicative rock emplacement area
- Disturbance area*

Note: the disturbance area is the extent of construction works required to build Snowy 2.0. It has been identified to allow an assessment of impacts for the EIS, and represents a defined maximum extent where construction works will be carried out. The area will be minimised as much as possible during detailed design.

Source: EMM (2019); Snowy Hydro (2019); DFSI (2017); LPMA (2011)

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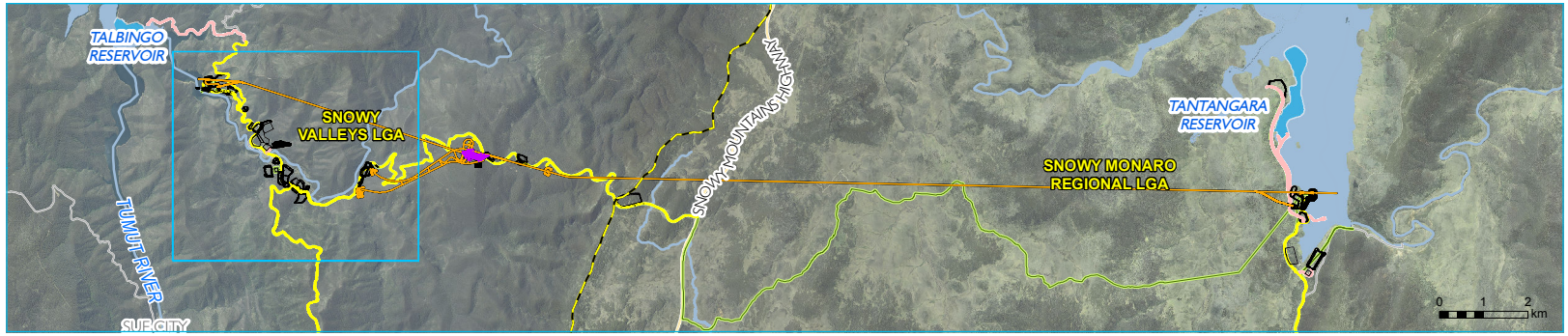
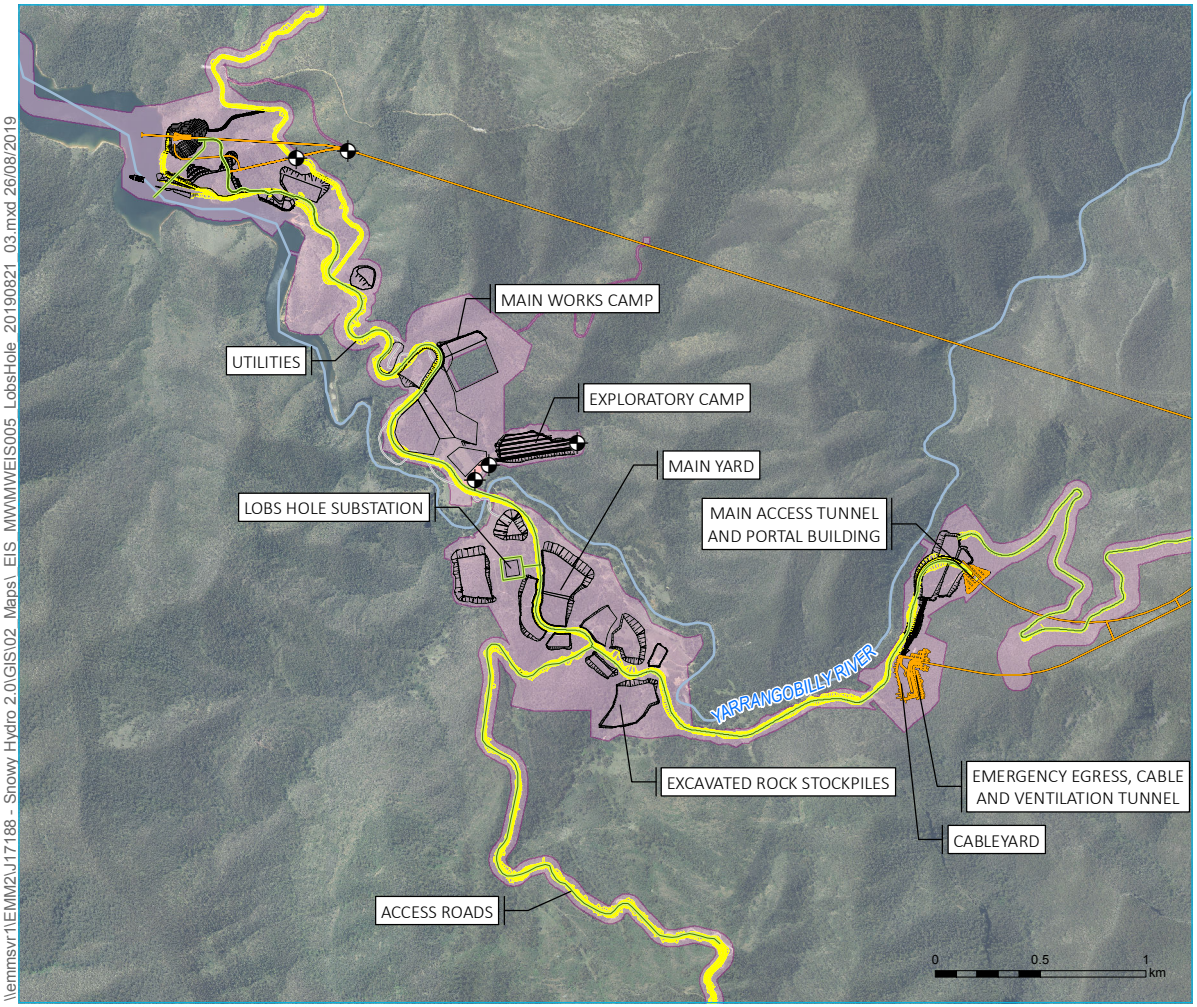
Talbingo Reservoir - project elements, purpose and description

Snowy 2.0
Recreational users study
Main Works
Figure 2.2

snowy 2.0

EMM creating opportunities





KEY

Existing environment
- Main road
- Local road
- Watercourse
- Waterbodies
- Local government area boundary

Snowy 2.0 Main Works operational elements
- Tunnels, portals, intakes, shafts
- Power station
- Utilities
- Permanent road

Snowy 2.0 Main Works construction elements
- Temporary construction compounds and surface works
- Temporary access road
- Geotechnical investigation
- Indicative rock emplacement area
- Disturbance area*

Note: the disturbance area is the extent of construction works required to build Snowy 2.0. It has been identified to allow an assessment of impacts for the EIS, and represents a defined maximum extent where construction works will be carried out. The area will be minimised as much as possible during detailed design.

Source: EMM (2019); Snowy Hydro (2019); DFSI (2017); LPMA (2011)

GDA 1994 MGA Zone 55

N

Lobs Hole - project elements, purpose and description

Snowy 2.0
Recreational users study
Main Works
Figure 2.3

snowy 2.0

EMM creating opportunities

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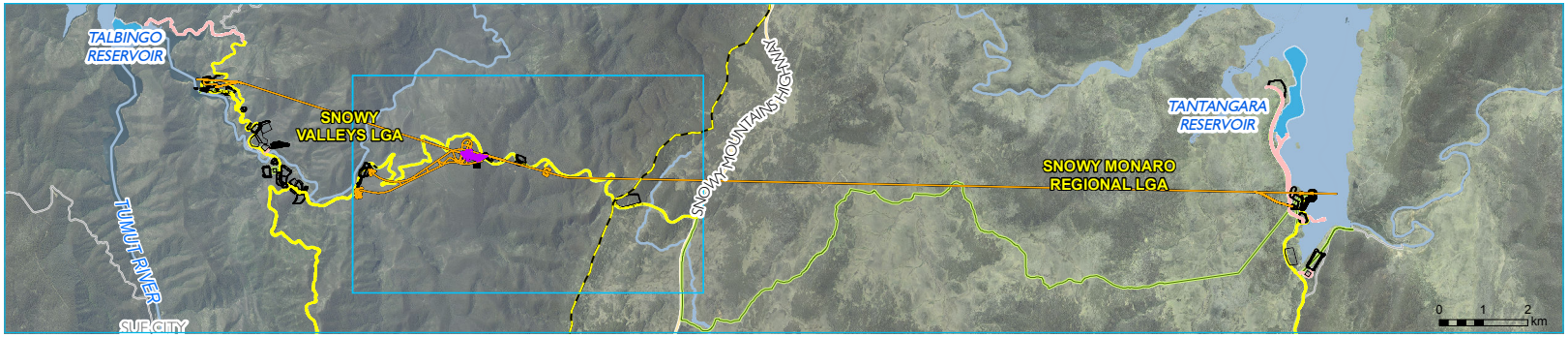

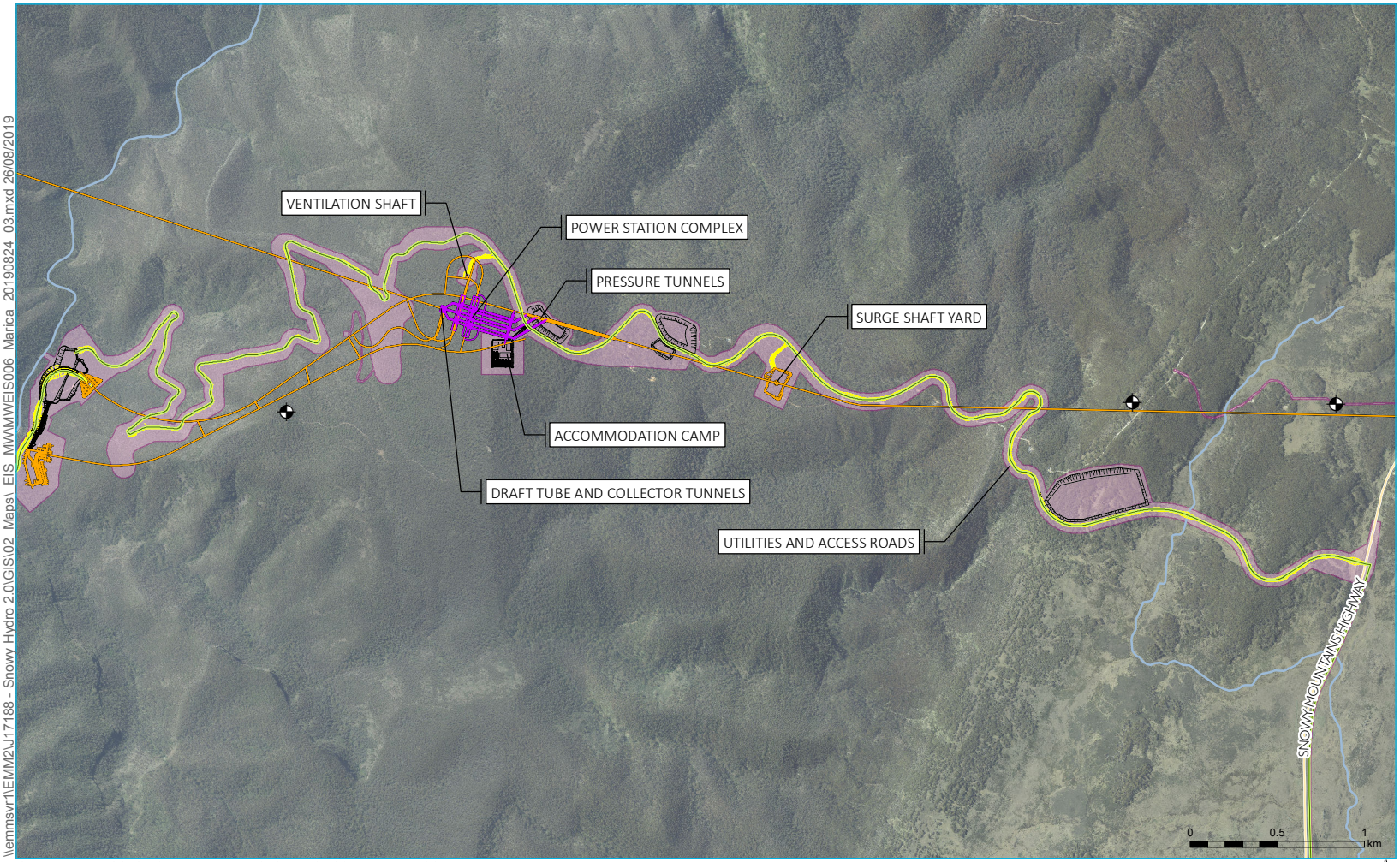

KEY

Existing environment

- Main road
- Local road
- Watercourse
- Waterbodies
- Local government area boundary

Snowy 2.0 Main Works operational elements

- Tunnels, portals, intakes, shafts
- Power station
- Utilities
- Permanent road

Snowy 2.0 Main Works construction elements

- Temporary construction compounds and surface works
- Temporary access road
- Geotechnical investigation
- Indicative rock emplacement area
- Disturbance area*

Note: the disturbance area is the extent of construction works required to build Snowy 2.0. It has been identified to allow an assessment of impacts for the EIS, and represents a defined maximum extent where construction works will be carried out. The area will be minimised as much as possible during detailed design.

Marica - project elements, purpose and description

Snowy 2.0
Recreational users study
Main Works
Figure 2.4

Source: EMM (2019); Snowy Hydro (2019); DFSI (2017); LPMA (2011)

GDA 1994 MGA Zone 55

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snowy 2.0

EMM creating opportunities

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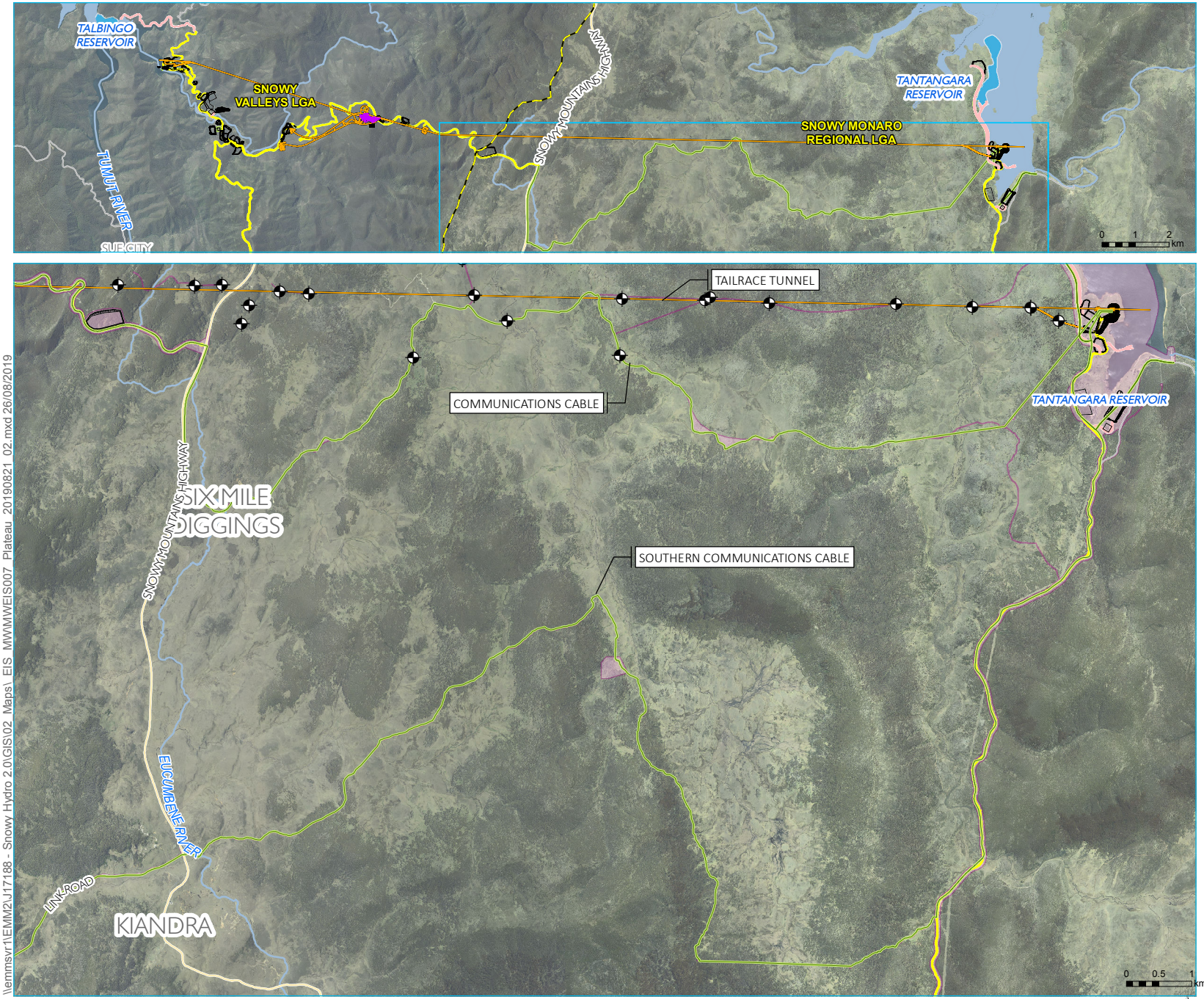

KEY

Existing environment

- Main road
- Local road
- Watercourse
- Waterbodies
- Local government area boundary

Snowy 2.0 Main Works operational elements

- Tunnels, portals, intakes, shafts
- Power station
- Utilities
- Permanent road

Snowy 2.0 Main Works construction elements

- Temporary construction compounds and surface works
- Temporary access road
- Geotechnical investigation
- Indicative rock emplacement area
- Disturbance area*

Note: the disturbance area is the extent of construction works required to build Snowy 2.0. It has been identified to allow an assessment of impacts for the EIS, and represents a defined maximum extent where construction works will be carried out. The area will be minimised as much as possible during detailed design.

Plateau - project elements, purpose and description

Snowy 2.0
Recreational users study
Main Works
Figure 2.5

Source: EMM (2019); Snowy Hydro (2019); DFSI (2017); LPMA (2011)

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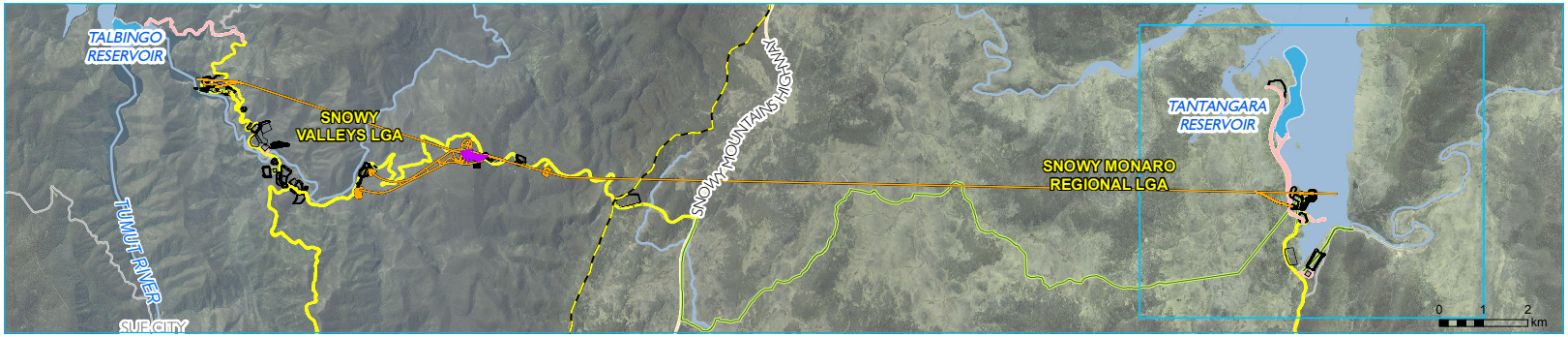

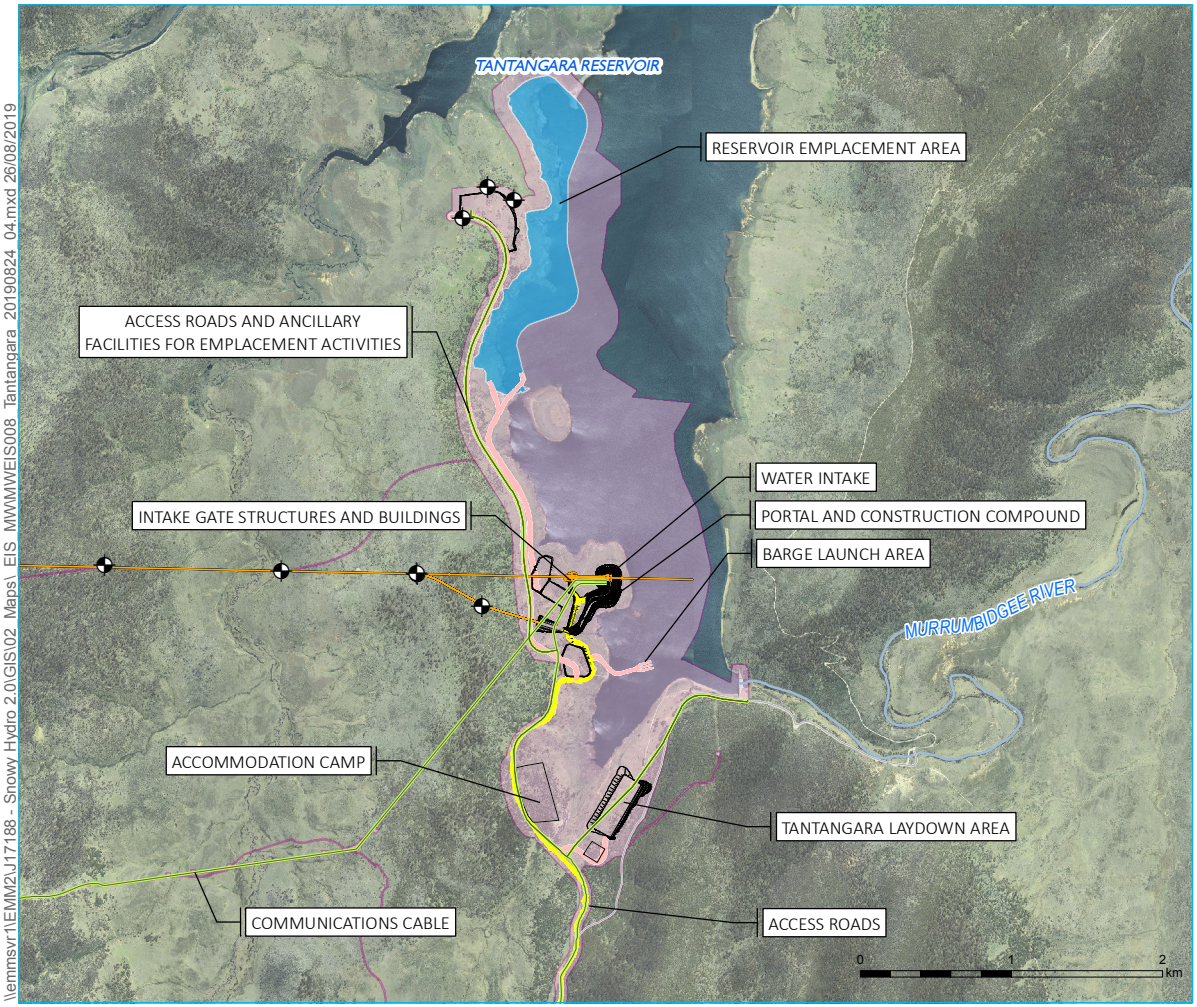

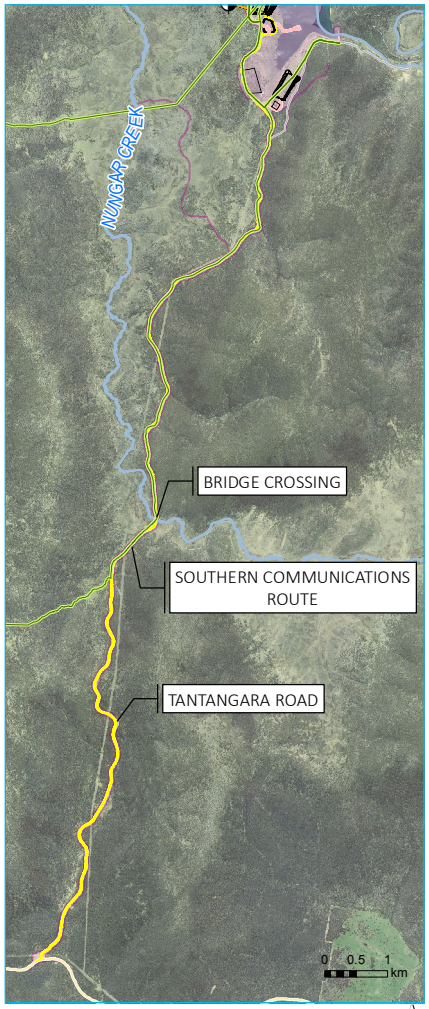

KEY

Existing environment

- Main road
- Local road
- Watercourse
- Waterbodies
- Local government area boundary

Snowy 2.0 Main Works operational elements

- Tunnels, portals, intakes, shafts
- Power station
- Utilities
- Permanent road

Snowy 2.0 Main Works construction elements

- Temporary construction compounds and surface works
- Temporary access road
- Geotechnical investigation
- Indicative rock emplacement area
- Disturbance area*

Note: the disturbance area is the extent of construction works required to build Snowy 2.0. It has been identified to allow an assessment of impacts for the EIS, and represents a defined maximum extent where construction works will be carried out. The area will be minimised as much as possible during detailed design.

Source: EMM (2019); Snowy Hydro (2019); DFSI (2017); LPMA (2011)

GDA 1994 MGA Zone 55

N

Tantangara Reservoir - project elements, purpose and description

Snowy 2.0
Recreational users study
Main Works
Figure 2.6

snowy 2.0

EMM creating opportunities

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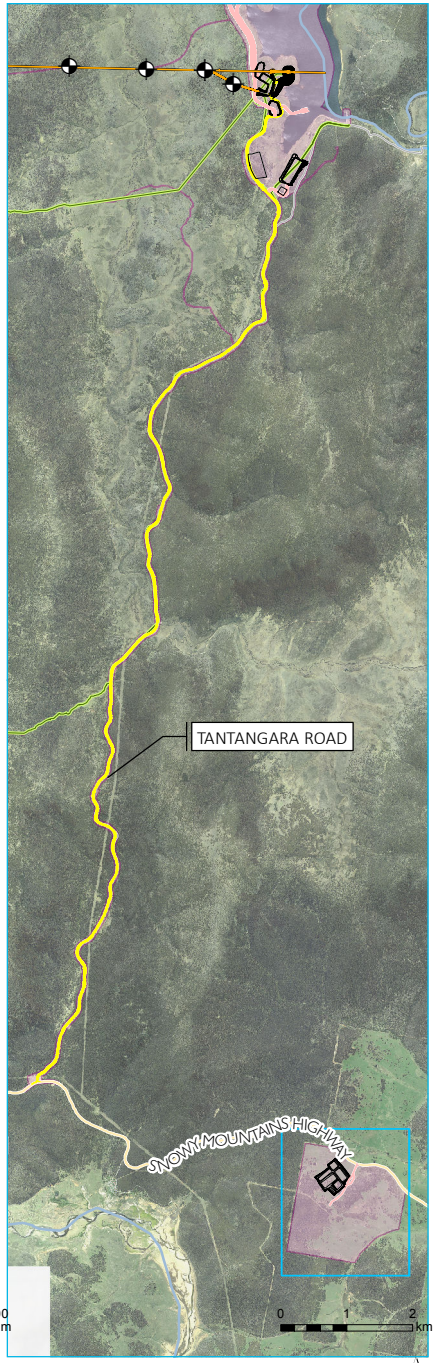

KEY

Existing environment
- Main road
- Local road
- Watercourse

Snowy 2.0 operational elements
- Tunnels, portals, intakes, shafts
- Utilities
- Permanent road

Snowy 2.0 contruction elements
- Temporary construction compounds and surface works
- Temporary access road
- Geotechnical investigation
- Disturbance area*

Note: the disturbance area is the extent of construction works required to build Snowy 2.0. It has been identified to allow an assessment of impacts for the EIS, and represents a defined maximum extent where construction works will be carried out. The area will be minimised as much as possible during detailed design.

Rock Forest - project elements, purpose and description

Snowy 2.0
Recreational users study
Main Works
Figure 2.7

Source: EMM (2019); Snowy Hydro (2019); DFSI (2017); LPMA (2011)

GDA 1994 MGA Zone 55

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snowy 2.0

EMM creating opportunities

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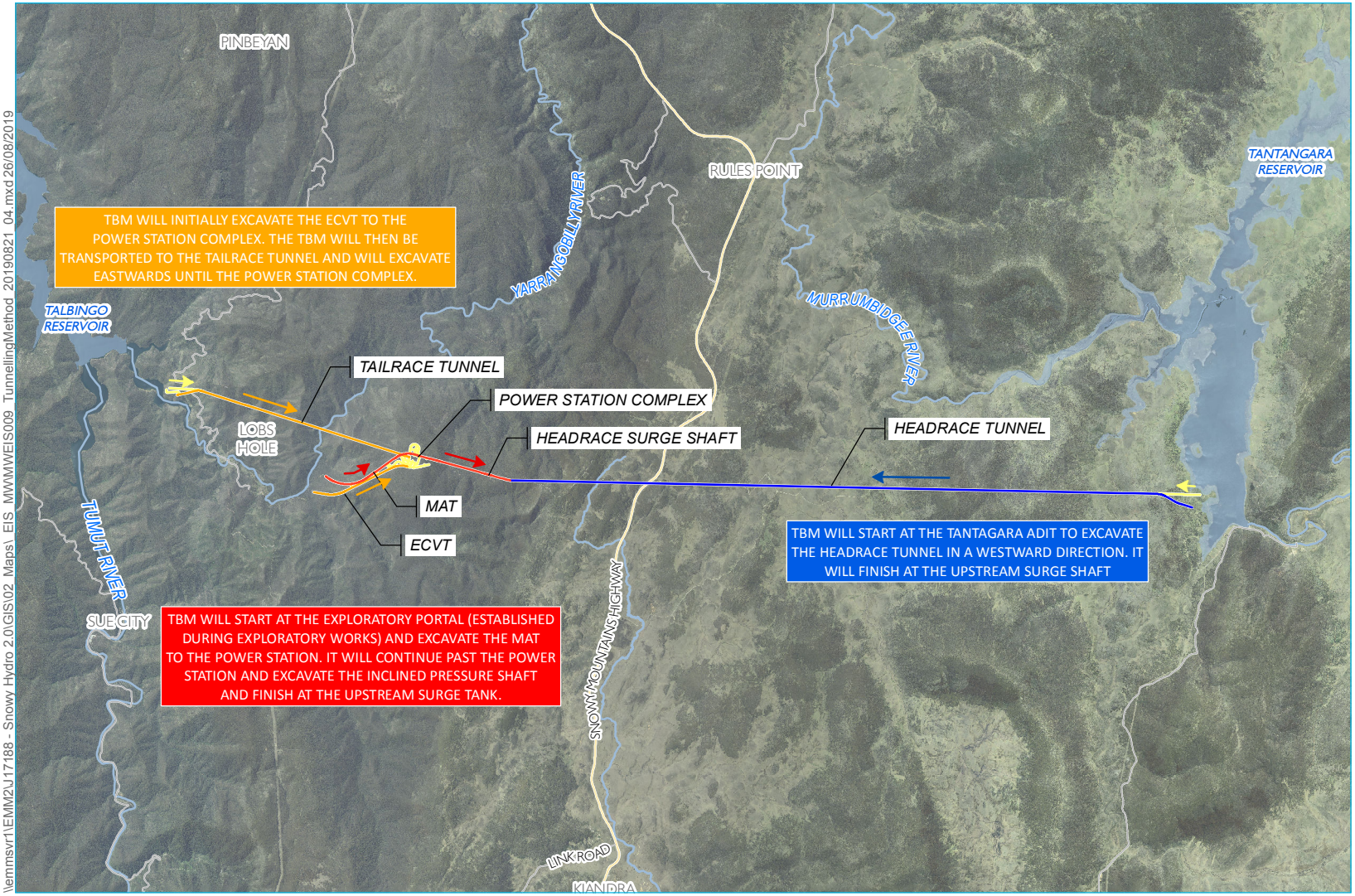
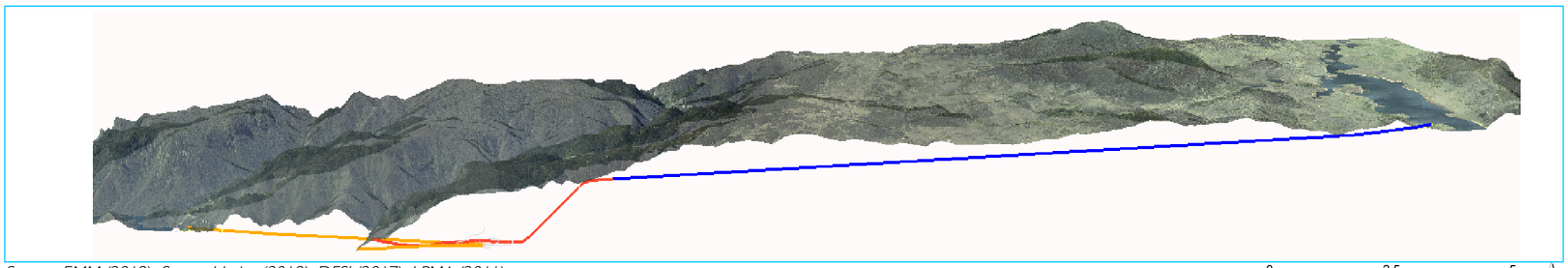


KEY

Tunnelling method
- Drill and blast
- TBM 1
- TBM 2
- TBM 3
- Tunnelling direction

Existing environment
- Main road
- Local road
- Watercourse
- Waterbodies



Source: EMM (2019); Snowy Hydro (2019); DFSI (2017); LPMA (2011)

0 2.5 5 km

GDA 1994 MGA Zone 55

N

Primary excavation methods – drill and blast and tunnel boring machine

Snowy 2.0
Recreational users study
Main Works
Figure 2.8

snowy 2.0

EMM creating opportunities

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2.3 Operation of Snowy 2.0

2.3.1 Scheme operation and reservoir management

Snowy 2.0 would operate within the northern Snowy-Tumut Development, connecting the existing Tantangara and Talbingo reservoirs.

Tantangara Reservoir currently has the following operational functions within the Snowy Scheme:

- collects releases from the Murrumbidgee River and the Goodradigbee River Aqueduct,
- provides a means for storage and diversion of water to Lake Eucumbene via the Murrumbidgee-Eucumbene Tunnel, and
- provides environmental releases through the Tantangara Reservoir river outlet gates to the Murrumbidgee River.

Talbingo Reservoir currently has the following operational functions:

- collects releases from Tumut 2 power station,
- collects releases from the Yarrangobilly and Tumut rivers,
- acts as head storage for water pumped up from Jounama Pondage, and
- acts as head storage for generation at Tumut 3 power station.

Due to its historic relationship to both the upstream Tumut 2 power station and downstream Tumut 3 power station, Talbingo Reservoir has had more operational functions than Tantangara Reservoir in the current Snowy Scheme.

Following the commencement of the operation of Snowy 2.0, both Tantangara and Talbingo reservoirs will have increased operational functions. Tantangara Reservoir will have the additional operational functions of acting as a head storage for generation from the Snowy 2.0 power station and also acting as a storage for water pumped up from Talbingo Reservoir. Talbingo Reservoir will have the additional operational function of acting as a tail storage from Snowy 2.0 generation.

As a result of the operation of Snowy 2.0, the water level in Tantangara Reservoir will be more variable than historically. Notwithstanding this, operations will not affect release obligations under the Snowy Water Licence nor will it involve any change to the currently imposed Full Supply Levels (FSLs). No additional land will be affected by virtue of the inundation of the reservoirs through Snowy 2.0 operations. Water storages will continue to be held wholly within the footprint of the existing FSLs.

2.3.2 Permanent access

Permanent access to Snowy 2.0 infrastructure is required. During operation, a number of service roads established during construction will be used to access surface infrastructure including the power station's ventilation shaft, water intake structures and gates, and the headrace tunnel surge shaft. Permanent access tunnels (the MAT and ECVT) will be used to enter and exit the power station. For some roads, permanent access by Snowy Hydro will require restricted public access arrangements.

2.3.3 Maintenance requirements

Maintenance activities required for Snowy 2.0 will be integrated with the maintenance of the existing Snowy Scheme. Maintenance activities that will be required include:

- maintenance of equipment and systems within the power station complex, intake structures, gates and control buildings;
- maintenance of access roads (vegetation clearing, pavement works, snow clearing);
- dewatering of the tailrace and headrace tunnel (estimated at once every 15 to 50 years, or as required); and
- maintenance of electricity infrastructure (cables, cable yard, cable tunnel).

2.4 Rehabilitation and final land use

A Rehabilitation Strategy has been prepared for Snowy 2.0 Main Works and appended to the EIS.

It is proposed that all areas not retained for permanent infrastructure will be revegetated and rehabilitated. At Lobs Hole, final landform design and planning has been undertaken to identify opportunities for the reuse of excavated material in rehabilitation to provide landforms which complement the surrounding topography in the KNP.

Given that most of Snowy 2.0 Main Works is within the boundaries of the KNP, Snowy Hydro will liaise closely with NPWS to determine the extent of decommissioning of temporary construction facilities and rehabilitation activities to be undertaken following the construction of Snowy 2.0 Main Works.

2.5 Key impacts relevant to recreational users

A review of the Project and associated activities identifies some potential recreational user impacts. The following aspects of the project are considered relevant to this assessment:

1. The temporary closure of Tantangara Road while upgrade to the roadway is carried out
2. Exclusion zones on Tantangara Reservoir during construction and operation
3. Fluctuations in water levels at Tantangara Reservoir during operation
4. Potential impacts on the quality of fishing
5. Visual impacts
6. Extended closure of Lobs Hole Ravine Road and the Lobs Hole Ravine campground during construction
7. Limits to access to Talbingo Reservoir from Lobs Hole Ravine
8. Increased traffic movements during construction
9. Noise impacts at recreational sites during construction
10. Increased us of alternate recreation areas.

3 Recreation in Kosciuszko National Park

3.1 Overview

3.1.1 Kosciuszko National Park

All of the recreational use areas impacted by the Project are within KNP.

KNP is 690,425 hectares and is the largest national park in NSW and one of the best known and best loved national parks in Australia. It is contiguous with Namadgi National Park in the Australian Capital Territory in the north east, and the Alpine National Park in Victoria to the south.

3.1.2 Consultation with NPWS

The NSW National Parks and Wildlife Service (NPWS), as the land management agency responsible for KNP, was consulted in the development of this impact assessment and provided advice for the formulation of mitigation strategies to address the impacts on recreational users.

3.1.3 Kosciuszko National Park Plan of Management

Recreation in KNP is managed under the 2006 Kosciuszko Plan of Management (POM). The POM recognises that the park is a nationally significant place for outdoor recreation as there are few other places in Australia that offer the opportunity for snow play and snow sports, there are extensive and diverse natural and cultural features and landscapes, and because of the cultural heritage of the park, which includes evidence of Aboriginal and European phases of historic land use.

The POM's management objectives for recreation prioritise managing conflicting uses; providing a spectrum of recreational opportunities and settings in the long term with experiences across different activities in a mix of different physical, biological, social and managerial settings; and minimising adverse impacts from visitors on the other values of the park.

The zoning/recreational activity schedule of the POM divides the park into management units and prescribes the recreational activities that are permitted, managed and promoted within each management unit.

The Project area is located within the northern area of KNP and includes the Lobs Hole mining area and the Ravine campground (referred to in this report as Lobs Hole Ravine) and the area around Tantangara Reservoir.

The northern area of KNP includes areas that are zoned in the POM as:

- Wilderness – wilderness areas declared under the NSW Wilderness Act 1987;
- Back Country – parts of KNP without public road access and not within declared wilderness areas;
- Minor Road Corridors – corridors along minor public roads and associated visitor developments;
- Major Road Corridors – corridors along major sealed and unsealed public roads and associated visitor developments; and
- Visitor Services Zone – alpine resorts, development nodes and operational centres.

Most of the camping and visitor use areas in the northern part of KNP are within the "Minor Road Corridors" zone that allows for car-based camping, sightseeing and picnicking, none of which are allowed in the Wilderness and Back Country zones. A key aim of the Minor Road Corridors zone is "the provision

of opportunities for "soft" adventures in which visitors can experience a sense of isolation, and appreciate the values of the park, in the presence of relatively small numbers of people and in settings with low to moderate levels of on-site management presence"[1].

Some roads in KNP are intended to provide a more challenging touring experience to visitor use sites in which few or no facilities are provided. The Lobs Hole Ravine Road is included in the "Minor Road Corridor" zone and is one of only a few in KNP that offers a more challenging drive touring experience. The relatively difficult level of access to this precinct enhances the sense of isolation and remoteness of the campground that has a low level of on-site management presence and no facilities provided.

3.1.4 Amendments to the Plan of Management

The NPWS has proposed an amendment to the POM for Visitor Improvements. Of relevance to the Snowy 2.0 Project is the amendment to Section 8.5 to allow camping at Yarrangobilly Caves. Allowing camping at Yarrangobilly Caves provides an additional camping area in the north end of the park and an alternative camping option to assist with dispersal of campers from those camping areas affected by the Snowy 2.0 Main Works.

3.2 Recreation in Northern Kosciuszko National Park

Recreational activities undertaken in the northern area of KNP include drive touring, picnicking, camping, walking, horse riding, cross country skiing, downhill skiing, snowboarding, snow play, cycling, climbing, caving, canoeing and rafting, boating and fishing. Popular sites for recreational activities are shown in Figure 4.1.

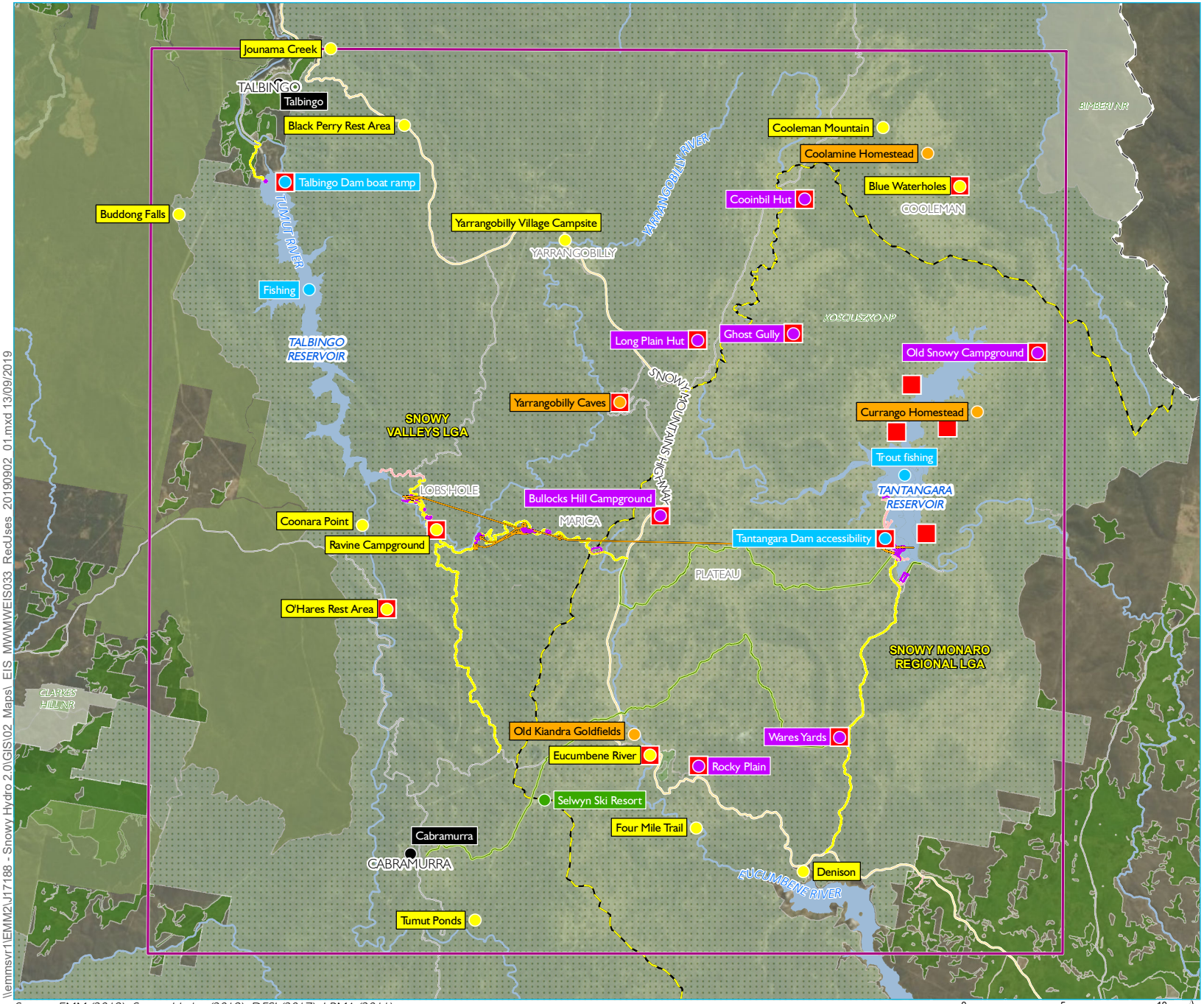
No park use fees or camping fees are currently collected in the northern area of KNP, with the exception of the Yarrangobilly Caves precinct, where fees of $4 per vehicle per day apply, and the Link Road (for access to Selwyn Snowfields) where park use fees of $29 per vehicle per day apply between the June and October long weekends.

Recreational use of the north end of the park is centred around a number of geographical precincts, each of which has different uses and users. Areas directly affected by the Project are Lobs Hole Ravine and Tantangara Reservoir and surrounding areas. Other precincts and their use are described below both to provide context and because some of those sites might be an alternative option for affected visitors, or be indirectly impacted by the displacement of visitors from directly affected areas, increased recreational use by Project workers, and/or by traffic and noise impacts.

No two locations have exactly the same combination of attributes for the recreational user: some might have better fishing but less shade, others have wonderful scenery but no horses allowed. The ease of access, level of facilities and formalisation of camping, opportunities to access water and scenery all differ from camp ground to campground. Many visitors return to the same place repeatedly, finding that the particular combination of attributes at that place best matches their desires. While visitors whose first choice would be Tantangara or Lobs Hole may be able to recreate in an alternative location nearby, there will likely be a compromise for them in some aspect of the experience.

Recreational sites relevant to the project are shown in Figure 3.1.

[1] Kosciuszko National Park Plan of Management 2006, Department of Environment and Conservation NSW, page 31



KEY

- Survey location
- Project area

Recreational use areas

- Camping
- Camping - horses permitted
- Fishing and boating
- Place of interest
- Ski resort
- Township

Snowy 2.0 Main Works operational elements

- Tunnels, portals, intakes, shafts
- Power station
- Utilities
- Permanent road

Snowy 2.0 Main Works construction elements

- Temporary construction compounds and surface works
- Temporary access road

Existing environment

- Main road
- Local road
- Watercourse
- Waterbodies
- Kosciuszko National Park
- NPWS reserve
- State forest
- Grazing
- Local government area boundary
- State boundary

Source: EMM (2019); Snowy Hydro (2019); DFSI (2017); LPMA (2011)

0 5 10 km

GDA 1994 MGA Zone 55

N

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Recreational sites relevant to the project area

Snowy 2.0
Recreational users study
Main Works
Figure 3.1

snowy 2.0

EMM creating opportunities

3.2.1 Recreational Precincts of Kosciuszko National Park

3.2.1.1 Blowering

Blowering is located to the north of Talbingo Reservoir, accessed via the Snowy Mountains Highway. Accessible campgrounds with pit toilets, picnic tables and fire pits are clustered along the Snowy Mountains Highway around the Blowering Dam foreshores. These campgrounds (Yolde, Humes Crossing, Log Bridge Creek, Old Yachting Point and The Pines) are popular with people using the dam for fishing and water skiing. While the dam stores water released from the Snowy Scheme for release into the Murrumbidgee Irrigation Area, the dam does not form part of the scheme. Blowering Dam is managed by WaterNSW. The area is busy between October and April, but recreational use is affected by the level of the dam as low water levels impact on campsites and access to the lake edge.

3.2.1.2 Snowy Mountain Highway Corridor

The Snowy Mountains Highway is a major through route from Tumut and areas west including off the Hume Highway, to Cooma and the Monaro and onwards to the South Coast. A number of sites of interest as well as campgrounds are located along the Snowy Mountains Highway corridor, in close proximity to the road. These sites suit touring travellers as they are easy to access. NPWS reports these sites are becoming increasingly popular with “grey nomads” in campervans and caravans as well as camping. These types of campers tend to stay longer and require more room because of their larger set ups. A recent trend has been observed[2] where this type of visitor is spending the maximum period of time allowed in campsites (three weeks) as part of extended trips.

The Yarrangobilly Village campground has toilets, BBQ facilities and picnic tables. The campground is located beside the Snowy Mountains Highway, adjacent to Cotterill’s Cottage. This campground is suitable for tents, camper trailers and caravans. Visitor counts undertaken over summer 2018-19 indicate the campground is well used as it is suitable for the larger campervans and caravans which are becoming more popular amongst park users[3].

Further south along the Snowy Mountains Highway, Bullocks Horse Camp and the Rocky Plain campgrounds provide the opportunity to camp with horses within close proximity to the main road.

The Eucumbene River near Kiandra is also a popular area for informal camping without facilities and with easy access to fishing.

[2] Discussions with NPWS staff, April 2018

[3] ibid

Image 3.1 Yarrangobilly Village Campground (TRC Tourism)

Image 3.2 Yarrangobilly Village Campground April 10 2018 (TRC)

3.2.1.3 Long Plain/Blue Waterholes

Long Plain Road provides access to the Long Plain Hut campground, Ghost Gully campground and Cooinbil Hut. The road (off which the Port Phillip Fire Trail also emanates) is unsealed but accessible by 2WD. It is closed during the period between the June and October long weekends. The Long Plain Road campgrounds have basic facilities, including toilets, and are popular with horse riders as horses are permitted at the campground and along trails in the area. This precinct is popular for horse riding as well as sightseeing/car touring.

Image 3.3 Long Plain Hut Campground (TRC)

Blue Waterholes is also accessed from the Long Plain Road and is one of the more popular locations in the northern area of KNP. Campers and day visitors visit Blue Waterholes to hike the Clarke Gorge and Nichols Gorge walking tracks, enjoy the waterholes and rock formations of the Cave Creek. The Cooleman Mountain and Cooinbil campgrounds are located within easy travel distance of Blue Waterholes. Visitor counts indicated relatively high use of this area over the summer period.

Image 3.4 Blue Waterholes (Office of Environment and Heritage)

3.2.1.4 Yarrangobilly Caves

The Yarrangobilly Caves precinct is one of the main visitor attractions in KNP. It is the largest karst area in the park, with guided and self guided tours through six of the highly decorated show caves. The area has been a tourist attraction since 1882, and the historic Yarrangobilly Caves House has been refurbished to provide visitor accommodation. The Yarrangobilly Caves precinct is managed as a Visitor Services Zone, which caters for visitors seeking "short duration experiences in natural or natural appearing settings in which they are likely to encounter relatively large numbers of other people[4]". There is a small visitor centre, a number of walking tracks, a thermal pool, barbeques and picnic tables.

Currently, camping is not allowed in the precinct, but the Kosciuszko National Park Proposed Amendment to Plan of Management – Visitor Experience Improvements (January 2019) proposed changes to the Plan of Management to allow vehicle based camping.

3.2.1.5 Selwyn Snowfields/Cabramurra

Selwyn Snowfields is a small (approximately 45 hectares) ski field located on the Kings Cross Road, off the Link Road, offering predominantly beginner and intermediate level skiing. The Selwyn Management Unit is zoned as an Area of Exceptional Recreational Significance in the POM. The resort is leased to Selwyn Snow Resort Pty Ltd by the NSW Government.

All visitors to the resort are day visitors as there is no overnight accommodation for visitors in the resort. It does not offer any summer activities although visitors do stop here.

Cabramurra was originally built to accommodate workers in the original Snowy Scheme and was modernised and rebuilt in the early 1970s. The town is still used to accommodate Snowy Hydro workers and contractors and has a general store and coffee shop. Accommodation at Cabramurra is not available to the public and will be utilised by Project workers for the period of the Main Works.

3.2.1.6 Elliot Way corridor

The Elliot Way is a scenic touring route between Tooma and Cabramurra. The road is windy and steep in sections as it descends to the bottom of the Tumut Valley and crosses the Tumut River five times.

O'Hares Rest Area is located just off the Elliot Way on the southern shores of Talbingo Reservoir. Camping is allowed, and a boat ramp provides access to the water for boating, fishing and water skiing and access to sites further up the reservoir, such as Coonara Point and Ravine campground.

[4] Kosciuszko National Park Plan of Management 2006, page 33

Image 3.5 O'Hares Rest Area (OEH)

Image 3.6 Caravans set up along the water at O'Hares Rest Area (TRC)

Image 3.7 O'Hares Rest Area (TRC)

3.2.2 Multi day walking and riding tracks

Three well known tracks go through the northern end of KNP. These are the Hume and Hovell Track (currently also being assessed as to its suitability for mountain bike riding as well as walking), the National Bicentennial Trail and the Australian Alps Walking Track.

The Hume and Hovell Track cuts across the north western tip of the Goobarragandra Wilderness Area, then continues outside KNP on the western foreshores of Blowering Dam and Jounama Pondage opposite the township of Talbingo, before re-entering the park about 3 km from Buddong Falls.

The National Bicentennial Trail is a horse riding trail that stretches over 5,000 km from Cooktown in tropical far north Queensland to Healesville in Victoria. This crosses through the north end of KNP, travelling near Currango Homestead in a southerly direction between Old Snowy Camp and Wares Yard. Whilst predominantly a horse riding trail, some walking also occurs on the National Bicentennial Trail.

The Australian Alps Walking Track which comes from Namadgi in the ACT and goes to Walhalla in Victoria, travels between Tantangara and Talbingo reservoirs, past Kiandra.

3.2.3 Commercial Tour Operators

Two commercial tour operators run horse riding tours in the north end of KNP - *Reynella Rides* and *Cochran Horse Treks*. These tours are guided rides with horses, equipment, meals, tents and mattresses provided. The season for both operators runs from October to the end of April.

Cochran Horse Treks offers three to seven day treks from homesteads at Yaouk and Khancoban including camping in the park. *Reynella Rides* offers trips of three to five days through the north of KNP across Currango Plain, Tantangara Creek and Mount Tantangara including camping in the park.

Four-wheel drive tours are offered in the north end of the park by *Getabout 4WD Adventures.* They offer tagalong tours where participants use their own four wheel drive vehicles and drive in convoy with a guide vehicle.

Outward Bound runs adventure experiences for school and youth groups including camping and walking in the north of the park.

3.2.4 Remote Campgrounds

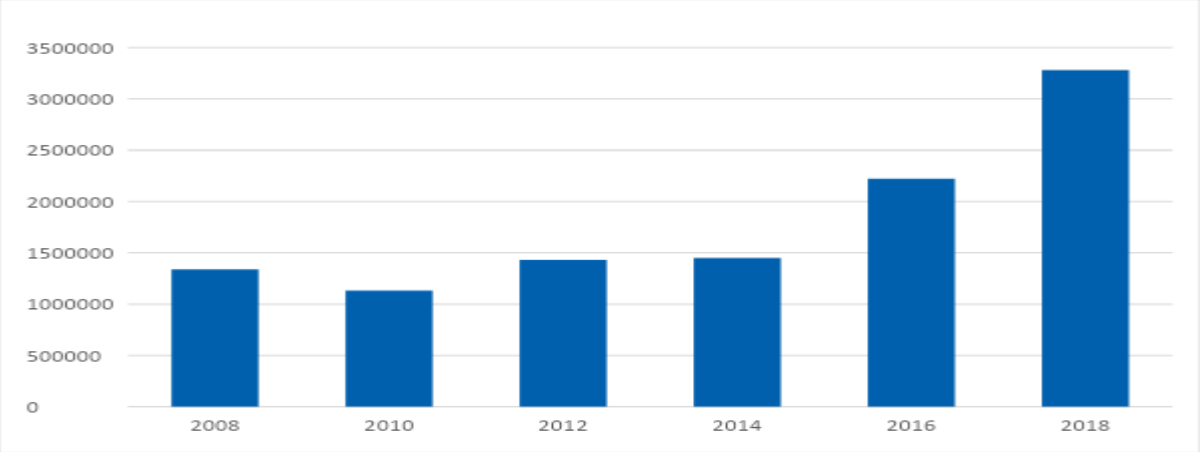
There are a number of campgrounds in the north end of KNP outside the major recreation precincts in the minor road corridor zone at which camping is allowed under the POM but no facilities are provided. These include Lobs Hole Ravine (currently closed), Broken Cart, Eucumbene River, Perkins Flat and Tumut Ponds.

3.3 Visitation

3.3.1 Existing data

KNP is the fourth most visited national park in NSW with almost 3.8 million domestic visitors to the park in 2018.[5] A large proportion of these visitors are people accessing the larger ski resorts at Perisher and Thredbo in the southern end of the park. Since 2008 (when the survey was initiated) visitation to KNP has increased by 144%.

Figure 3.2 Domestic Visitation to Kosciuszko National Park. Source: OEH



There is little visitor data available on visitation specifically to the northern end of KNP. There is no requirement to either book sites or pay park use fees or camping fees in camp grounds, except at Yarrangobilly Caves, where 11,756 site fee permits were purchased over the 12 months to the end of April 2018[6]. Note that vehicles with National Parks Annual Passes do not need to purchase the site fee so this number does not represent total vehicles visiting the site. The total number of people who toured the caves in the 2015-16 financial year was 25,817.[7]

[5] Data sourced from 2018 Park Visitor Survey undertaken for NSW National Parks and Wildlife Service (NPWS) by Roy Morgan Research

[6] NPWS

[7] ibid

3.3.2 Collection of data

Qualitative and quantitative data for this assessment has been collected through face to face and online surveys.

3.3.2.1 Visitor Surveys

Camping and day use areas likely to be impacted by the project (both directly and indirectly) were surveyed on the dates listed below. Most of these dates were weekends or public holidays to capture periods of high visitation.

- 29 September 2018
- 21 October 2018
- 4 November 2018
- 1 December 2018
- 8 December 2018
- 15 December 2018
- 28-29 December 2018
- 4-6 January 2019
- 11-12 January 2019
- 22 January 2019
- 2 February 2019
- 9 February 2019
- 16 February 2019
- 23 February 2019
- 14 April 2019
- 21-23 April 2019

Over the period, 295 face to face surveys were conducted (13 at Lobs Hole and 282 elsewhere in the park). The survey results are attached at Appendix A and B.

Extremely hot conditions were experienced across the survey areas during January. Some planned surveys were unable to be undertaken in mid January due to bushfires in the area. It is likely that the extreme conditions during all of January resulted in lower visitation to the park than in other years.

Users were asked questions about where they came from, what activities they undertook in various places and what they valued about the places they visited, as well as questions to collect data for other studies being undertaken for the EIS (economic impact and fishing). Users at Lobs Hole, where it was known access would be denied for the period of the Project, were also asked whether there were any aspects of Snowy 2.0 which concerned them. Visitors in other areas were not asked this question because at the time of surveying too little was known about what changes would occur for users as a result of the Project. Instead email addresses were collected from those interested so that they could be sent an online survey once there was more certainty about access to recreational areas and the potential impacts on recreational users.

The survey was not intended to provide a representative sample of users of the area but to contribute to the understanding of scale of visitor numbers and to gain insights into the motivations for use and the values of the area for KNP users.

Horse riders were given the option to provide their email address and participate in a second survey once enough detail on the Project was available. Those who provided their email addresses were included in the email survey.

Survey results are attached in full at Appendix 1 and 2.

3.3.2.2 Email Surveys

During the collection of the face-to-face surveys, participants had the option to provide their email address if they were interested in participating in a further survey once more detail on the project was known. Two hundred and ninety one email addresses were collected. The survey was distributed on August 23 2019 and 34 responses were received. The follow up survey results are attached in full at Appendix 3.

3.3.2.3 Visitor Counts

Visitor counts were also undertaken at campgrounds visited for the survey work to give some indication of visitor numbers.

As expected the busiest periods coincided with public holidays and occurred around Christmas, Australia Day and Easter.

Despite an expectation that people might take the opportunity to visit Lobs Hole before it closed prior to the Snowy 2.0 Exploratory Works, numbers of visitors to Lobs Hole Ravine remained low with the busiest day observed (on the Australia Day long weekend) seeing 11 vehicles at the site. Counts were also conducted at O'Hares Rest Area, around Tantangara Foreshores, at Talbingo Reservoir, Three Mile Dam campground, Rocky Plain campground and Talbingo Reservoir. Although campgrounds were busy compared to other times of the year[8] none were full. The informal nature of the campgrounds means that while visitors might have to camp further from the most desirable locations (water and facilities) in busier periods at most campgrounds they can still get a spot.

Visitor counts are attached at Appendix 4.

3.4 Stakeholder Consultation

TRC Tourism met with National Park representatives by phone on two occasions during the assessment period to discuss the identified impacts and potential mitigation strategies.

Snowy Hydro met with NPWS to provide briefings and project updates, and have conducted meetings and site visits as part of interagency meetings. The Snowy Mountains Bush Users Group also received updates on fish transfer, horse riding and recreational impacts, and a presentation at a special meeting of the Group in April 2019.

More detail on consultation undertaken by Snowy Hydro is included in the Community and Stakeholder Engagement Consultation Outcomes Report appended to the EIS.

[8] TRC Park User Surveys March/April 2018, NPWS discussions

4 Impacts on Park Users

Recreational values are affected by a range of factors, such as the activities available at a location, the quality of the activity (e.g. the quality of the fishing or cycling trails), the availability of the activity elsewhere, the scenic amenity of the area in which the activity takes place and the opportunity to connect with nature, the numbers of other people in the area and the opportunity to connect with others, or to find solitude. The severity of the impact depends on the change to these values as a result of the proposed works. The significance of an impact is assessed by considering the change to the recreational value and the magnitude of the impact before and after the application of mitigation and management measures, using the risk levels described in Table 4.1.

Table 4.1 Degree of Impact

Degree of Impact	Description of Degree of Impact
Nil	**No discernible positive or negative changes caused by the project**
Low	**An impact on one or two of the recreational values of an area that is temporary or short term and affects a small number of users or only some users in an area.**
Medium	**An impact that changes the recreational values of an area for a longer period or for a larger number of users**
High	**An impact that is long lasting or results in substantial and irreversible change to the recreational value of an area affecting a significant proportion of visitors to an area.**

4.1 Tantangara Reservoir and other areas accessed from Tantangara Road

4.1.1 The Site

Tantangara Road provides access to Tantangara Reservoir, Currango Homestead and various camping areas, huts and walking trails.

The area around the foreshores of Tantangara Reservoir is a popular part of the park. There are no designated camping areas around the reservoir and no facilities (toilets or water supply) available, and visitors camp in the area of their choice around their vehicles. This freedom to camp wherever they choose is valued by many users. There is enough space for each group to camp in their own area well away from others regardless of group size.

4.1.1.1 Areas accessed from Tantangara Road

There are also some well used campgrounds to the south and east of the reservoir that allow camping with horses: Wares Yard and Old Snowy Camp situated on the Tantangara Road are overnight stops for horse riders including commercial operators offering horse riding tours. Some horse riders also do day rides in the area using Wares Yard as a base.

The historic Currango Homestead is located some 25km beyond the Tantangara Dam wall along the Pockets Saddle Road. This is popular accommodation from which people walk, mountain bike ride, horse ride, drive tour and fish.

There are a number of trails that can be used for horse riding, walking or cycling across the area around Tantangara Reservoir, including some that are parts of multi-day walks or rides such as the National Bicentennial Trail and the Australian Alps Walking Track.

4.1.2 Recreational Use

On the busiest days during the survey period, around sixty vehicles[9] were parked around the foreshores of Tantangara.

Many Tantangara users are repeat visitors, who have been using the area for many years, with 41% of the 31 people surveyed at the site having visited more than 50 times.[10]

The most popular activities undertaken at the reservoir are fishing (undertaken by 97% of respondents to the TRC survey) camping (86%) swimming (50%) and relaxing (50%). Fishing is undertaken from the waters edge, from a boat, by trolling and fly-fishing.

Most visitors surveyed were camping for one to three nights. Tantangara users valued the lack of crowds, quality of fishing and scenery most highly.

Image 4.1 Vehicle based camping around Tantangara foreshores (image credit 4x4drive.com.au)

[9] Estimated from TRC visitor counts 2018-19

[10] TRC Park User Surveys, 2018-2019

Image 4.2 Vehicle based camping around Tantangara foreshores (image credit 4x4drive.com.au)

4.1.3 Impact of the Project on Recreation around Tantangara Reservoir

During construction of Snowy 2.0, public access to some areas of Tantangara reservoir will be restricted, both by limits to the use of Tantangara Road, and exclusion zones on the reservoir itself.

4.1.3.1 The temporary closure of Tantangara Road during upgrade

Tantangara Road is used to access popular recreational use areas such as Wares Yard Horse Camp and the southern shores of Tantangara Reservoir, including the boat ramp at the end of the road. It is also used by some visitors to access areas off Pockets Saddle Road and Port Phillip trail, such as Currango Homestead and Old Snowy Camp. Although these sites can be accessed from Port Phillip Trail, the access from Tantangara Road is better if the visitor is coming from the east, or towing a float. Also, Port Phillip Trail is closed between the June and October long weekends and at other times of the year if reservoir levels are high.

At the commencement of the period of assessment for this study, it was considered likely that Tantangara Road would be closed to all traffic for the duration of the construction period. It is now proposed that Tantangara Road will be closed during road construction works and when any high risk activities are being undertaken (eg transport of oversized equipment). Access along Tantangara Road will be maintained at other times with measures in place to achieve the required level of safety. This change to the project methodology has significantly mitigated the impact of the Project to users of the parts of the park accessed by Tantangara Road.

4.1.3.2 Exclusion zones on Tantangara Reservoir

Currently many users of Tantangara launch their boats from the boat ramp located at the southern end of the reservoir adjacent to the dam wall.

Following Snowy 2.0 Main Works, during the operation of the scheme Tantangara reservoirs will continue to be used for boating and fishing, however safety exclusion zones will be put in place in the vicinity of the intake. The extent of the permanent safety exclusion zones is also unknown at this stage and will be determined during the detailed design.

4.1.3.3 Impact of variable lake levels on campers around Tantangara Reservoir

During construction, the water level in Tantangara Reservoir is likely to be near to minimum operating level to facilitate construction. This increases the amount of space available for free camping around the reservoir, however it also reduces the size of the reservoir for recreation.

During the operations phase, the water level in Tantangara Reservoir will remain variable with regular rising and falling of water and water storages will continue to be held wholly within the footprint of the existing FSL.

Currently, many people camp below the FSL. The Master Plan for Camping and Day Use proposed for the park will need to address the issue of rising and falling water levels and more formalised arrangements for camping around Tantangara may need to be implemented.

4.1.3.4 Air quality impacts at Wares Yard

Air quality impact assessments found that at Wares Yard the movement of vehicles across Tantangara Road, which is 500m away, will result in elevated dust with predicted concentrations that exceed the assessment criteria. This will be managed through dust suppression measures using water carts.

4.2 Lobs Hole Ravine and Talbingo Reservoir

4.2.1 Lobs Hole Ravine

Lobs Hole Ravine is a remote campground situated beside the Yarrangobilly River. Campsites are unmarked and there are no facilities provided. Fishing and swimming in the Yarrangobilly River, drive touring and the remote nature of the location are the main appeals of the Lobs Hole Ravine area for visitors. Camping at Ravine is permitted under the POM, and the campground is managed as a remote site. People camp at informal sites along a 2 km stretch beside the river and up the arm of the Talbingo Reservoir. The amount of space and the topography allows for groups to have their own space at a reasonable distance from other visitors. There is no mobile phone reception. The scenery, remoteness, (perceived) unspoiled nature isolated nature and lack of crowds of/at site are drawcards for many visitors.[11]

Lobs Hole was previously settled by pastoralists in the mid 1800s and was the site of a copper mining operation which continued on the site for 50 years[12], a much longer period than most of the other mining which occurred in the park. The Lobs Hole mining area is identified as a heritage precinct in the POM. Evidence of this era of the site exists through mine tailings and the ruins of the Washington Hotel.

[11] TRC Park User Surveys March/April 2018

[12] Kosciuszko National Park Plan of Management 2006, page 82.

The POM notes that "for some people, particular recreational activities and destinations present direct personal links with family and community histories."[13] This is relevant for the Lobs Hole Ravine area as there is an active group of descendants of John Thomas, who resided in the area in the later 1800s, who are interested in their family history and visit the location because of this connection.

Visitors surveyed indicated they were attracted to Lobs Hole Ravine for a number of reasons[14]:

- as part of a wider vehicle touring route through the park;
- because of a family connection to the area;
- for fishing;
- for a remote camping experience not available in many locations elsewhere in the park;
- for bushwalking; and
- as a destination on a canoe/kayaking or boat trip from Talbingo Reservoir.

Lobs Hole Ravine was closed to visitors in February 2019 ahead of the Snowy 2.0 Exploratory Works commencing in March 2019. The effect of the Main Works on Lobs Hole will be an extension of the period for which Lobs Hole is closed to the public – from an estimated 2 years to an estimated 7 years. The proposal for the Project includes the construction of various temporary structures in and around Lobs Hole Ravine camping area. These will be removed at the end of the construction phase. The only permanent operational elements in the camping area will be a substation, and some material left in Lobs Hole which will be rehabilitated and land formed.

4.2.1.1 Impacts of the Project at Lobs Hole Ravine

The affect of the Main Works on Lobs Hole Ravine is to extend the period of closure of the site to the public from the two years estimated for the Exploratory Works for an additional six years (an estimated eight years in total). This extends the duration of the temporary impacts to Lobs Hole users.

On completion of the Main Works, the area will be re-opened to the public, with improved access as a result of the road upgrades undertaken for the Exploratory Works and improved recreational facilities which will be detailed in the Offset Strategy and Recreational Plan to be prepared in consultation with NPWS. However as a result of the Main Works, for Lobs Hole Ravine visitors it is expected that access to the Yarrangobilly Arm of the Talbingo Reservoir will be limited as a safety exclusion zone will be in operation around the intake structure.

4.2.2 Talbingo Reservoir

Talbingo Reservoir is approximately 5 km from the Talbingo township. The dam is a rockfill dam with a gross capacity of 920,600 megalitres[15] and was the last completed dam in the Snowy Scheme, being completed in 1970. Public access to the dam for boats is from either a concrete boat ramp on the western side of the dam wall or a slipway on the eastern side. The reservoir is also accessible from points within KNP including Lobs Hole Ravine campground and O'Hares Camping and Rest Area.

Some of the visitors to Talbingo Reservoir stay in the township of Talbingo. Talbingo is located on the shores of the Jounama Pondage, 45 km south of Tumut and about 1 km outside the border of KNP. The

[13] Ibid, page 104

[14] TRC Park User Surveys, March/April 2018

[15] http://www.snowyhydro.com.au/our-energy/hydro/the-assets/dams/

town has a population of 239[16] and has a service station, golf course, country club motel, primary school, general store and caravan park. The caravan park has approximately 100 sites and has a mixture of annual visitors (who keep a permanent van on site and visit multiple times throughout the year) and casual visitors.

The operation of Snowy Hydro's Tumut 3 Power Station, which is located between the Talbingo Reservoir and Jounama Pondage, mean that for safety reasons there is no swimming or boating allowed on Jounama Pondage and fishing is allowed from the shore only. The Talbingo Reservoir and Blowering Dam (also about 5 km from the town but to the north) provide recreational opportunities for residents and visitors to the town.

Talbingo Reservoir is used for water skiing, paddle boarding, canoeing and swimming. It is also a popular fishing spot with Brown Trout, Rainbow Trout, Golden Perch, Macquarie Perch, Redfin and Trout Cod present. Picnic tables and toilets are provided at both the boat ramp and the spillway. There is no data available on recreational usage of the reservoir.

Water skiing and water sports are seasonal with the season finishing by March or early April when the water gets too cold. The reservoir is open to fishing all year round. Traffic counts undertaken between March and April 2018 as part of the *Subaqueous excavated rock placement assessment* (RHDHV 2018) indicate a peak daily demand of 75 vessels per day using the boat ramp and a typical daily demand of less than 10 vessels.

Survey responses from TRC surveys undertaken for the Exploratory Works project indicate that reservoir users value the scenery, activities and the unspoiled nature of the site as the most important attributes influencing their enjoyment of the site. The survey indicated high levels of repeat visitation with 61% of respondents indicating that they had visited the reservoir more than 50 times.

A small number of reservoir users launch from the boat ramp at Talbingo and boat, kayak or canoe up the arm of the reservoir to the Lobs Hole Ravine area. During the construction phase of the Project, access to Lobs Hole from the water will no longer be possible as a public exclusion zone will operate to the north west of Lobs Hole Ravine, prohibiting access up the arm. The shoreline spoil disposal area will be visible from the part of the reservoir north and east of the public exclusion zone.

[16] Census of Population and Housing, Australian Bureau of Statistics, 2016

Image 4.3 Boat ramp at Talbingo Reservoir (TRC)

Image 4.4 Canoes and a boat on Talbingo reservoir (TRC)

4.2.2.1 Impacts of the Project at Talbingo Reservoir

Most of the impacts of the Project at Talbingo Reservoir occur at the southern end of the Reservoir and in the Ravine arm of the reservoir. Areas near the construction of the intake and excavated rock emplacement, including the Yarrangobilly Arm will be restricted from the public for safety reasons. Public access will be maintained in all other areas of the reservoir. Public access will also be restricted in areas near the construction of the intake and excavated rock emplacement for safety reasons.

Some barging operations will be undertaken during the construction phase for the removal of the rock plug and construction of the Talbingo intake structure. These operations will not impact on recreational users because they will be undertaken within the public exclusion zone.

On completion of the Main Works, the Talbingo Reservoir will continue to be used for boating and fishing, however safety exclusion zones will be put in place in the vicinity of the intakes. The full extent of safety exclusion zones is unknown at this stage and will be determined during the detailed design stage.

There is an informal boat launching area ramp near Middle Bay, only accessible by a four wheel drive track, which will be closed.

The visual impact of the project on users of Talbingo Reservoir has been assessed as “high” during construction as there will be a visible change in water turbidity as well as new cleared areas and construction activity visible along the shoreline (Landscape Character and Visual Assessment, appended to the EIS). During operation the impact is “moderate” to “high”, however it is noted that this impact occurs in a location isolated from the main recreational user areas on the reservoir.

4.3 Impacts across Multiple Locations

4.3.1 Impacts on the quality of fishing

The most significant cause of concern for recreational users regarding the potential impacts on fishing is the potential reduction to trout populations in Tantangara and some upstream areas as a result of the potential transfer of redfin perch from Talbingo to Tantangara. This risk is detailed in Appendix M.2 Aquatic Ecology Assessment. Fish barrier controls will be established to prevent the potential for redfin or any other fish to enter the Murrumbidgee River below Tantangara or Lake Eucumbene. In the event that redfin are transferred and establish within Tantangara Reservoir, appropriate measures to mitigate impacts will be developed in consultation with NSW DPI – Fisheries.

Impacts on fishing are explained in detail in the Aquatic Ecology chapter of the EIS.

4.3.2 Traffic Impacts

The Traffic and Transport Assessment Report (appended to the EIS) examines traffic impacts in detail. The largest increase of light and heavy vehicles is expected to be travelling on Link Road (between Kings Cross Road and Snowy Mountains Highway) and Snowy Mountains Highway (between Link Road and Cooma).

The assessment determined that winter traffic combined with the increase of construction traffic may case some localised congestion to occur, especially near the Selwyn Snow Resort, which will impact on visitors to the resort.

Visitors will be notified in advance of any disruptions to traffic and restriction of access to areas of KNP impacted by project activities.

Notification signs advising of the works and public closures will be at:

- the intersection of Snowy Mountains Highway and Tantangara Road;
- the intersection of Snowy Mountains Highway and Long Plain Road;
- Tantangara boat ramp.

4.3.3 Visual Impacts

Recreational users value the visual amenity of the park: responses to the Park Users Survey indicated that scenery was the most important factor in choosing a place to visit, with 92% ranking scenery as "extremely important" or "important".

The visual impact of the Main Works has been assessed in Amenity Chapter of the EIS. The assessment concluded that because public access will be restricted to some of the locations, many of the visual impacts during construction will not be experienced by recreational users. Once temporary supporting elements are removed on completion of construction, some permanent elements remain which will change the landscape character and visual setting of KNP, however it is considered that opportunities to provide recreational facilities as part of the rehabilitation of these sites (to be determined in consultation with NPWS) may mitigate the magnitude of potential impacts during operation.

4.3.4 Noise

While road traffic levels satisfy the baseline assessment criteria from NSW Road Noise Policy noise levels for passive recreation, road traffic noise generated by increased truck movements and nearby construction activities will be perceptible and clearly audible to recreational users of the park in the Tantangara area. The quietness of being in nature and removed from society is an integral part of the recreational experience; currently intrusive noise sources are primarily limited to intermittent traffic noise and noise from boating activities, so any perceptible traffic noise will have some impact on recreational users' experience.

4.3.5 Increase in demand for recreational areas by project workers

During the peak of the project, up to 2000 workers will be on shift at any one time, working a rotational roster of 20 days on, 10 days off. Some of these workers might occasionally choose to stay in the area on their days off, however it is not considered that these numbers would be large enough to have any significant impact when spread across KNP, given the park receives 3.8 million visits per year.

4.4 Impacts Assessment Summary Table

Table 4.1 Impacts assessment summary table

Impact scenario	Direct Impact	Reference	Level of Impact (Unmitigated)		Mitigation/Offset	Residual Impact	
			Construction	Operation		Construction	Operation
TANTANGARA							
Limited access along Tantangara Road	No access to Wares Yard Limits access to Tantangara Reservoir for fishing camping to Long Plain Road/Port Phillip Trail which is also closed June long weekend to October long weekend No access to Currango between June long weekend and October long weekend for NPWS operations (able to be accessed by Long Plain road by NPWS and visitors outside these periods)	REC01	High	NA	Maintain access along Tantangara Road with measures in place (car escort, traffic lights) other than during periods of high risk activities Advance communication to stakeholders and visitors	Low	Nil
Closure of Tantangara road closed for period of upgrade (April 2020-December 2020)	No access to Wares Yard	REC02	High	NA	Advance communication to stakeholders and visitors Mitigation measures to impact on horse campground to be accounted for in the offset	Medium	Positive (quality of access improved due to road upgrade)

					strategy. Appropriate recreational offset should be detailed in a Master Plan for Camping and Day Use as part of the Offset Strategy and will include measures such as: periods of no impacts to Wares Yard and development of alternative horse campgrounds in collaboration with NPWS.		
	No access to Currango from Tantangara Road for NPWS for management purposes between June long weekend October long weekend 2020 (able to be accessed by Long Plain road outside these periods)	REC03	High	NA	Use Long Plain Road/Port Phillip Trail June long weekend to October long weekend (mitigation will only apply when water is not at FSL)	Medium	Positive (quality of access improved due to road upgrade)
	Limits access to Tantangara Reservoir for fishing and camping to Long Plain Road/Port Phillip Trail which is also closed June long weekend to October long weekend	REC04	High	NA	Open Long Plain Road/Port Phillip Trail to visitors between June long weekend to October long weekend (mitigation will only apply when water is not at FSL)	Medium	Positive (quality of access improved due to road upgrade)
Facilitated access along Tantangara Road	Some waiting periods and slower journey times. Some periods of closure for heavy vehicles	REC05	Medium	NA	Advance communication to stakeholders and visitors		Nil
Access to parts of Tantangara	Reduced opportunity for fishing and boating,	REC06	High	High	Mitigation measures to impact on access, use of	Low	Low

Reservoir by boat restricted	remaining accessible areas may become more crowded				Tantangara reservoir as well as the quality of recreational fishing are accounted for in the offset strategy. Appropriate recreational offset should be detailed in a Master Plan for Camping and Day Use as part of the Offset Strategy and will include measures such as: advance communication to stakeholders and visitors when closures are expected, construction of temporary or permanent boat ramps in collaboration with NPWS		
Increased rate of water level change and more frequent inundation around reservoir	Reduced areas available for camping	REC07	Low (reservoir levels generally low during construction phase)	Medium	Mitigation measures to impact on access, use of Tantangara reservoir as well as the quality of recreational fishing are accounted for in the offset strategy. Appropriate recreational offset will be detailed Master Plan for Camping and Day Use as part of the Offset Strategy and will include measures such as: advanced communications to stakeholders and visitors when closures are expected, construction of temporary or permanent	Low	Low

					boat ramps in collaboration with NPWS, etc.		
Impacts on the quality of fishing in Tantangara Reservoir	Potential decline in quality of fishing from foreshore due to potential biodiversity impacts	REC08	High	High	Mitigation measures to impact on access, use of Tantangara reservoir as well as the quality of recreational fishing are accounted for in the offset strategy. Appropriate recreational offset will be detailed in the Master Plan for Camping and Day Use and will include measures such as: advanced communications to stakeholders and visitors when closures are expected, construction of temporary or permanent boat ramps in collaboration with NPWS, etc.		
Visual impacts	Visual impacts of construction phase work (accommodation camp, stockpile) and any permanent elements visible from and around Tantangara reservoir	REC09	High	High	The Master Plan for Camping and Day Use prepared in consultation with NPWS to consider visual impacts of infrastructure and locate recreational areas to minimise impact. Rehabilitation plan to include vegetation to better enable integration with the landscape	High	Medium
Noise	Noise from traffic on Tantangara Road audible	REC10	Medium	NA – noise impacts	Construction Noise and Vibration Management		NA

	from camping areas along roads (Wares Yard) Construction noise will be perceptible at Tantangara			during operation are not expected to be perceived	Plan to address noise and vibration management and mitigation options where required. Design of operational structures, plant and equipment to be assessed against the requirements of Noise Policy for Industry (2017) and consider the amenity criteria for passive recreation. Noise impacts are not expected to be perceived during operation.		
WARES YARD							
Potential closure of Wares Yard (TBC) during construction period	Horse riders, campers using Wares Yard	REC11	High	NA	Mitigation measures to impact on horse campground to be accounted for in the Master Plan for Camping and Day Use. Appropriate recreational offset will include measures such as: periods of no impact to Wares Yard, development of alternative horse campground in collaboration with NPWS, etc.	Medium	NA
Air quality impacts at Wares Yard (if remains open)	Horse riders, campers using Wares Yard	REC12	Medium	NA	Dust to be managed with the use of water carts on Tantangara Road. Mitigation measures to impact on horse	Low	NA

					campground are accounted for in the offset strategy and included in the Master Plan for Camping and Day Use. Appropriate recreational offset will include measures such as: periods of no impact to Wares Yard, development of alternative horse campground in collaboration with NPWS, etc.		
Noise	Construction noise is predicted to be in the order of up to 37dB and will be perceptible at Wares Yard which currently experiences low background noise levels (<30dB) Noise from traffic audible from camping areas along roads	REC13	Medium	NA	Construction Noise and Vibration management Plan to address noise and vibration management and mitigation options where required. Design of operational structures, plant and equipment to be assessed against the requirements of Noise Policy for Industry (2017) and consider the amenity criteria for passive recreation	Low	NA
LOBS HOLE RAVINE							
Extended closure of Lobs Hole Ravine Campground	Lobs Hole Ravine family history visitors access to site of family history	REC14	Medium	Low	Masterplan for Lobs Hole to consider inclusion of interpretive material outlining Aboriginal and European history	High	Low

	Lobs Hole Remote Campers	REC15	High	Medium	Master Plan for Camping and Day Use to consider alternative sites to develop to consider access to and camping alternative locations elsewhere in the park that offer a similar experience to Lobs Hole (may require POM amendments) Implement measures to increase awareness amongst park visitors of alternative options	Low	Low
Extended closure of Lobs Hole Ravine Road	Lobs Hole Ravine 4WD tourers	REC16	High	Medium	Consideration and promotion of alternative routes within the park included in Master Plan for Day Use and Camping as part of the Offset Strategy	Low	Low
Restrictions to access to Lobs Hole Ravine from Talbingo Reservoir	Access via boat or canoe to and from Lobs Hole Ravine will be restricted	REC17	Medium	NA – no ongoing impact to accessing the reservoir from Lobs Hole	Provide information about alternative locations for camping with access to water.	Low	NA
TALBINGO RESERVOIR							
Visual impacts	Views of the landscape around Talbingo will include permanent infrastructure	REC18	NA (public access restricted	High	Rehabilitation strategy to include different types of revegetation that would	NA (public access restricted during construction)	Moderate-High

	that is contrasting to the previously undisturbed natural setting, water Turbidity will change temporarily during construction		during construction)		better enable integration with the landscape. Refer to Amenity Chapter of the EIS.		
Closure of Middle Bay boat ramp	Limits opportunities to access water by small craft	REC19	NA (Lobs Hole Ravine closed)	NA	Master Plan for Camping and Day Use to investigate opportunities to provide access to the southern end of Talbingo in consultation with NPWS.	NA	Positive impact as construction boat ramp will be retained permanently.
MT SELWYN							
Traffic impacts	Drive tourists and skiers will experience extended journey times, increased traffic and delays at winter pinch points such as Sawyers Hill, Mt Selwyn and Roaring Meg.	REC20	Medium	Low	Traffic Management Plan to consider management of traffic impacts during peak periods. Refer to Traffic Assessment Report appended to the EIS		
3 MILE DAM							
Noise impacts	Noise from traffic audible from camping areas along roads	REC21	Medium	NA – noise impacts during operation are not expected to be perceived	Nil	Medium	NA
OTHER AREAS							
Users of campsites elsewhere in the park	Displacement to less affected campgrounds in	REC22	Medium	Low	Master Plan for camping and day use across KNP to	Low	Low

affected by displacement of campers from areas affected by traffic, air quality, visual impacts etc	the northern part of the park and also to other parts of the park (Western side)				consider alternative sites to develop. This will be detailed in the Recreational User Management Plans.		
	COMMERCIAL TOUR OPERATORS (CTOs)						
Closure of Tantangara Road during construction period, noise and air quality impacts at Wares Yard, potential closure of Wares Yard	CTOs unable to operate some existing tours	REC23	High	NA	Mitigation measures to impact on horse campground are accounted for in the offset strategy. Appropriate recreational offset will be detailed in recreational user management plans and will includes measures such as: periods of no impact to Wares Yard, development of alternative horse campground in collaboration with NPWS, etc.		
	OTHER						
Visual impacts for visitors on Wallaces Creek Trail and Wallace Creek Lookout	Nearest view point to surge shaft and ventilation shaft at Marica. Dense vegetation is expected to screen views of the surge shaft and ventilation shaft	REC24	Low	NA	N/A	Low	NA

5 Conclusion

It is considered that the impact of the Main Works on recreational users is acceptable given that:

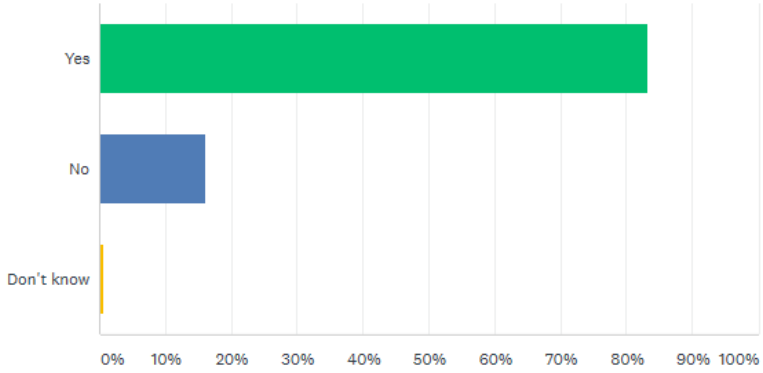
- the closure of Tantangara Road has been limited to a period of nine months, which does not fall over the busiest period of January to April and access has been facilitated for the remainder of the construction period;
- most impacts, once mitigation strategies are implemented, will be low;
- some long term impacts will be positive such as improved access and facilities at Lobs Hole (boat ramp) and improved access along Tantangara Road;
- there are other sites within KNP that are available for recreational users; while they might not replicate the experience exactly they could provide alternative experiences for the periods of restricted access; and
- displacement, both temporary and long term, is not expected to occur at high levels and will be to sites that generally have the capacity to absorb some extra visitation.

Therefore, on balance, the impact of the Project on recreational users is considered acceptable.

APPENDIX A – MAIN SURVEY RESULTS

Are you aware that Snowy Hydro is considering and planning for a pumped hydro scheme in Kosciuszko National Park?

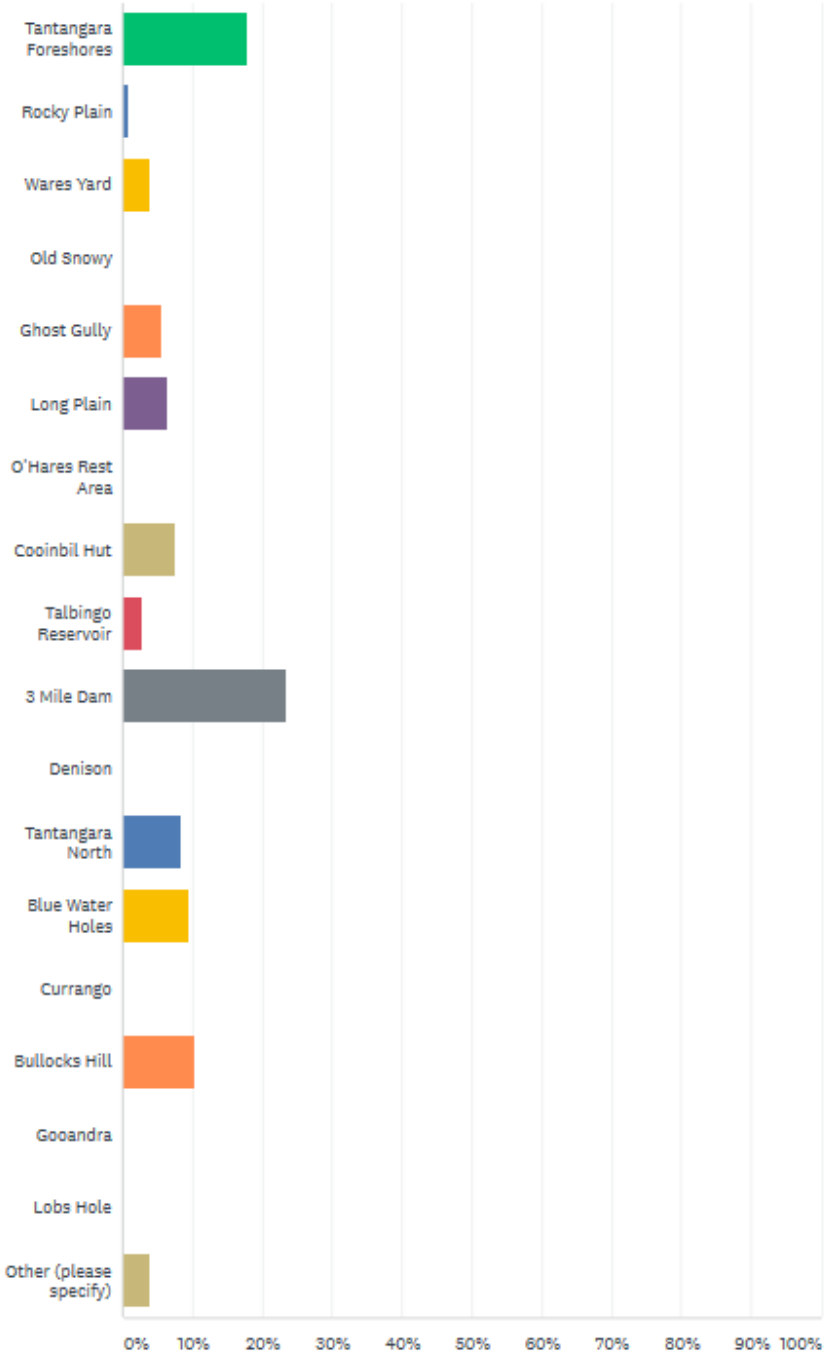
Answered: 281 Skipped: 1



ANSWER CHOICES	RESPONSES	
Yes	83.27%	234
No	16.01%	45
Don't know	0.71%	2
TOTAL		281

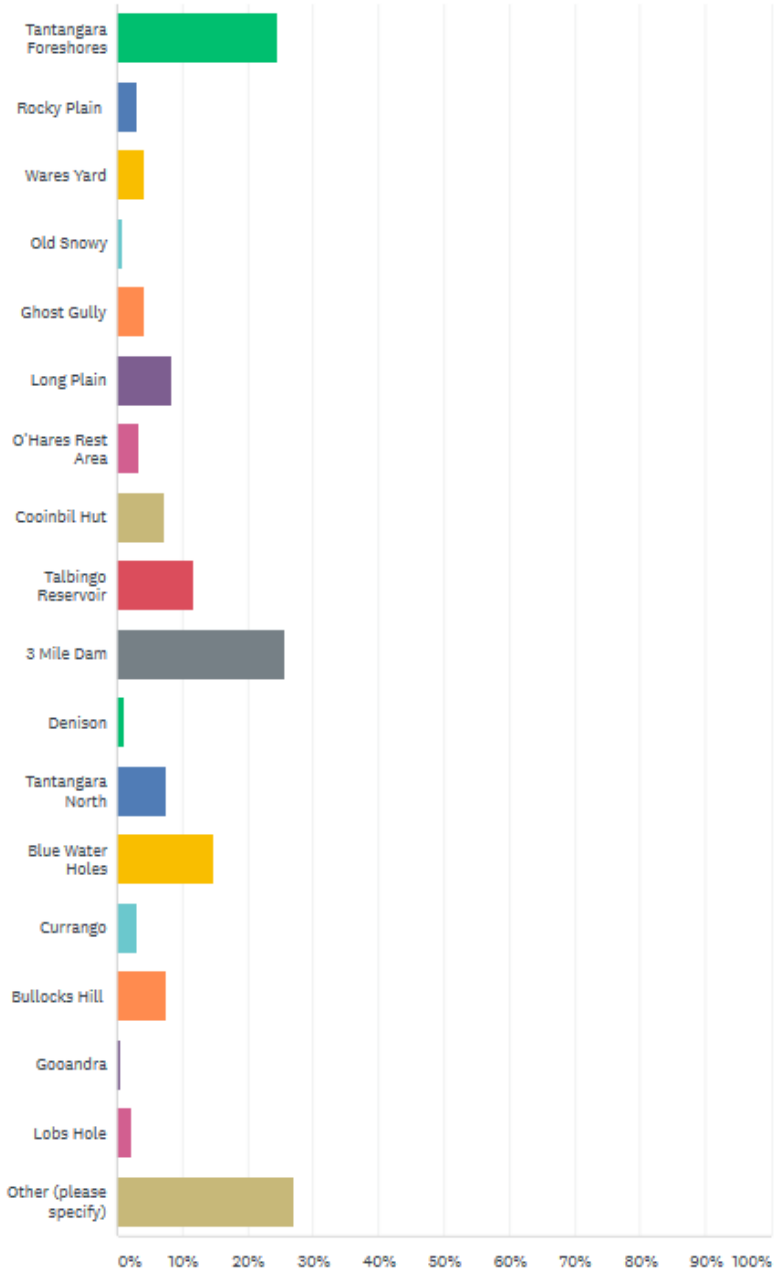
Where are you completing this survey?

Answered: 107 Skipped: 175



We are conducting this survey as part of the planning approval process for the 2.0 project and your responses will be used as part of the social impacts assessment for the project.Which sites are you visiting on this visit?

Answered: 266 Skipped: 16



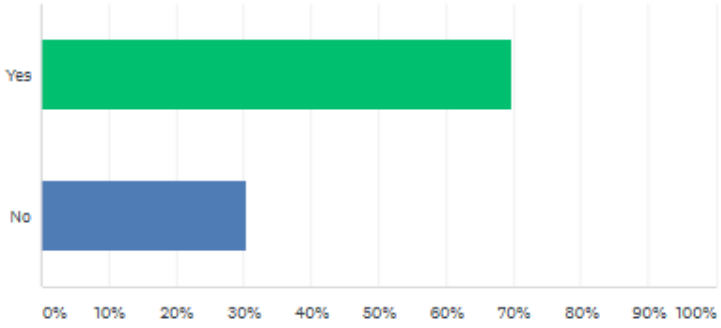
Could you please describe your trip in a few words, eg fishing at Tantangara, camping and touring to ....)

Answered: 268 Skipped: 14

- Popular words:
- Camping 31.34%
- Fishing 11.94%
- Camping and fishing 8.96%
- Tantangara 7.09%
- Horse riding 7.09%
- Touring 4.85%
- Swimming 4.85%

Is your visit to this site the only purpose for your group's trip?

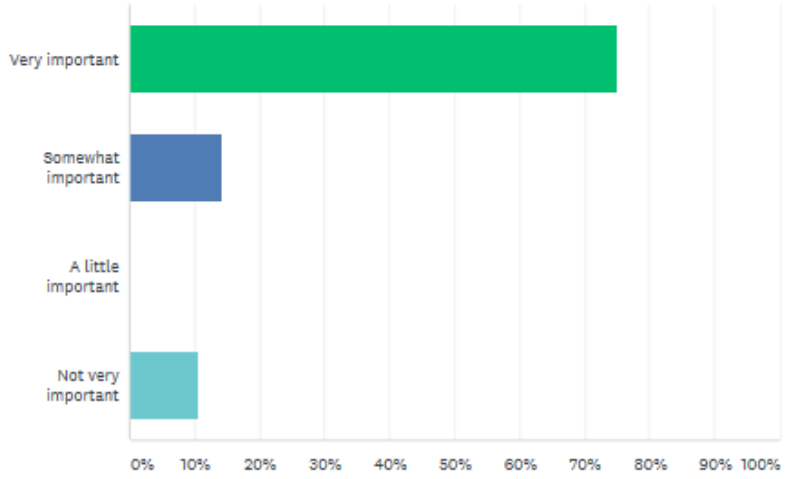
Answered: 274 Skipped: 8



ANSWER CHOICES	RESPONSES	
Yes	69.71%	191
No	30.29%	83
TOTAL		274

If a visit to this site was not the sole purpose of your group's trip, how important was it, relative to the other things your group is doing on this trip?

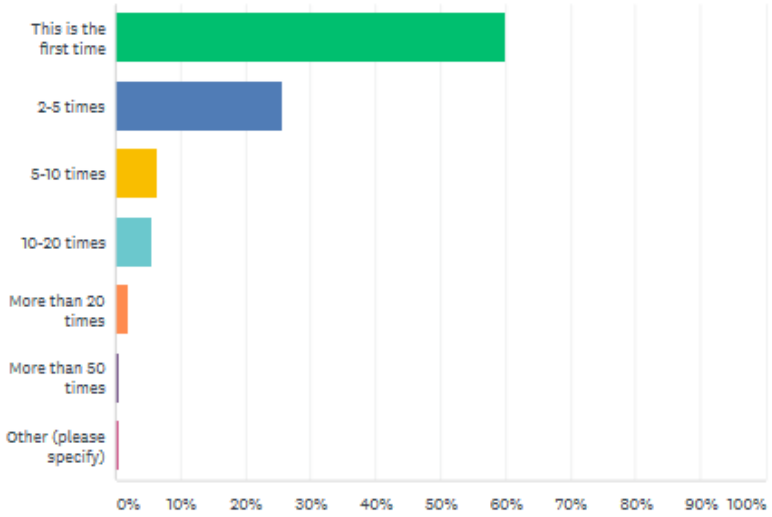
Answered: 28 Skipped: 254



ANSWER CHOICES	RESPONSES	
Very important	75.00%	21
Somewhat important	14.29%	4
A little important	0.00%	0
Not very important	10.71%	3
TOTAL		28

How many times have you visited this site (where you are now) in the last year?

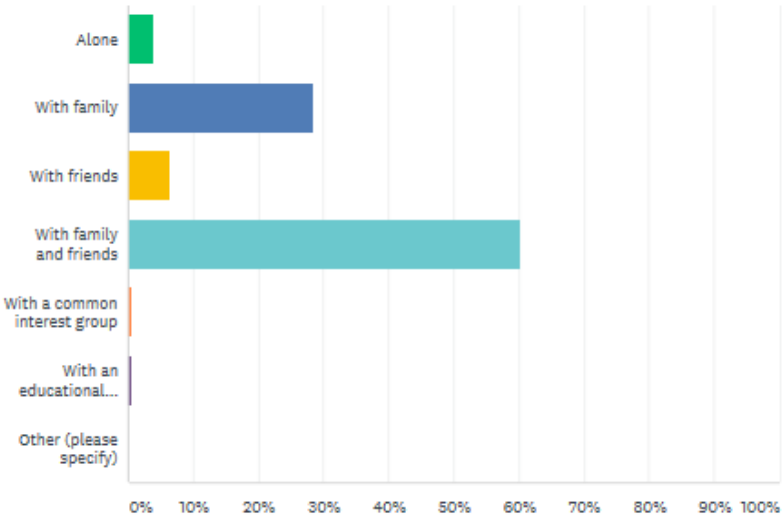
Answered: 272 Skipped: 10



ANSWER CHOICES		RESPONSES	
This is the first time		59.93%	163
2-5 times		25.74%	70
5-10 times		6.25%	17
10-20 times		5.51%	15
More than 20 times		1.84%	5
More than 50 times		0.37%	1
Other (please specify)	Responses	0.37%	1
TOTAL			272

Do you usually visit:

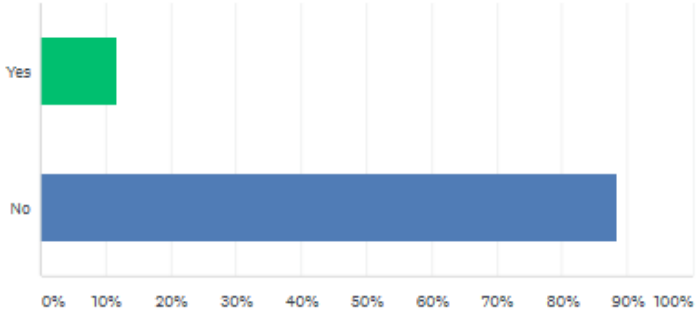
Answered: 277 Skipped: 5



ANSWER CHOICES		RESPONSES	
Alone		3.97%	11
With family		28.52%	79
With friends		6.50%	18
With family and friends		60.29%	167
With a common interest group		0.36%	1
With an educational group		0.36%	1
Other (please specify)	Responses	0.00%	0
TOTAL			277

Are you a member of a group or club that uses Kosciuszko National Park regularly?

Answered: 273 Skipped: 9



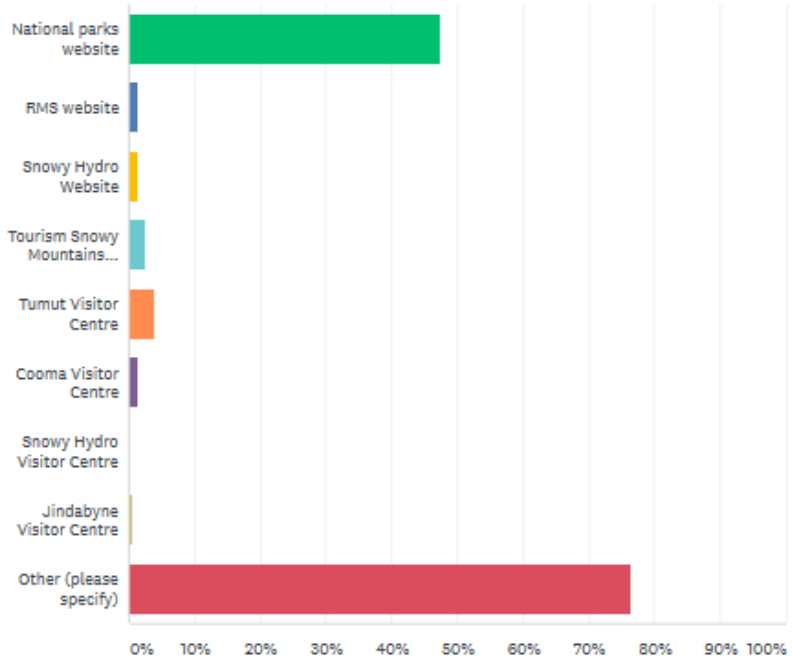
ANSWER CHOICES	RESPONSES	
Yes	11.72%	32
No	88.28%	241
TOTAL		273

Comments (30)

- Bush Users Group (9)
- Adaminaby Fishing Club (3)
- Motorhome Club of Australia (2)
- Thirroul Ski Club (1)
- Pathfinders (1)
- 4x4 Earth (online forum) (1)
- Sundowners (1)
- Commercial Club Albury (1)
- National Parks Association (1)
- ANU/RMIT caving group (1)
- Wagga Leagues Swimming Club 4WD group (1)
- Tumbarumba Ski Club (1)
- Sydney Fly Rodders Club (1)
- Blue Mountains 4WD Club (1)
- Kosciuszko Huts Association (1)
- Cochran Horse Treks (1)
- NZ Alpine Club (1)
- Avalanche (1)
- Bus tour (1)

Before you came on your trip, did you search for information about your trip anywhere? Please indicate any sources you used.

Answered: 156 Skipped: 126

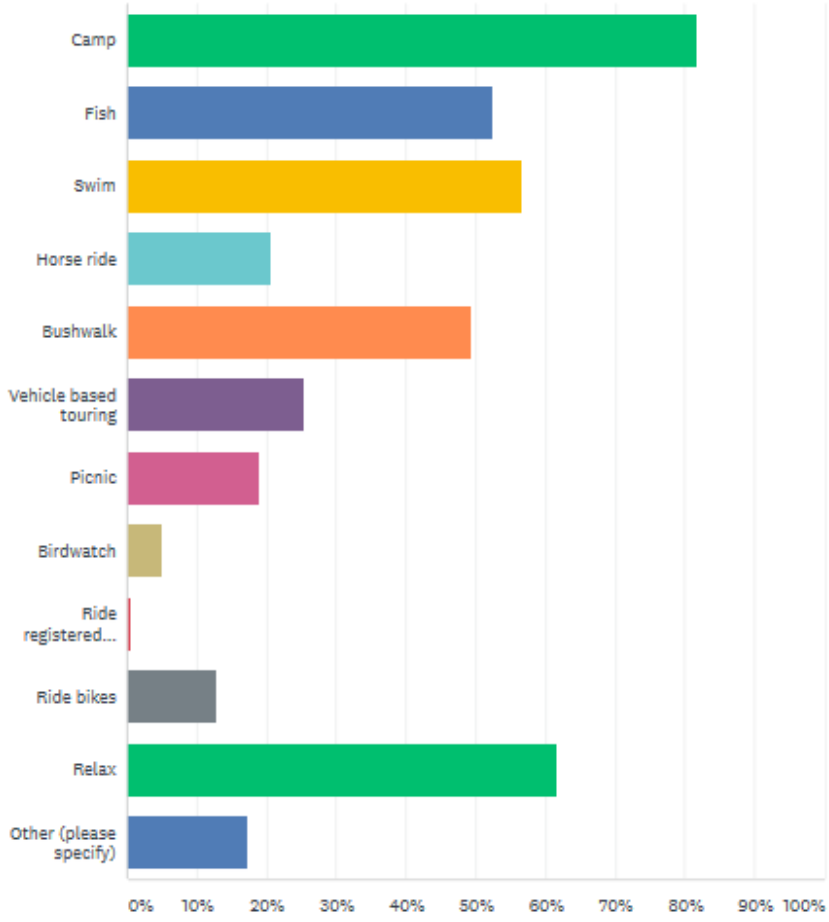


Other included:

- B.O.M (62)
- Willy Weather (12)
- Elders Weather (3)
- Weatherzone
- Google (11)
- Word of mouth/friends/family (6)
- Magazines/books (4)

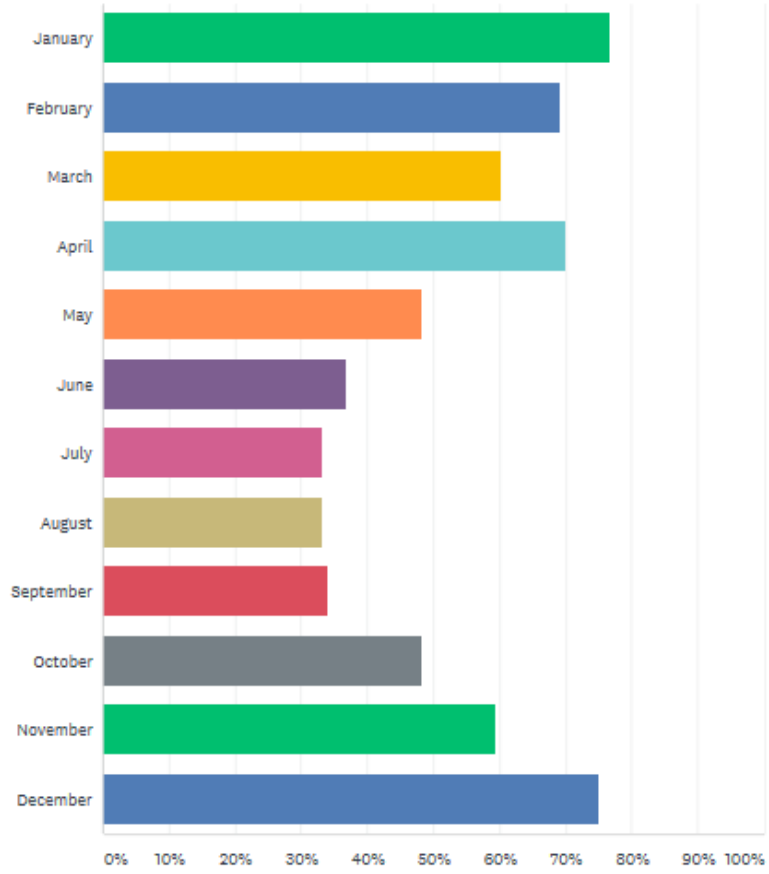
What do you do at or from this site? Please tick all that apply.

Answered: 280 Skipped: 2



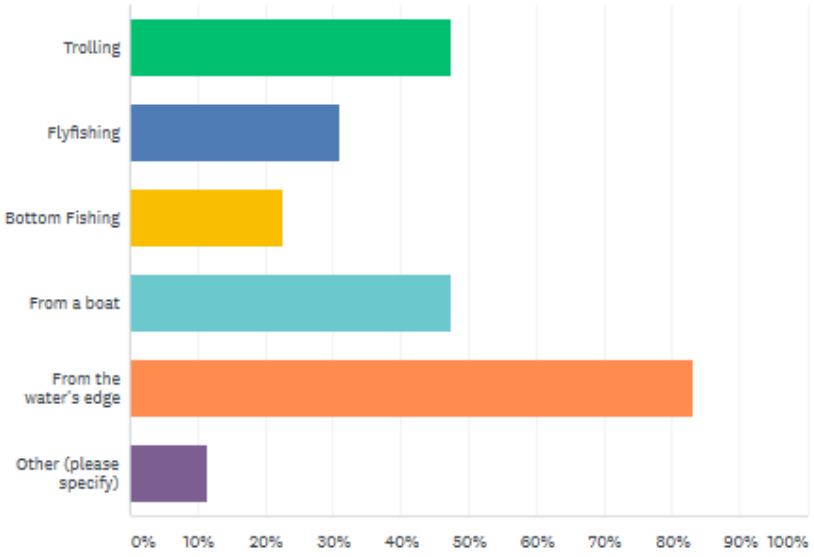
If you do not fish, skip to question 14.If you fish, what times of year do you fish? (tick all that apply)

Answered: 133 Skipped: 149



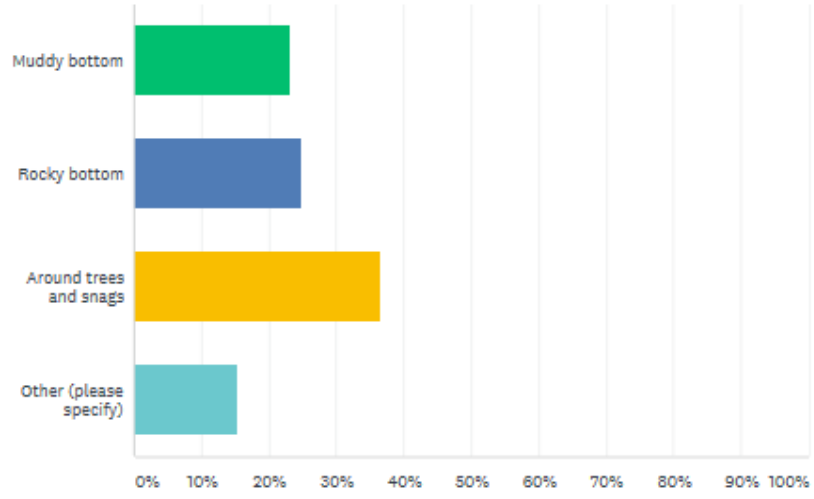
How do you fish? (tick all that apply)

Answered: 142 Skipped: 140



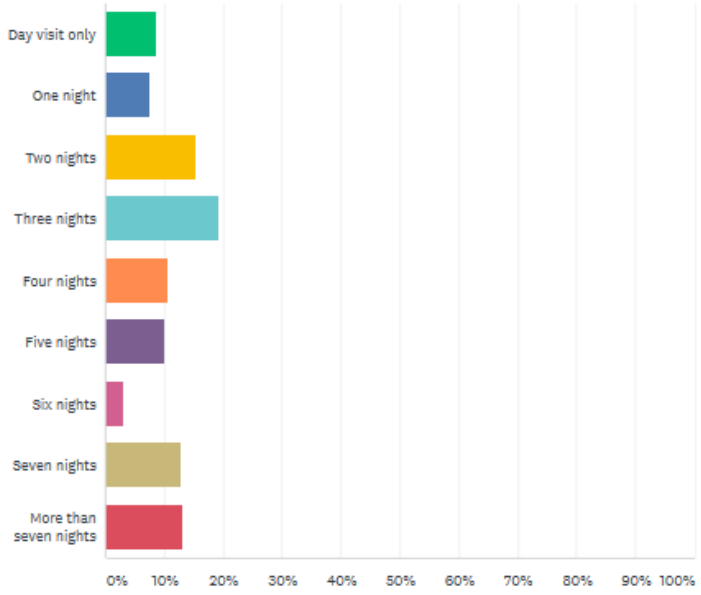
Which do you think is the best substrate for fishing?

Answered: 112 Skipped: 170



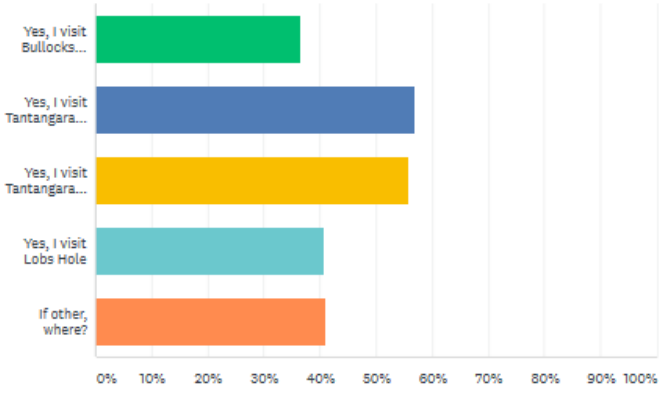
How long are you staying on this visit?

Answered: 280 Skipped: 2



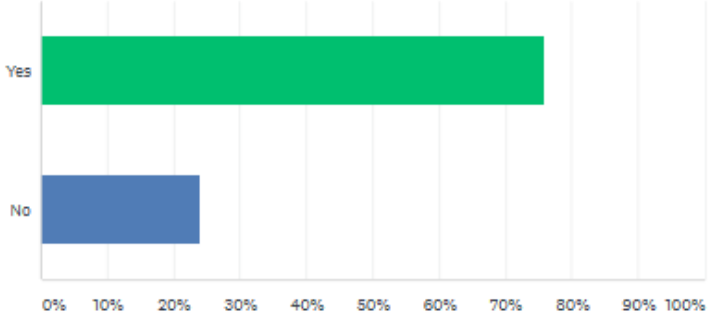
Do you visit other places in Kosciuszko National Park (on other visits) Tick all that apply

Answered: 195 Skipped: 87



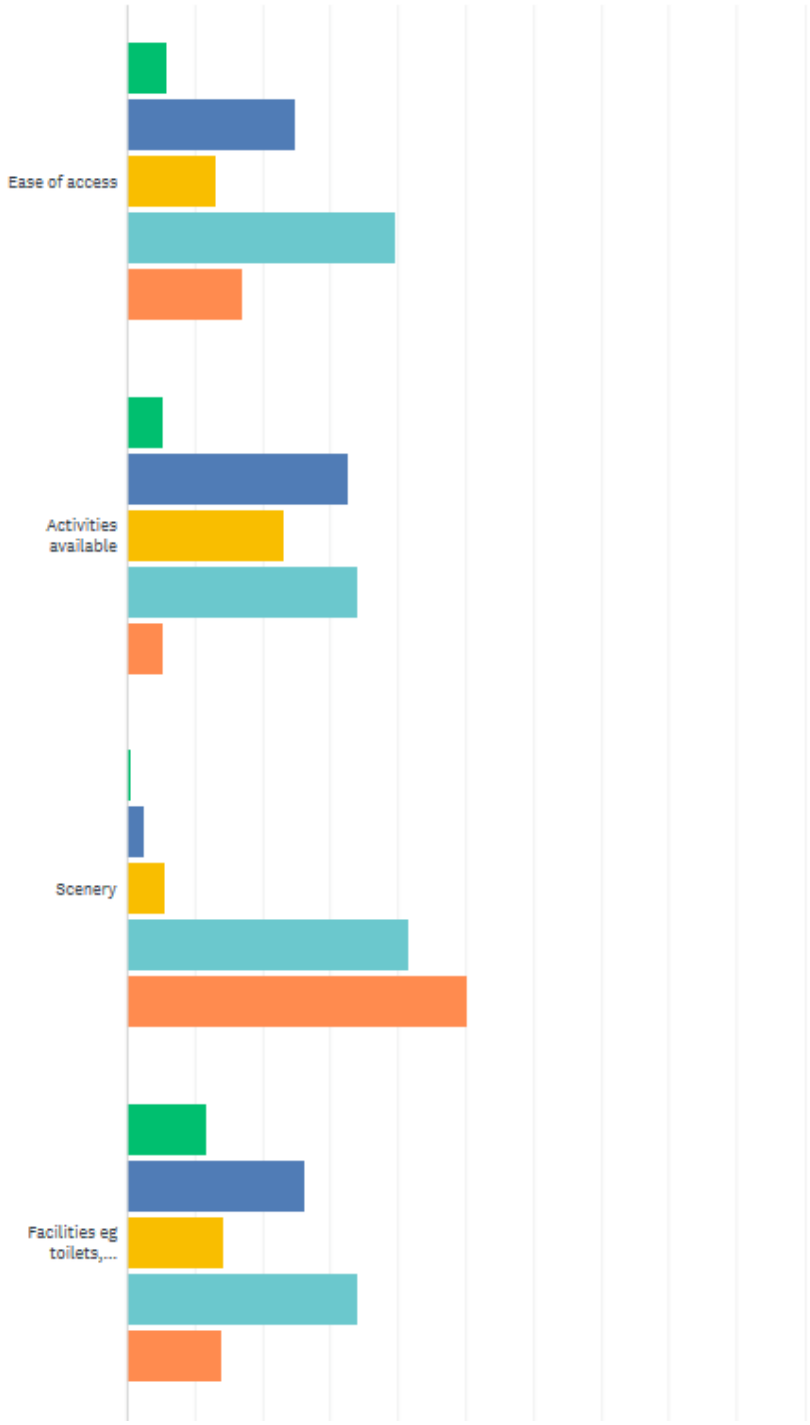
Do you recreate in places outside Kosciuszko National Park?

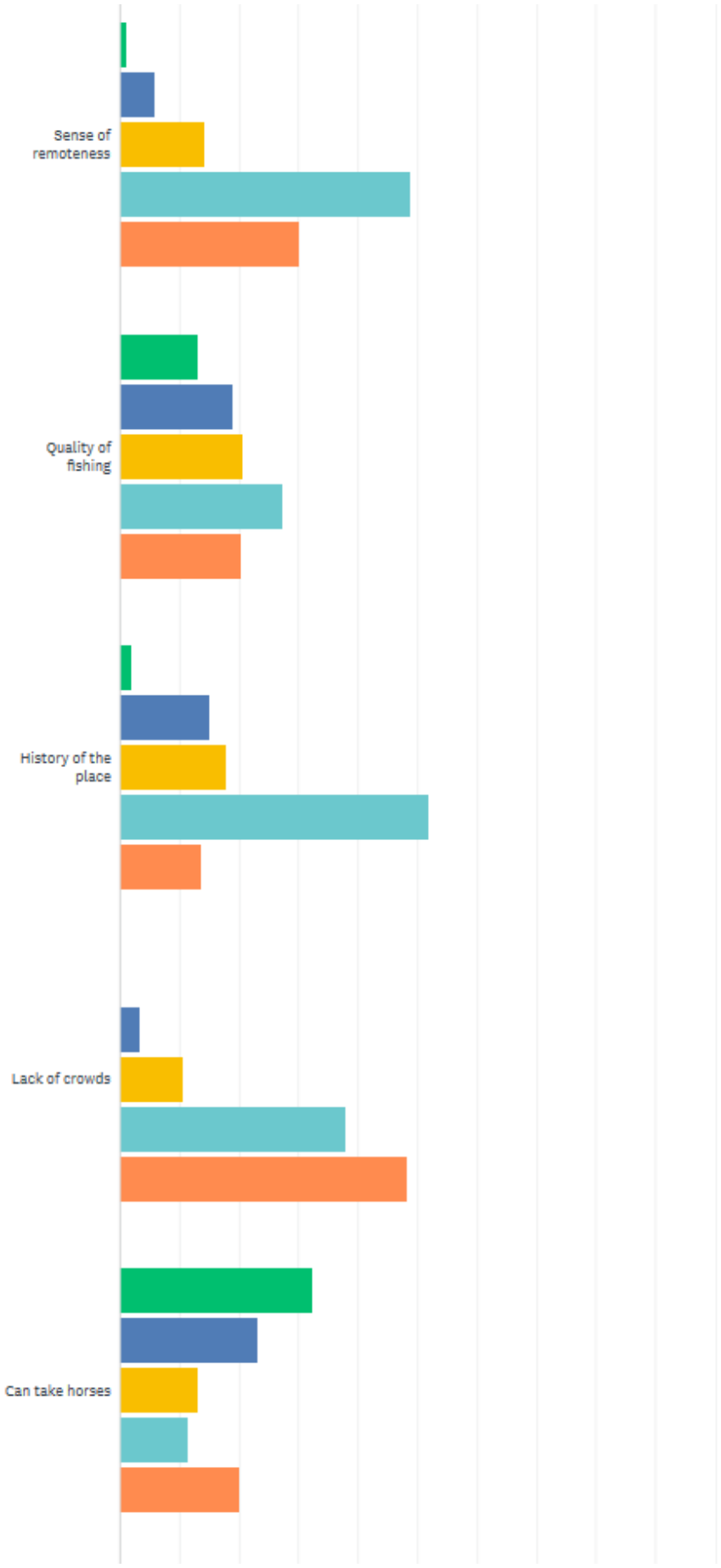
Answered: 266 Skipped: 16

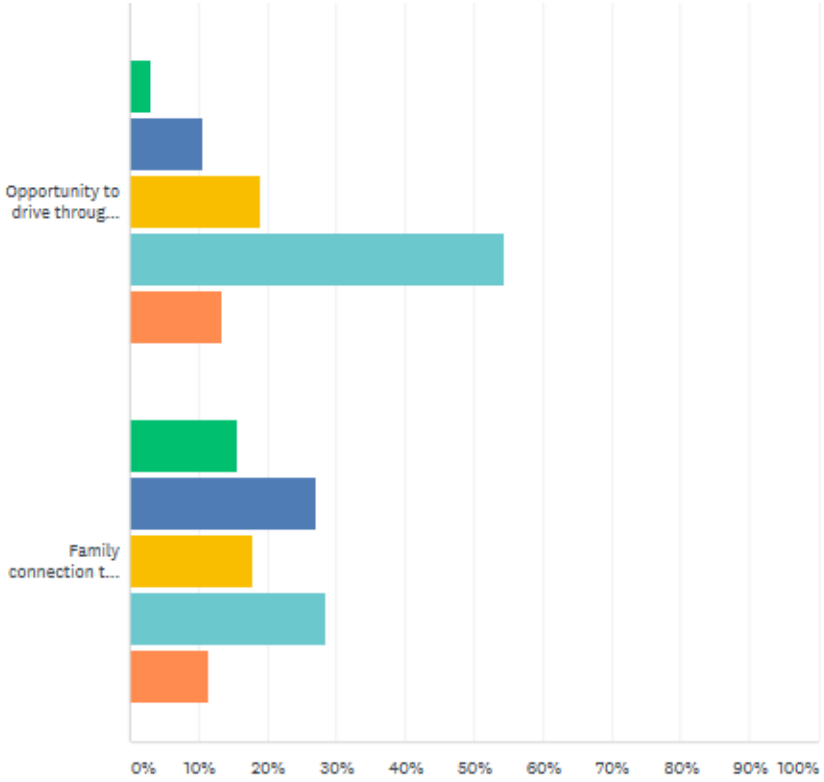


How important are the following to you when choosing a place to visit?

Answered: 277 Skipped: 5




Sense of remoteness
Quality of fishing
History of the place
Lack of crowds
Can take horses

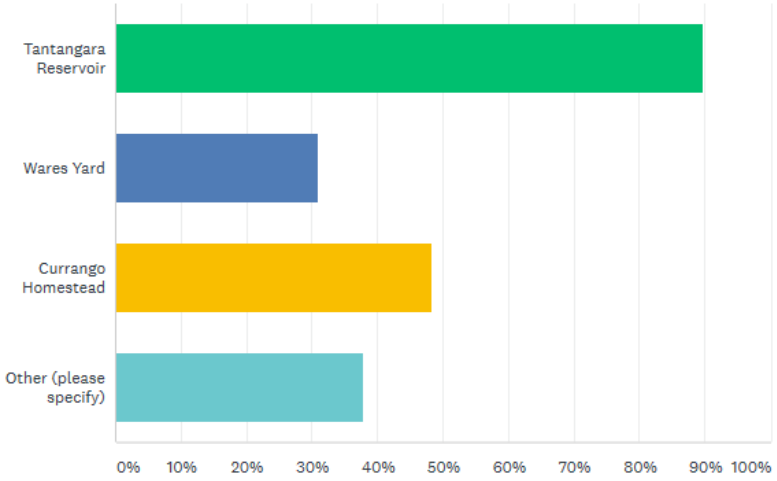

Opportunity to drive throug...
Family connection t...
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%

APPENDIX B - SNOWY 2.0 FOLLOW UP SURVEY RESULTS

Question 1

Do you visit any of the following areas? Tick all that apply

Answered: 29 Skipped: 4



ANSWER CHOICES		RESPONSES	
Tantangara Reservoir		89.66%	26
Wares Yard		31.03%	9
Currango Homestead		48.28%	14
Other (please specify)	Responses	37.93%	11

"Other" included Old Snowy Camp (3), fire trails between Bullocks Hill and Tantangara (2), Long Plain, Port Phillip Trail and Selwyn Snow Fields.

Question 2

If escorted access along Tantangara Road at limited times can be facilitated, what days and times would be best for you? Please indicate which days of the week and what times would be most suitable for entering and exiting, for example open Saturdays 7am-9am and Sundays 4-5pm.

Answered: 26 Skipped: 7

Ten respondents suggested windows of mornings and afternoons over weekends:

friday afternoon leave sunday midday
5pm-8pm Friday, 3pm-5pm Sunday
Sat 7-10am Sun 3-5pm
Friday 3pm onwards, Saturday and Sunday all day
Saturday 7-9
Saturday 6-10am Sunday 6-10am
Friday 4-5 pm Saturday's morning and afternoons Sunday's 11-12 noon On long weekends Monday's 11-12 noon
Saturday's and Sunday's 7am- 10am
Saturday morning
Saturday 7am to any time Sunday from 3pm onwards

Three respondents suggested weekend days but no time limitations:

Weekends
Sat and sun
weekends

Two respondents suggested morning and afternoon but not limited to weekends:

Usually enter area on day trips and would need access in morning and afternoon
Mornings and afternoons 6-9am and 3-6pm

Two respondents suggested a window in the middle of the day:

Any days between 12 and 4. Never know what days until a trip is planned.
Lunch time for entering & exit as we travel from 3 hours away

One respondent suggested school holidays with no time limitations:

School holidays

Five respondents suggested no limitations at all:

Access 365 days a year 24 hours a day would be best for my family and friends as we visit regularly at all times
All time of the day
I think limiting times is too problematic, particularly on the return exit journey, especially because fishing/camping at Tantangara can be heavily weather dependant. i.e. some days we might want to leave at noon, other days not till evening or even night. It would be better to have a temporary access, even if only single lane, to still utilise the reservoir.
24/7
Neither

Three respondents did not specify any preferences or were unclear:

Rarely use this road.
N/a
6am

Question 3.

If you chose not to camp at Wares Yard due to noise or other impacts, where would you camp instead?

Answered: 23 Skipped: 10

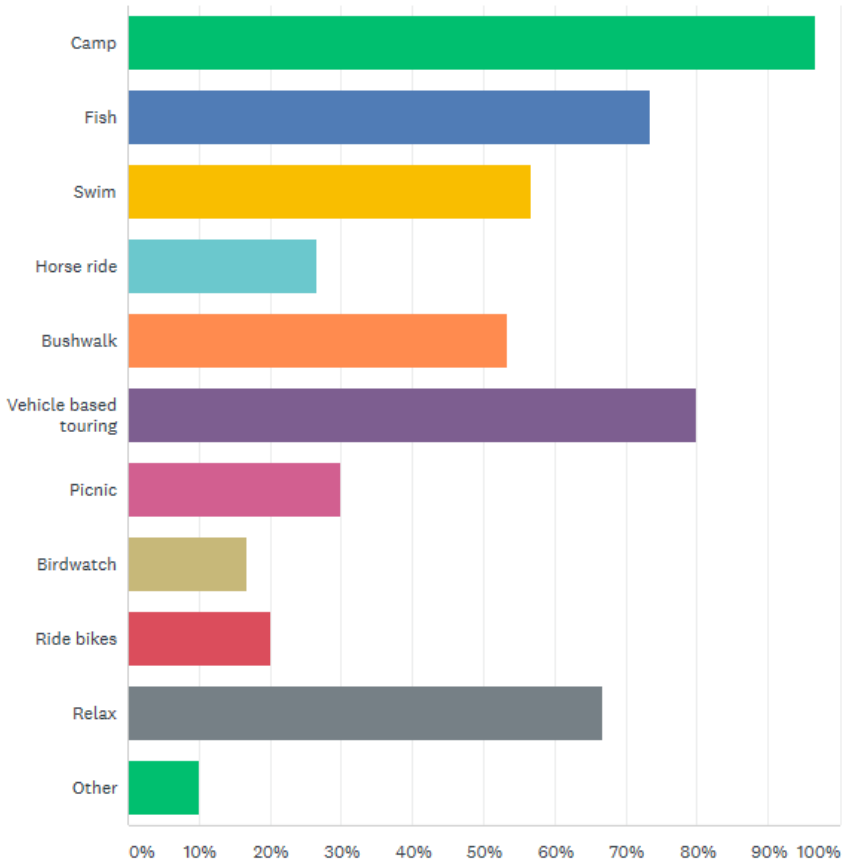
Wouldn't go at all
Not sure
Eucumbene (3) Wyangla
Bullocks, Rocky Plains.
Old Adaminaby
Talbingo (4) One comment re Talbingo noted: Would go to Talbingo but swimming and kayaking is an issue. Would be fine if Jounama pond were accessible for these activities, like it should be.
3 Mile Dam
Probably would not visit the Snowys even though it's my favourite place in Australia. Tantangara is my base camp
Back to Sue City
Long Plain
Blowering (2)
Other nearby water ways
Dont know
Island bend
N/A
Barlow Paddy's river
Unsure as it is the nicest of the alpine lakes
3 Mile (3) (although one noted not preferred) Via Long Plains Rd (also not preferred due to additional journey).
Razorback Hut in Victoria

Nowhere

Question 4

What activities do you do? Tick all that apply

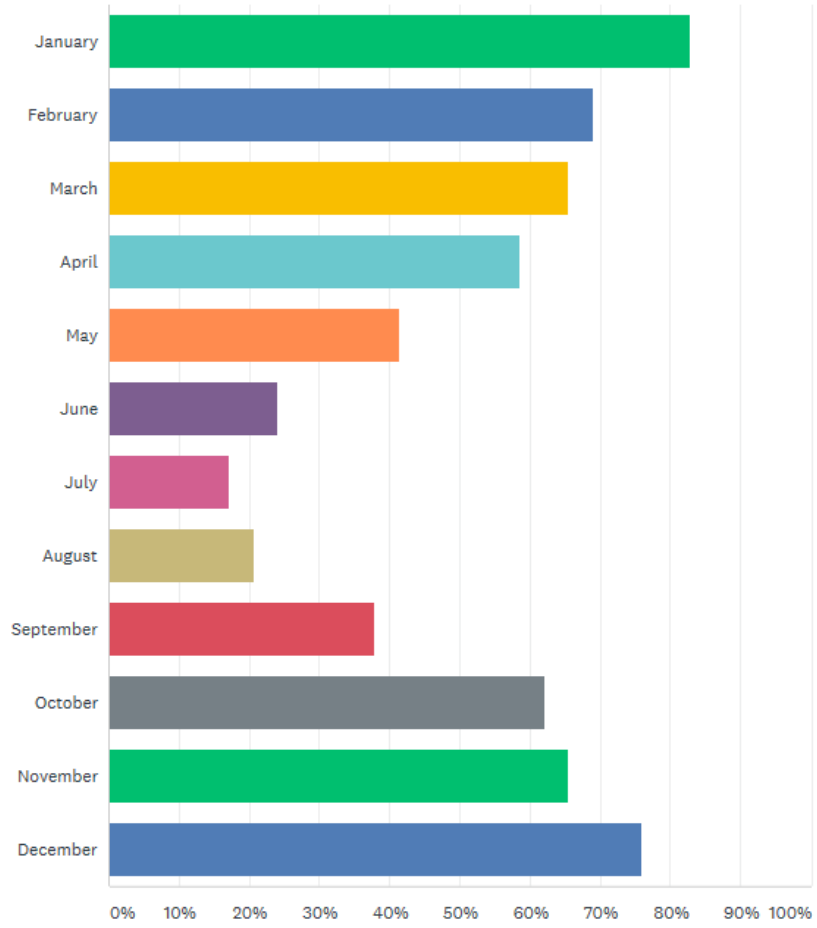
Answered: 30 Skipped: 3



Question 5.

What time of year do you visit? Tick all that apply

Answered: 29 Skipped: 4



Do you have any other comments about Snowy 2.0?

Answered: 18 Skipped: 15

Four comments critical of project:

Not happy with the whole project when coal is the best option
It should have been built between 2 reservoirs that 1. Are not currently being used in a pumped Hydro loop ie Talbingo reservoir and 2 should be between 2 reservoirs that are much closer together. Jounama to Talbingo is only 400 metres, Talbingo to Tantangara is 28 km!! Can that be economically viable and energy efficient?
I think a lot more detail needs to be released to the public. A 35km tunnel from Tantangara to Talbingo seems like a huge undertaking when there have been many other pumped hydro sites identified that will have a lot less impact. I also wonder about the amount of water available for this project as current conditions would seem to indicate that there will be a problem with rainfall and water capacity.
Communications and information availability failure resulting in rumour, Indecision and frustration.

Six comments expressing concerns relating to access:

I thought they were putting another road in? Would make sense as Tantangra is so well used. Fancy cutting off the boat ramp for 8 years!!!
Public access along Tantangara rd from highway to old snowy camp should remain open to public
Please remain access to tantangera reservoir
I mainly use Talbingo Dam so pleased dont close it
I am heavily in support of the scheme and upgrading it's capacity, and do not mind the temporary inconvenience (even if over several years) provided genuine effort is made to ensure we can still access the same camping locations as before, particularly on the western shoreline.
Just let people enjoy it without government interference

Two comments related to environmental issues:

Don’t dump dirt in the dam
Please put in the best possible controls to keep carp out of tantangra.

One comment supportive of project:

It's a huge project, good luck

One comment not related to the project:

please get rid of the horses that are causing erosion, large fly colonies and detract from a genuinely authentic Australian bush experience.

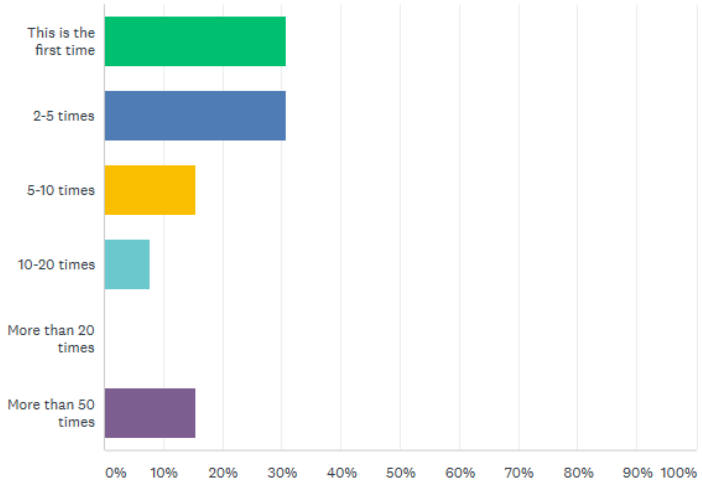
APPENDIX C - LOBS HOLE SURVEYS

Lobs Hole was scheduled to be closed during the period of the surveys and assessments for the commencement of the Preliminary Works. The effect of the Main Works on Lobs Hole users is the same as the Preliminary Works, except that the Main Works extend the duration of the period during which Lobs Hole cannot be accessed.

Thirteen groups were surveyed at Lobs Hole between December 1 2018 and January 26 2019.

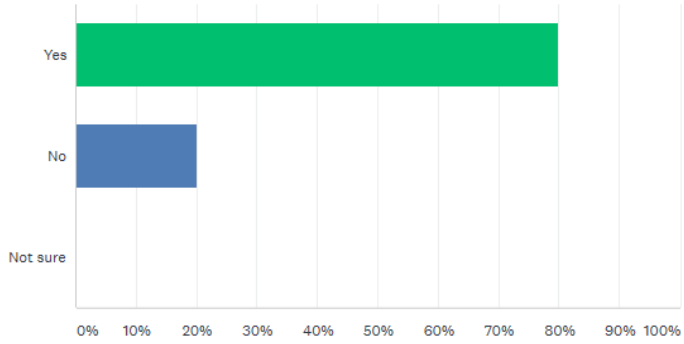
How many times have you visited Lobs Hole?

Answered: 13 Skipped: 0



Are you aware that Snowy Hydro is considering and planning for a pumped-hydro expansion of the Snowy Mountains Scheme?

Answered: 10 Skipped: 3



Awareness of the planned project was lower at Lobs Hole than elsewhere in the park. 20% of respondents were not aware that Snowy Hydro was planning for an expansion of the existing scheme.

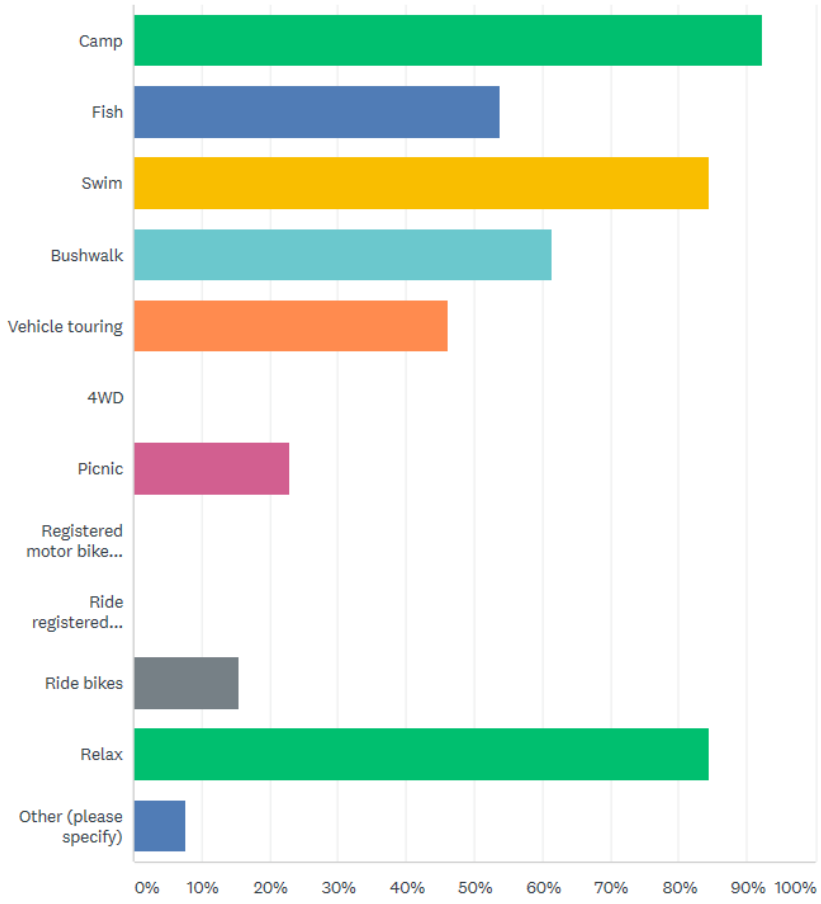
What is your postcode/usual country of residence?

Answered: 13 Skipped: 0

Visitors surveyed were all from NSW (8) or the ACT (5).

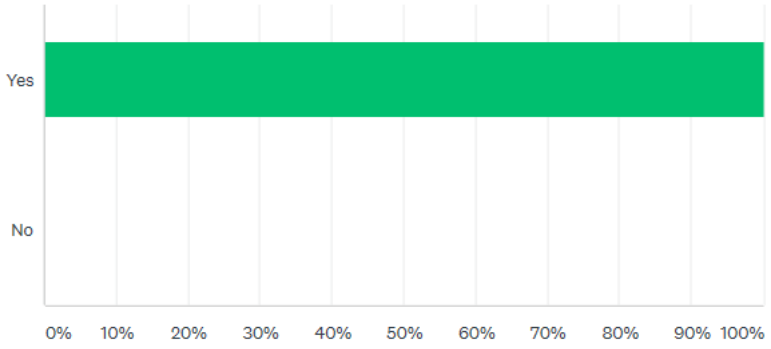
What do you do at Lob's Hole/Ravine? Please tick all that apply.

Answered: 13 Skipped: 0



Do you recreate in places outside Kosciuszko National Park?

Answered: 9 Skipped: 4



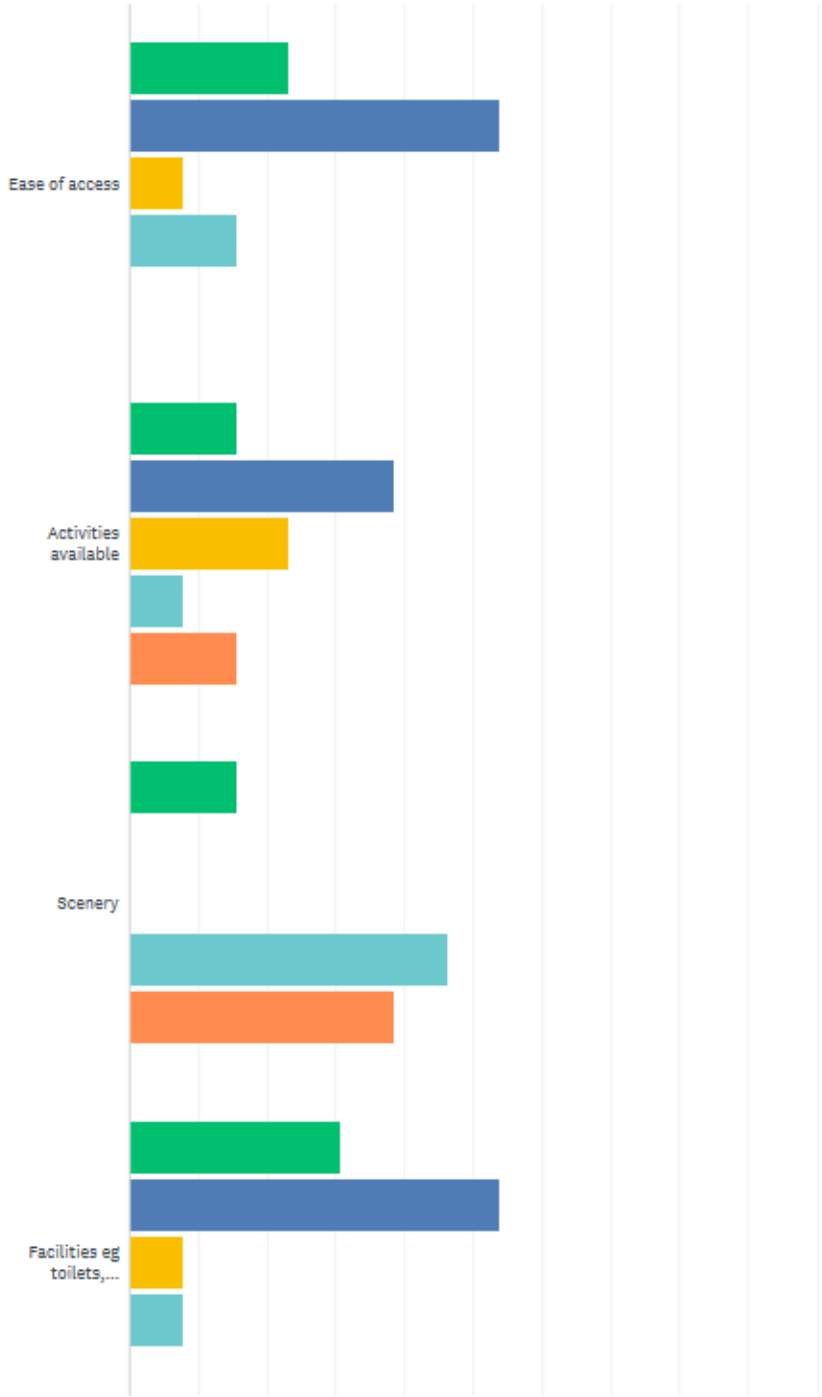
If you are unable to visit Lobs Hole for a period of time, where would you go instead?

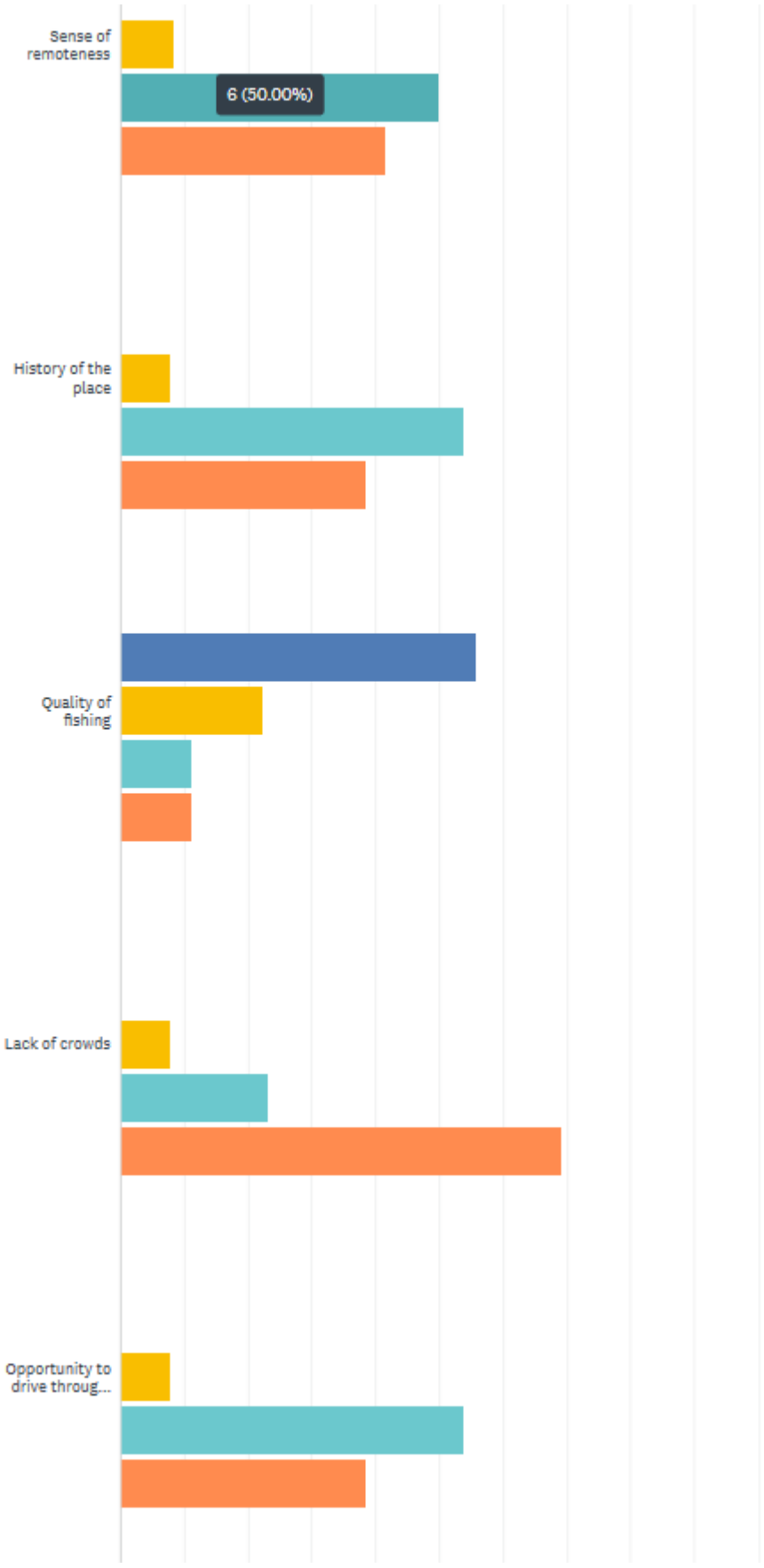
Answered: 10 Skipped: 3

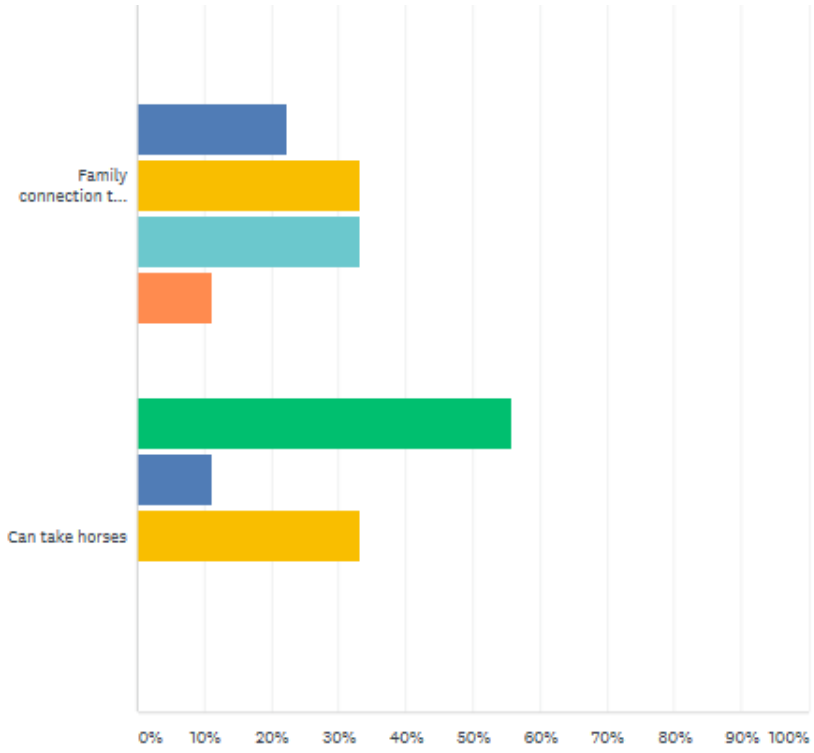
When asked where else they would recreate respondents nominated the Brindabellas (2), Victorian High Country (4) and other areas in KNP (Tantangara area (3) and Currango (2)), Pettys River Dam (1), Wyangla (1) and Wattagans (1).

How important are the following to you when choosing a place to visit?

Answered: 13 Skipped: 0




Sense of remoteness
6 (50.00%)
History of the place
Quality of fishing
Lack of crowds
Opportunity to drive throug...



Are there any aspects of Snowy 2.0 that concern you?

Answered: 12 Skipped: 1

Concerns generally related to access with 10 comments on this issue:

Areas of flood, reduced access

Access

Maintaining access to trails and areas

access

access to lobs hole

Lack of access

Maintaining access to trails and areas

closure

closure

closure of lobs hole. etc

Other concerns (2) related to the environment

Destroy the natural environment

Also the impact on the environment and the changes to the landscape

Do you have any other comments?

Answered: 3 Skipped: 10

- very upset about taking away access
- Are they building a village for the workers
- very disappointing to loose

APPENDIX D – VISITOR SURVEY NUMBERS

Blue Waterholes							
	Cars	Boats	Horse Trailers	Campers	Tents	Surveyed	Notes
	6						
	1				3		
	1						
	1						
	4			1			
	4			1	2		
	1				1		
				1			High side
				1			High side
					1		High side
	2			1	3		High side
	1				1		High side
	2				4		High side
	2						Coolamine Mountain Campground
	1			1			Coolamine Mountain Campground
	1				2		Coolamine Mountain Campground
	2			1	3		Coolamine Mountain Campground
	1			2	1		Coolamine Mountain Campground
	1			1			Coolamine Mountain Campground
TOTAL 28/12/19	**31**	**0**	**0**	**10**	**21**		
4/01/2019	1			1			
	2				7	y	
TOTAL 4/1/19	**3**	**0**	**0**	**1**	**7**		
	Cars	Boats	Horse Trailers	Campers	Tents	Surveyed	Notes
5/01/2019	5						
	2				2		
	1				1		
	2				1		
	1				1		
	1				1		
	1			1			
	2			1	3		
	3				7		
TOTAL 5/1/19	**18**	**0**	**0**	**2**	**16**		
11/01/2019	1				1		
	1				1		
	1						
	1						
	1						
	1						
	1						
	2						
	1				1		
	1				3		
	1				1		
TOTAL 11/1/19	**12**	**0**	**0**	**0**	**7**		
2/02/2019	1						
	1				1		
	1				1		
	1			1			
					2		
	1			1			
TOTAL 2/2/19	**5**	**0**	**0**	**2**	**4**		

23/02/2019	1						day tripper
	1						day tripper
	1						day tripper
	1						day tripper
	1						day tripper
	1						day tripper
	1				2		day tripper
	1						
	1			1			
	3				3	y	
	1						
	1						
					1		
	2			2			
	1				1	y	
	17	**0**	**0**	**3**	**7**		

Bullocks Hill						
	Cars	Boats	Horse Trail	Campers	Tents	Surveyed
28/12/2018	1		2		1	
28/12/2018	2		1		1	
28/12/2018			1			Y
28/12/2018			1			
28/12/2018	3		2			
28/12/2018						
TOTAL 28/12/19	**6**	**0**	**7**	**0**	**2**	
4/01/2019	1		1			n
	1					
	1		1			
TOTAL 4/1/19	**3**	**0**	**2**	**0**	**0**	
5/01/2019	3		1			n
	4	1	3	2		y
	2		1			n
TOTAL 5/1/19	**9**	**1**	**5**	**2**	**0**	
	1			1		
	2		1			
	2		2			
	1		1			
	4	1	2	1	2	
TOTAL 6/1/19	**10**	**1**	**6**	**2**	**2**	
12/01/2019	2					
	4		5		1	
	1			1		
	5		4	1	1	
TOTAL 12/1/19	**12**	**0**	**9**	**2**	**2**	
17/01/2019				1	1	
TOTAL 17/1/19	**0**	**0**	**0**	**1**	**1**	
2/02/2019	2		1			
	1					
TOTAL 2/2/19	**3**	**0**	**1**	**0**	**0**	

Cooinbil								
	Cars	Boats	Horse Trai	Campers	Tents	Surveyed		
29/12/2018	3		3		2			
	2		2	1	1			
			4		3			
Total 29/12/18	**5**	**0**	**9**	**1**	**6**	**0**		
4/01/2019	3		3		1			
	2		2					
	1		1					
	1			1				
TOTAL 4/1/19	**7**	**0**	**6**	**1**	**1**	**0**		
6/01/2019	1		1					
TOTAL 6/1/19	**1**	**0**	**1**	**0**	**0**	**0**		
11/01/2019	1		1					
	2		2					
	5		3					
	1		1					
	3							
	4		4					
	4		4					
TOTAL 11/1/19	**20**	**0**	**15**	**0**	**0**	**0**		
12/01/2019	6		6				y	
	5		5				y	
	3		2	1			n	surveyed last Easter
TOTAL 12/01/201	**14**	**0**	**13**	**1**	**0**	**0**		
17/01/2019			1					
			1					
			1					
	1		1					
			1					
	1		1		1			
TOTAL 17/1/19	**2**	**0**	**6**	**0**	**1**			
2/02/2019	1		1					
	2		2					
	2		2					
TOTAL 2/2/19	**5**	**0**	**5**	**0**	**0**			
23/02/2019	2		1					
	4		1		2			
	1		1					
	1		1					
	1		1					
	1		1		1			
TOTAL 23/2/19	**10**	**0**	**6**	**0**	**3**			

Currango								
	Cars	Boats	Horse Trai	Campers	Tents	Surveyed	Notes	
30/12/2018	0	0	0	0	0	n	people staying but	
							out when we arrived	
3/01/2019	1							
	3		2					
TOTAL 3/1/19	**4**	**0**	**2**	**0**	**0**			
21/01/2019	0	0	0	0	0	n	no guests staying	

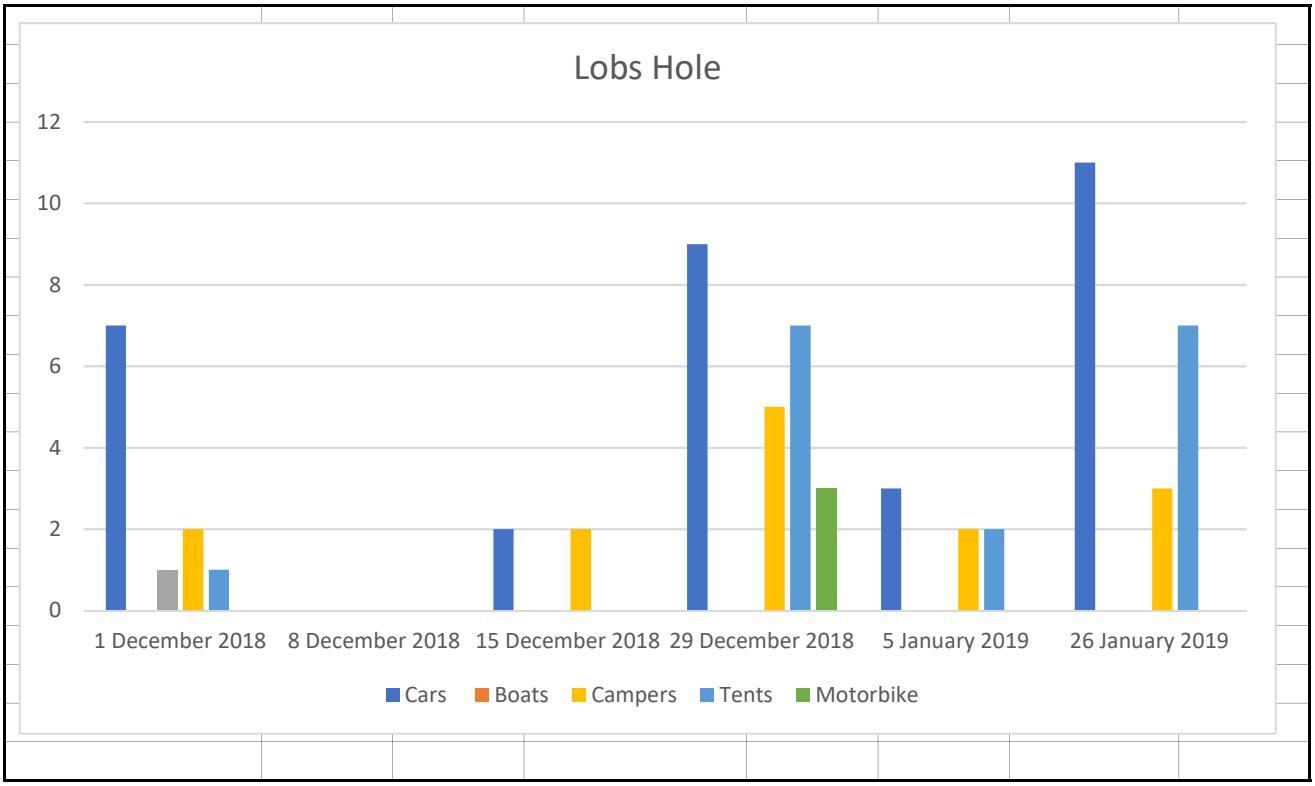
Ghosts Gully							
	Cars	Boats	Horse Trail	Campers	Tents	Surveyed	
8/12/2018	3		2	2	1	N	
TOTAL	**3**	**0**	**2**	**2**	**1**		
15/12/2018	1			1			
TOTAL	**1**	**0**	**0**	**1**	**0**		
29/12/2018	1		1				
	1		1				
	4		3	1	1		
	5	1	5	2	2		
TOTAL	**11**	**1**	**10**	**3**	**3**		
4/01/2019	1		1			y	
	3		2		2	n	
	4	1	2	1	1	n	
	1		1		1	y	
TOTAL	**9**	**1**	**6**	**1**	**4**		
5/01/2019	1		1		1	n	
	1			1		n	
TOTAL	**2**	**0**	**1**	**1**	**1**		
6/01/2019	0	0	0	0	0		
TOTAL 6/1/19	0	0	0	0	0	0	
11/01/2019	1	1					Police
TOTAL 11/1/19	1	1	0	0	0	0	
12/01/2019	2		2				
TOTAL 12/1/19	**2**	**0**	**2**	**0**	**0**		
17/01/2019	1		2				
TOTAL 17/1/19	**1**	**0**	**2**	**0**	**0**		
27/01/2019	1		1				
			1				
	1			1	1		
	1		1	1			
	1						
			1				
	1		1				
	1		1				

	1		1				
			1				
	1		1				
TOTAL 27/1/19	**8**	**0**	**9**	**2**	**1**		
2/02/2019				1			
TOTAL 2/2/19	**0**	**0**	**0**	**1**	**0**		

Long Plain							
	Cars	Boats	Horse Trailers	Campers	Tents		
29/09/2018	2	1	1				
TOTAL	**2**	**1**	**1**				
8/12/2018	1			1			
TOTAL	**1**	**0**	**0**	**1**			
15/12/2018	1			1			
	1	**0**	**0**	**1**			
29/12/2018	1		2		4		
	2		1		2		
	2			3	2		
	1				1		
	2			1	1		
TOTAL 29/12/18	**8**	**0**	**3**	**4**	**10**		
4/01/2019	4		3				
	1		1				
				1			
TOTAL 4/1/19	**5**	**0**	**4**	**1**			
5/01/2019	2				**2**		
	1			1			
	1			1			
	4		3				
TOTAL 5/1/19	**8**	**0**	**3**	**2**	**2**		
				1			
TOTAL	**26**	**0**	**14**	**7**	**4**		
6/01/2019	2						
	4		3				
TOTAL 6/1/19	**6**	**0**	**3**	**0**	**0**		
11/01/2019	4			3	1		
	1			1			
	1			1			
	1			1			
	1			2	2		
TOTAL 11/01/2019	**8**	**0**	**0**	**8**	**3**		
12/01/2019	1			1	1		
	1				1		
	4			3	1		
	1		1				
TOTAL 12/1/19	**7**	**0**	**1**	**4**	**3**		

17/01/2019	1			1	1		
				1	1		
TOTAL	**1**	**0**	**0**	**2**	**2**		
27/01/2019	1						
	1		1				
	1		1				
	1	1					
	1		1				
	1		1				
	1				1		
	1				1		
	3			2			
				1			
	1			1	1		
TOTAL 27/1/19	**12**	**1**	**4**	**4**	**3**		
2/02/2019			1				
				1			
				1			
	1			1			
	7						
TOTAL 2/2/19	**8**	**0**	**1**	**3**	**0**		

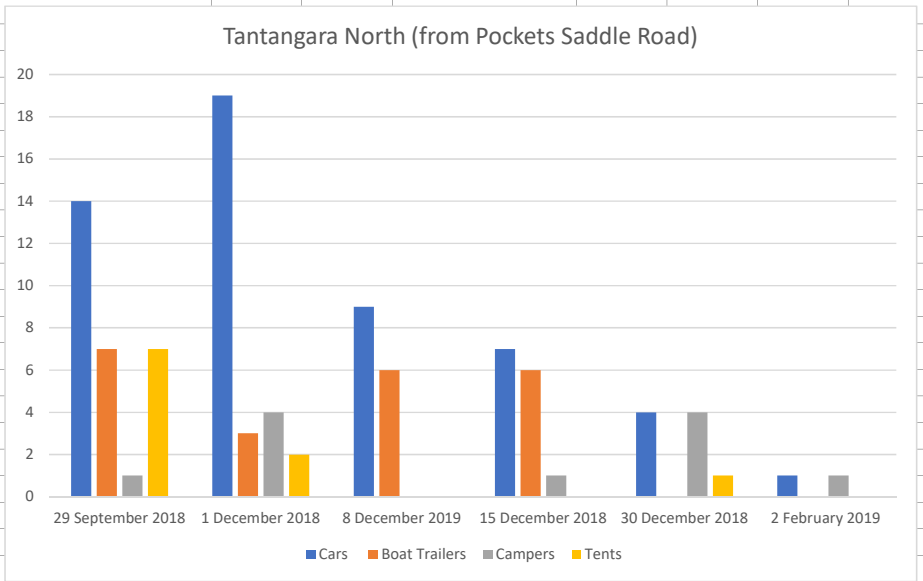
Lobs Hole							
	Cars	Boats	Horse Trailers	Campers	Tents		Surveyed
1/12/2018				1			Y
1/12/2018	1						n
1/12/2018	1						n
1/12/2018	1			1			y
1/12/2018	1				1		n
1/12/2018	1						n
1/12/2018	1						n
1/12/2018	1						n
TOTAL 1/12/18	**7**	**0**	**0**	**2**	**1**		
8/12/2018	0	0	0	0	0		
TOTAL 8/12/18	**0**	**0**	**0**	**0**	**0**		
15/12/2018	2			2			y
TOTAL 15/12/18	**2**	**0**	**0**	**2**	**0**		
	Cars	Boats	Horse Trailers	Campers	Tents	Motorcycle	
29/12/2018					2	3	y
	1			1			y
	2			1	1		y
	1			1			y
	2				2		y
	2			2			y
					2		n
	1						n
TOTAL 29/12/18	**9**	**0**	**0**	**5**	**7**	**3**	
5/01/2019	1			1	1		n
	1			1			y
	1				1		y
TOTAL 5/1/19	**3**	**0**	**0**	**2**	**2**	**0**	
26/01/2019	3						
	2			1			Y
	1			1	1		Y
	2			1	1		Y
	3				5		
TOTAL 26/1/19	**11**	**0**	**0**	**3**	**7**	**0**	


Lobs Hole
12
10
8
6
4
2
0
1 December 2018
8 December 2018
15 December 2018
29 December 2018
5 January 2019
26 January 2019
Cars
Boats
Campers
Tents
Motorbike

O'Hares Rest Area						
	Cars	Boats	Horse Trailers	Campers	Tents	
4/01/2019	1			1		
4/01/2019	1	1		1		
4/01/2019	1	1				
4/01/2019	1	1				
4/01/2019	1	1				
4/01/2019	4					
4/01/2019		1			1	
4/01/2019	2					
4/01/2019	1			1		
4/01/2019	1			1		
TOTAL 4/1/19	**13**	**5**	**0**	**4**	**1**	

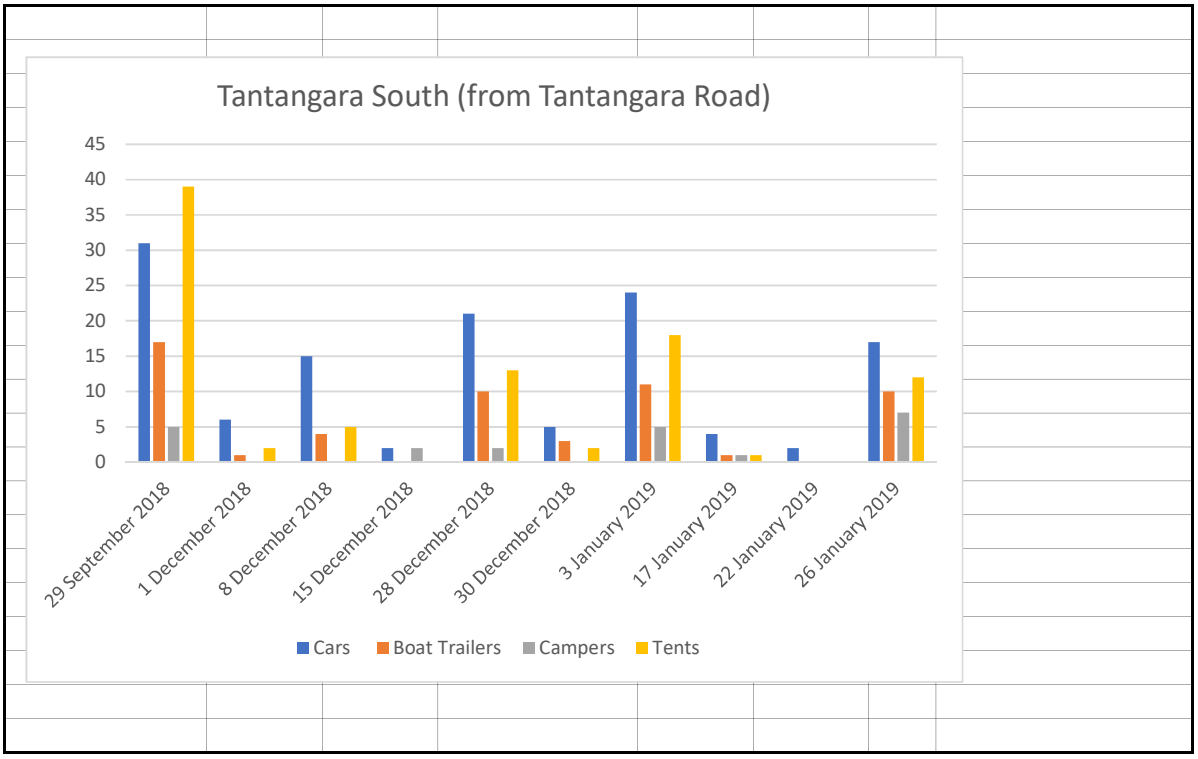
Old Snowy							
	Cars	Boats	Horse Trailers	Campers	Tents	Surveyed	
3/01/2019	3		1	2	6	y	
	8		3	2	3	y	
12/01/2019	1		1		5		
	1						
TOTAL 12/1/19	**2**	**0**	**1**	**0**	**5**		
17/01/2019			1			Cochranes	
TOTAL 17/1/19	**0**	**0**	**1**	**0**	**0**		
26/01/2019				1			
	1		6			Cochranes	
	5				4	Cochranes	
	2		2				
TOTAL 26/1/19	**8**	**0**	**8**	**1**	**4**		
2/02/2019	1		1				
	1		1				
	1		1				
	1		1				
	1		1				
	1		1				
	1		1	1			
	1		1		1		
	1			1	1		
	1		1				
	1		1				
			1			Cochranes	
TOTAL 2/2/19	**11**	**0**	**11**	**2**	**2**		

North East Tantangara access from Pockets Saddle Road							
	Cars	Boats	Horse Trailers	Campers	Tents	Surveyed	Notes
29/09/2018	2	1		1	3		
29/09/2018	2				2	Yes	
29/09/2018	1						
29/09/2018	4	3				Yes	
29/09/2018	2	2					
29/09/2018	1				1		
29/09/2018	2	1			1		
TOTAL 29/9/18	**14**	**7**		**1**	**7**		
1/12/2018	2						
1/12/2018	1					yes	
1/12/2018	1			1			
1/12/2018	2	1					
1/12/2018	1	1					
1/12/2018	2	1		1	2		
1/12/2018	2						
1/12/2018	2						
1/12/2018	2						
1/12/2018	2						
1/12/2018	2			2			
TOTAL 1/12/18	**19**	**3**	**0**	**4**	**2**		
8/12/2018	1	1					
8/12/2018	1	1					
8/12/2018	2						
8/12/2018	1	1					
8/12/2018	2	2					
8/12/2018	1	1					
8/12/2018	1						
TOTAL 8/12/18	**9**	**6**	**0**	**0**	**0**		
15/12/2018	1	1					
15/12/2018	1						
15/12/2018	2	2					
15/12/2018	1	1					
15/12/2018	1	1		1			
15/12/2018	1	1					
TOTAL 15/12/18	**7**	**6**	**0**	**1**			
30/12/2018	2			2			Remote part of east banks
	2			2	1		
TOTA 30/12/18	**4**	**0**	**0**	**4**	**1**		
2/02/2019	1			1			
TOTAL 2/2/19	**1**	**0**	**0**	**1**	**0**		



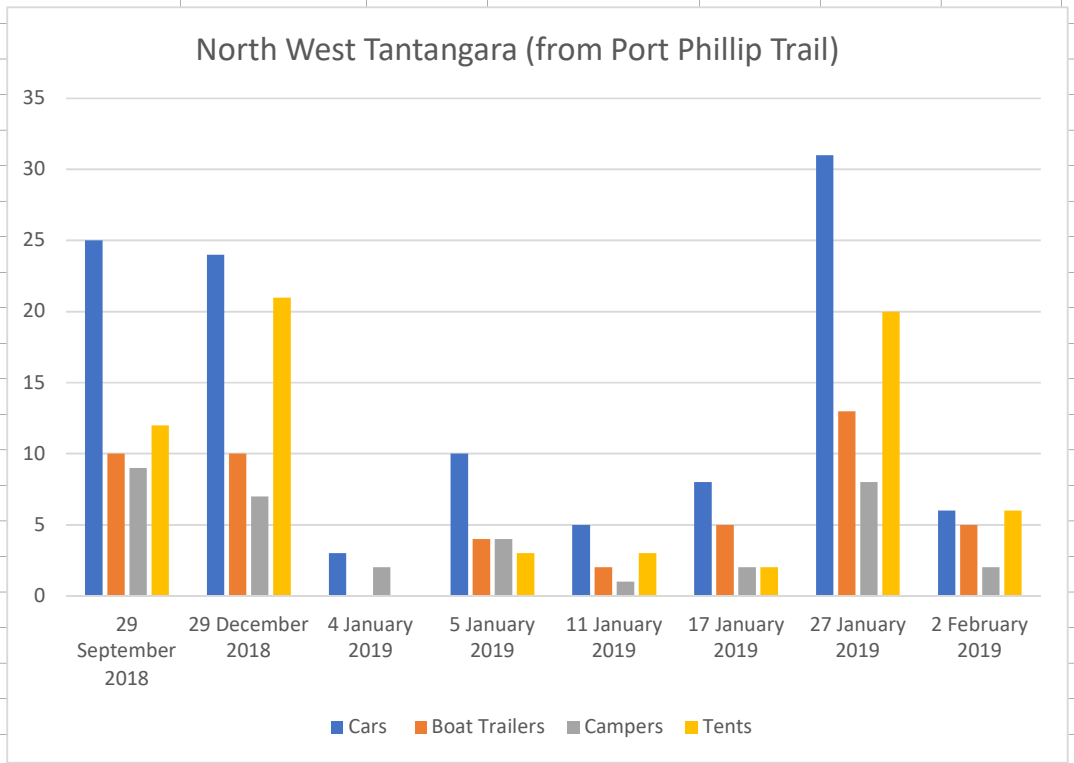
Tantangara South							
	Cars	Boats	Horse Trailers	Campers	Tents		
29/09/2018	3	2		2	1	yes	
29/09/2018	5				6		
29/09/2018	9	7			16		
29/09/2018				2			
29/09/2018				1			
29/09/2018	1				1		
29/09/2018	1						
29/09/2018	5	2			4		
29/09/2018	2	2			4		
29/09/2018	2	2			3		
29/09/2018	2	1			2		
29/09/2018	1	1			2		
TOTAL 29/9/18	**31**	**17**		**5**	**39**		
1/12/2018	2	1					
1/12/2018					1		
1/12/2018	1				1		
1/12/2018	1						
1/12/2018	2						
TOTAL 1/12/18	**6**	**1**	**0**	**0**	**2**		
8/12/2018	3				2		
8/12/2018	8	4					
8/12/2018	1				1		
8/12/2018	1						
8/12/2018	1				1		
8/12/2018	1				1		
TOTAL 8/12/18	**15**	**4**	**0**	**0**	**5**		
15/12/2018	1			1		n	
15/12/2018	1			1		n	
TOTAL 15/12/18	**2**	**0**	**0**	**2**	**0**		
28/12/2018	1	1		1		y	
28/12/2018	1				1	n	
28/12/2018	2	1			2	n	
28/12/2018	2	1			2	y	
28/12/2018	1					n	
28/12/2018	2				3	y	
28/12/2018	1	1				y	
28/12/2018	1				1	y	
28/12/2018	1	1			1	y	
28/12/2018	1	1				y	
28/12/2018	1				1	y	
28/12/2018	1			1		y	
28/12/2018	1	1			2	y	
28/12/2018	1	1				n	
28/12/2018	1	1				n	
28/12/2018	1	1				n	
28/12/2018	2						
TOTAL 28/12/18	**21**	**10**	**0**	**2**	**13**		

30/12/2018	2					y	
	1	1				n	
	1	1			2	n	
	1	1					
TOTAL 30/12/18	**5**	**3**	**0**	**0**	**2**		
3/01/2019	1	1			1		
3/01/2019	1						
3/01/2019	2				3		
3/01/2019	1				1		
3/01/2019	1			1			
3/01/2019	5	2		2	4		
3/01/2019	3	1			3		
3/01/2019	4	4		1	2		
3/01/2019	1	1					
3/01/2019	1	1					
3/01/2019	1	1			3		
3/01/2019	2				1		
3/01/2019	1			1			
TOTAL 3/1/19	**24**	**11**	**0**	**5**	**18**		
12/01/2019	3			2	1	N	Already surveyed
					2	N	
	2				1		
TOTAL 12/1/19	**5**	**0**	**0**	**2**	**4**		
	1						
	1						
17/01/2019	1	1			1		
	1			1			
TOTAL 17/1/19	**4**	**1**	**0**	**1**	**1**		
22/01/2019	2	0	0	0	0		
TOTAL	**2**	**0**	**0**	**0**	**0**		
26/01/2019	3	2		1	1	Y	
	1				1		
	1	1			3	N	surveyed at Christmas
	1	1					at Lobs Hole
	1	1					
	2	2		2			
	1			1			
	2	2		1	2		
	4	1		1	5		
	1			1			
TOTAL 26/1/19	**17**	**10**	**0**	**7**	**12**		


Tantangara South (from Tantangara Road)
45
40
35
30
25
20
15
10
5
0
29 September 2018
1 December 2018
8 December 2018
15 December 2018
28 December 2018
30 December 2018
3 January 2019
17 January 2019
22 January 2019
26 January 2019
Cars
Boat Trailers
Campers
Tents

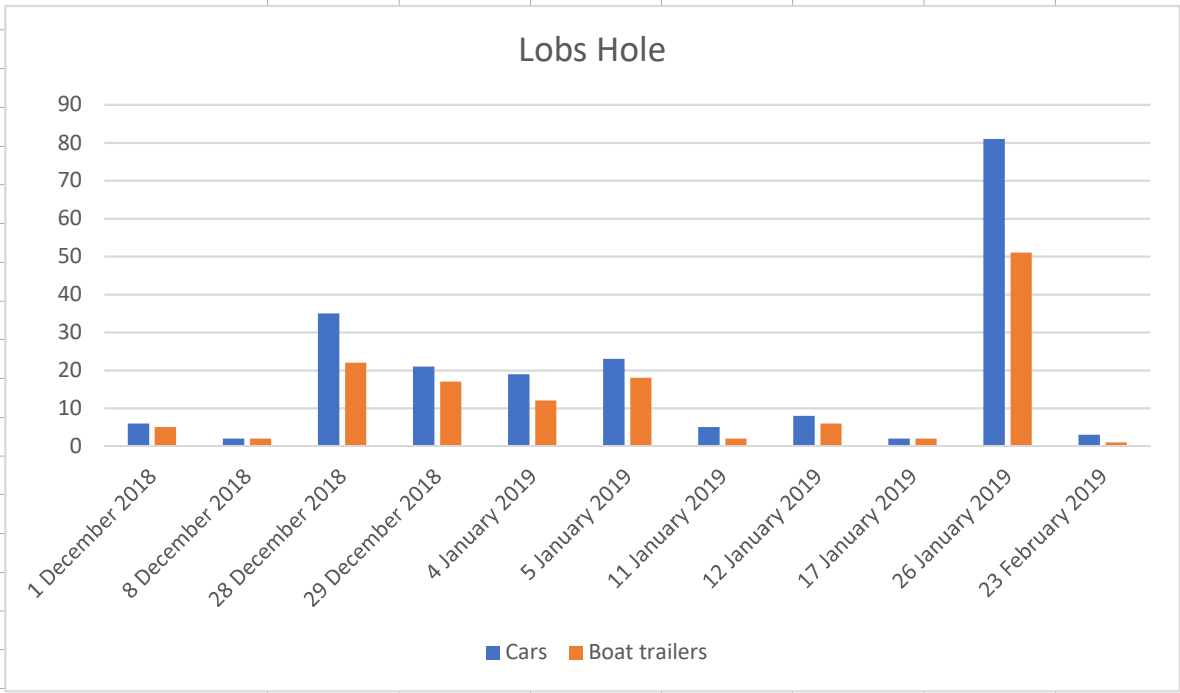
North West Tantangara							
	Cars	Boats	Horse Trailers	Campers	Tents	Surveyed	
29/09/2018	3	2			2		
	4	3		1	2		
	6	2		3			
	2	1		1			
	1			1			
	4	2		2	2		
	5			1	6		
TOTAL 29/9/18	**25**	**10**	**0**	**9**	**12**		
29/12/2018	1				1		
	2	1			2		
		1		1			
	1				1		
	1	1			1		
	2	1			3		
	2	2			6		
	2			2	1		
	1				1		
	2				2		
	2	1		1	1		
	5	3			1		
	3			3	1		
TOTAL 29/9/18	**24**	**10**	**0**	**7**	**21**		
4/01/2019	2			1		y	
	1			1		n	
TOTAL 4/1/19	**3**	**0**	**0**	**2**	**0**		
5/01/2019	3			1	1		
	2	2					
	1			1			
	3	2		1	2		
	1			1			
5/01/2019	**10**	**4**	**0**	**4**	**3**		
11/01/2019	1			1	1		
	1						
	1	1					
	1	1					
	1				2		
TOTAL 11/1/19	**5**	**2**	**0**	**1**	**3**		

17/01/2019	1	1					
	1	1					
	1						
	1						
		1		1	1		
	1						
	1	1			1		
	2	1		1			
TOTAL 17/1/19	**8**	**5**	**0**	**2**	**2**		
27/01/2019	2	1					
	3	1		1	1		
	3	1		2			
				1			
	3	1			2		
	1						
	2	2			2		
	4	1		1	4		
				1	4		
	4	1					
	4	2			3		
	3	2		1	3		
	1	1			1		
	1			1			
TOTAL 27/1/19	**31**	**13**	**0**	**8**	**20**		
2/02/2019	1	1			2		
	1	1		1			
	3	2			3		
	1	1			1		
				1			
TOTAL 2/2/19	**6**	**5**	**0**	**2**	**6**		



Talbingo Boat Ramp							
	Cars	Boats		Campers	Tents	surveyed	
1/12/2018	1	1					
1/12/2018	1	1					
1/12/2018	1	1					
1/12/2018	1	1					
1/12/2018	1	1					
1/12/2018	1						
TOTAL 1/12/18	**6**	**5**					
8/12/2018	1	1					
	1	1					
TOTAL 8/12/18	**2**	**2**					
28/12/2018	35	22					
TOTAL 28/12/18	35	22					
29/12/2018	21	17					
TOTAL 29/12/18	**21**	**17**					
4/1/19 5:20pm	12	12					
	7						
TOTAL 4/1/19	**19**	**12**	**0**				
5/01/2019 4pm	18	18					
	5						
TOTAL 5/1/19	**23**	**18**	**0**	**0**	**0**		
11/1/19 4pm	1	1					
	1						
	2						
	1	1					
TOTAL 11/1/19	**5**	**2**	**0**	**0**	**0**		
12/1/19 6am-8am	1	1				n	already there
	1	1				n	already there
	1	1				y	
	1	1				n	didn't want to
	1					n	didn't want to
	1	1				n	
	1	1					
	1						
TOTAL	**8**	**6**	**0**	**0**	**0**		
17/01/2019	1	1					
	1	1					
TOTAL 17/1/19	**2**	**2**					

26/01/2019	81	51					
TOTAL 26/1/19	**81**	**51**	**0**	**0**	**0**		
23/02/2019	1	1					
	1					n	
	1					n	
TOTAL 23/2/19	**3**	**1**	**0**	**0**	**0**		



	Cars	Boats	Horse Floa	Campers	Tents	surveyed		
29/12/2018	2				2			
	1			1				
				1				
	1			1				
	1				2			
	2			2	2			
	3			2	3			
	2				1			
	1			1				
					3			
	2			3				
				1				
	1			1				
	1			1				
	1			1				
				1				
				1				
				1				
	1			1				
	1			1	1			
	5			2	2			
				1				
	1			1				
TOTAL 29/12/18	**26**	**0**	**0**	**24**	**16**			
3/01/2019	1			2		n		
	2			1		y		
	2			2		y		
	1			1		y		
	1			1		n		
	1			1		y		
	1			1		y		
	1			1		y		
	1			1		n		
	1			1		y		
	1			1		n		
					2	n		
	1				1			
TOTAL 3/1/19	**14**	**0**	**0**	**13**	**3**			

4/01/2019	1					y		
	1					y		
	1			1	1	y		
	1				1	y		
	1				1	y		
	3			2	2	y		
	2			2		y		
	1			1		y		
	2			2		y		
	2				1	y		
	1			1		y		
	1			1		y		
	1			1		y		
	1				1	n		
	1				1	n		
	1				1	n		
TOTAL 4/1/19	**21**	**0**	**0**	**11**	**9**			
12/01/2019	1					n		
MAIN				1		y		
					1	n		
					4	n		
				1		y		
				1		n		
				1		n		
	1			1		n	previously surveyed	
	3				1	y		
				1		y		
					1	n		
	1			1		y		
				1		n		
	1			1		y		
SELWYN SIDE	1			1		y		
					1	n		
	1			1		n		
					1	n		
					3	n		
	1				1	n		
27/01/2019	2							
	1			1	1			
	1			1	1			
	1			1				
TOTAL 27/1/19	**5**	**0**	**0**	**3**	**2**			

Rocky Plain							
	Cars	Boats	Horse Floa	Campers	Tents	surveyed	
30/12/2018	11		7	2	2	y	
	4			2	8	y	
	9		2	2	2	y	
	3		3		1	n	
TOTAL 30/12/18	**27**	**0**	**12**	**6**	**13**		
12/01/2019				1	8	commercial operator	
TOTAL 12/1/19	**0**	**0**	**0**	**1**	**8**		
22/01/2019	0	0	0	0	0		
TOTAL	**0**	**0**	**0**	**0**	**0**		
26/01/2019	3						
	2		2		1		
	4			1	7	Reynella	
	1		1				
	1		1				
	1		2				
TOTAL 26/1/19	**12**	**0**	**6**	**1**	**8**		

Yarranbobilly Caves							
	Cars	Boats	Horse Trail	Campers	Tents	Surveyed	Notes
28/12/2018	2					y	outside visitor centre
	1					y	outside visitor centre
	3					n	outside visitor centre
	1					n	outside visitor centre
	2					y	outside visitor centre
	2					y	outside visitor centre
	2					y	outside visitor centre
	33						bottom car park
	29						thermal pool car park
	7						guest house car park
TOTAL 28/12/18	**82**	**0**		**0**	**0**		
							NOTES: 7 in guest house car park, 13 outside visitor centre, 33 in bottom car park, 29 at thermal pool - all
5/01/2019	1					y	
	1					n	
	4					n	
	12					n	
	4					n	
	16					y	
	2					y	
	20					n	
	60	**0**	**0**	**0**	**0**		
6/01/2019	3					n	
	7					n	
	3					n	
	1					y	
	3						
	1					y	
	2						
	20	**0**	**0**	**0**	**0**		
12/01/2019	1						
	4						
	9						
	5						
	8						
	8						
Total 12/1/19	**35**	**0**	**0**	**0**	**0**		

Yarrangobilly Village								
		Cars	Boats	Horse Floats	Campers	Tents	surveyed	
	5/01/2019	1			1		y	
		1				1	n	
		1			1		y	
		1			1			
		1			1		n	
		2					y	
	TOTAL 5/1/19	**7**	**0**	**0**	**4**	**1**		
	12/01/2019				1		n	
					1		n	
		1			1		n	
		1				1	n	
	TOTAL 12/1/19	**2**	**0**	**0**	**3**	**1**		
	21/01/2019	9			9			
		5			5			
	TOTAL 21/1/19	**14**	**0**	**0**	**14**	**0**		
	23/02/2019	1				1		
		1			1			
		1			1			
		2						
		1				1		
		1				1		
		1						
	23/02/2019	**8**	**0**	**0**	**2**	**3**		

Wares Yard							
	Cars	Boats	Horse Trailers	Campers	Tents	Surveyed	
28/12/2018	4		3	1	2	y	
	3		2	1		y	
	4		1	1		n	3 trucks and 3rd wheeler
	5		3	2			large camp, trucks
28/12/2019	**16**	**0**	**9**	**5**	**2**		and 3rd wheeler
30/12/2018	3		2			y	
	1		1			n	
	6		2	1		y	
	6	1	3	1	1		
TOTAL 30/12/	**16**	**1**	**8**	**2**	**1**		
3/01/2019	4		3	3		y	
TOTAL 3/1/19	**4**	**0**	**3**	**3**	**0**		
	4		2	1		n	ridden out
	2		2			n	ridden out
	4		2	1		y	BUGS members
	9		7	2	5	y	mostly out riding
	19	**0**	**13**	**4**	**5**		
22/01/2019	0	0	0	0	0		
TOTAL 22/1/1	0	0	0	0	0		
26/01/2019							
	3		1	2			
	2		3			y	
	1			1		y	
TOTAL 26/1/1	**6**	**0**	**4**	**3**	**0**		
23/02/2019	7		5	2			
	2		2				
	6						
	6			1	10		
	1						
TOTAL 23/2/1	22	0	7	3	10		

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