



ABORIGINAL HERITAGE MANAGEMENT PLAN SNOWY 2.0 – EXPLORATORY WORKS

Stage 1 - Exploratory Works Access Roads

December 2019



leed

Aboriginal Heritage Management Plan

Rev 1

Report Snowy 2.0 - Exploratory Works - Aboriginal Heritage Management Plan |

Prepared for Snowy Hydro | 16 December 2019

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Plan approved by:

Tom Fallon
Leed Project Director

Charlie Litchfield
Snowy 2.0 Environment Manager



T +61 (0)2 9493 9500 | F +61 (0)2 9493 9599
Ground Floor | Suite 01 | 20 Chandos Street |
St Leonards | New South Wales | 2065 | Australia
www.emmconsulting.com.au



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Abbreviations and Glossary

ACHAR	Aboriginal Cultural Heritage Assessment Report
AHIMS	Aboriginal Heritage Information Management System
AHMP	Aboriginal Heritage Management Plan
BCD	Biodiversity and Conservation Division
CSSI	Critical State Significant Infrastructure
DEC	Department of Environment and Conservation (now Office of Environment and Heritage)
DECC	Department of Environment and Climate Change (now Office of Environment and Heritage)
DPIE	NSW Department of Planning, Industry and Environment <i>formerly</i> NSW Department of Planning and Environment
EIS	<i>Environmental Impact Statement Exploratory Works for Snowy 2.0</i>
EMS	Environmental Management Strategy
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EWMS	Environmental Work Method Statement
Heritage Item	An item as defined under the Heritage Act and/or an Aboriginal object or Aboriginal Place as defined under the NPW Act.
KNP	Kosciuszko National Park
Kosciuszko National Park	A National Park protected under the National Parks and Wildlife Act 1974 (NSW) and managed by NSW National Parks and Wildlife Service. It covers an area of 673,543 hectares and forms part of Australia's only Alpine area
Lobs Hole	A former settlement location within Kosciuszko National Park, and primary location of Exploratory Works
<i>Lobs Hole</i> Spelling	In this document the contemporary spelling <i>Lobs Hole</i> is used except for when a specific older name is referred to, such as for example, <i>Lobbs Hole Copper Mine</i> , when the original spelling is used.
NPWS	National Parks and Wildlife Service
NPW Act 1974	<i>National Parks and Wildlife Act 1974</i>
RAPs	Registered Aboriginal Parties - Aboriginal stakeholders registered for cultural heritage consultation for the project
REMM	Revised Environmental Management Measures
Snowy Hydro	Snowy Hydro Limited
Submissions Report or RTS	<i>Response to Submissions Exploratory Works for Snowy 2.0</i>
OEH	Office of Environment and Heritage
Project, the	Exploratory Works for Snowy 2.0

1 Introduction

1.1 Context

This Aboriginal Heritage Management Plan (AHMP or Plan) forms part of the Environmental Management Strategy (EMS) for the Exploratory Works for Snowy 2.0 (the Project). The Exploratory Works is the first stage of Snowy 2.0, a pumped hydro-electric storage and generation project which will increase the hydro-electric capacity within the existing Snowy Mountains Hydro-electric Scheme. The second stage, or main project, will be subject to a separate Environmental Impact Statement in 2019.

The AHMP has been prepared to address the requirements of the Infrastructure Approval (SSI 9208) issued for Snowy 2.0 Exploratory Works on 7th of February 2019, the *Environmental Impact Statement Exploratory Works for Snowy Hydro 2.0*, and the revised environmental management measures (REMMs) within the *Response to Submissions Exploratory Works for Snowy 2.0*.

This revision of the AHMP has been prepared to address the requirements of the Exploratory Works for Snowy 2.0 Modification 1 Assessment Report (MOD1) and the REMMs within the Exploratory Works Modification 1 Response to Submissions Report which were approved by Department of Planning, Industry and Environment (DPIE) on 2 December 2019.

The original EIS Exploratory Works scope includes:

- an exploratory tunnel about 3.1 km long to the site of the underground power station;
- horizontal and other test drilling, investigations and analysis in situ at the proposed cavern location and associated areas, and around the portal construction pad, access roads and excavated rock management areas all within the disturbance footprint;
- a portal construction pad for the exploratory tunnel. This will provide the entrance structure to the tunnel and an area for infrastructure and equipment needed to support tunnelling activities;
- an accommodation camp for the Exploratory Works construction workforce;
- road works and upgrades to enable access and haulage routes during Exploratory Works. This includes upgrades to 26 km of existing roads and creating about 2 km of new roads;
- barge access infrastructure to enable access and transport by barge on Talbingo Reservoir. This includes one new barge ramp at Talbingo Spillway in the northern part of Talbingo Reservoir and one new barge ramp at Middle Bay near Lobs Hole at the southern part of Talbingo Reservoir;
- excavated rock management, including subaqueous placement within Talbingo Reservoir. Up to 750,000 m³ of excavated rock will need to be tested for its geochemical properties (ie whether the rock is reactive or non-reactive) before being managed by a combination of the following options:
 - re-use - suitable material can be used as construction materials for roads or similar. Some materials will be provided to NPWS for use in road maintenance and upgrades in other areas of KNP;
 - on land placement - material will be temporarily placed in one of two on land emplacement areas.

- subaqueous placement within Talbingo Reservoir – suitable material will be placed at a suitable location within Talbingo Reservoir, subject to a number of water quality controls and monitoring; and
- services infrastructure such as diesel-generated power, water and communication;
- post-construction revegetation and rehabilitation, management and monitoring.

Having regard to the design changes identified in Modification 1, the scope now comprises the following listed in Table 1.1 below :

Table 1.1 New scope items for EW (Stage 1 & 2) as a result of MOD1

Stage 1	
Lobbs Hole Substation	<p>Additional disturbance area required for the construction power connection to an existing transmission line (Line 2) at Lobs Hole for power supply to the Exploratory Works accommodation camp and construction areas. This will provide a reliable and long-term source of construction power and will reduce the reliance on diesel generation and associated on-site storage requirements and emissions. Works in this area will include establishing a substation, connection infrastructure, access roads and ancillary construction areas;</p> <p>This will include:</p> <ul style="list-style-type: none"> • construction of a 330/33 kV substation within Kosciuszko National Park and adjacent to Line 2, which forms a 330-kV connection between Upper Tumut Switching Station and Yass Substation; • geotechnical investigation works to inform the detailed design of the construction power substation; • replacement of one transmission support structure (Structure 54) within the existing transmission easement. This will involve removal of the existing structure and establishment of one new steel lattice tower, approximately 50 m in height; • short overhead 330 kV transmission line connections (approximately 100 m in length) between the substation and the new Structure 54; • 33 kV feeder connection between the substation and the Exploratory Works construction power network. This will be either overhead lines or underground cables; • establishment and upgrade of access tracks and roads to the new substation and transmission line structures; • installation of a fibre optic communication link into the new substation from the approved communication network; and • ancillary activities, including brake and winch sites, crane pads, site compounds and equipment laydown areas. <p>(Illustrated Appendix D Figure 1i)</p>
Camps Bridge and Wallaces Creek	<ul style="list-style-type: none"> • additional disturbance area around Camp Bridge and Wallaces Creek Bridge required for improved constructability of the crossings. Works within these areas will include vegetation clearing, levelling earthwork, erection of falsework, sediment controls, laydown, parking and movement of equipment;

	(Illustrated in Appendix D Figures 1h and 1i of this plan and Modification 1 Assessment Report Figure 3.9)
Lobs Hill Ravine Road and Construction Boundary Changes	<ul style="list-style-type: none"> • minor changes to the project boundary identified through detailed design including: <ul style="list-style-type: none"> – revised road upgrade for Lobs Hole/Ravine Road to improve access, drainage and safety; – minor additions to construction areas for design optimisation. • removal of dangerous trees on Lobs Hole Ravine Road. This will involve either complete or partial removal of up to 91 trees that have been identified to pose a safety risk to road users on Lobs Hole Ravine Road and Mine Trail Road; <p>(Illustrated in Appendix D, Figures 1d, 1e, 1f and 1i)</p>
Operating Hours	<ul style="list-style-type: none"> • modify operating hours from existing 7 am to 6pm to sunrise to sunset
Miscellaneous	<ul style="list-style-type: none"> • continued use of existing communications towers within KNP that were previously approved by the NPWS under a separate review of environmental factors (REF R – Wallaces Creek Geotechnical drilling) environmental impact assessment carried out under the NSW National Parks and Wildlife Act 1974 (NPW Act) and its regulation for the geotechnical investigation program; and • increase in peak traffic volumes. Additional vehicles will be required to access the site to facilitate construction of Exploratory Works, however no change in impacts to the road network are expected. <p>(location of communications towers illustrated in Appendix D Figures 1a, 1f, 1l)</p>
Stage 2	
Borehole drilling and geophysical surveys	<ul style="list-style-type: none"> • Borehole drilling and geophysical surveys for further geotechnical investigation of the Snowy 2.0 power station and power waterway at Marica, Talbingo and Tantangara; • clearing of up to 2.79 hectares (ha) of additional vegetation for access tracks and drilling pads. • About 1.33 ha within Smokey Mouse potential habitat; • trimming of overhanging dangerous branches on adjacent trees (these trees will not require removal); • mulching of trees and vegetation; • establishment of an additional 1 km of access tracks (4 m wide), including minor earthworks, • placement of geofabric (as required) and import of stabilised material; • establishment of eight drilling pads and boreholes at top of the cavern area, with an area of 900 m² per pad, including minor earthworks, placement of geofabric (as required) and import of stabilised material (as required); • undertaking geophysical surveys near Talbingo and Tantangara reservoirs; • establishment of two drilling pads and boreholes at both Tantangara and Talbingo with an area of • 900 m² per pad, including approximately 400 m of additional access tracks and minor earthworks (as required);

	<ul style="list-style-type: none"> • establishment of in-reservoir boreholes including one in Talbingo Reservoir and two in Tantangara Reservoir; • drilling of additional nested vertical boreholes at each of the drilling pads up to a depth of 1,100 m; • conversion of the investigation boreholes into monitoring bores; • undertaking geophysical surveys; and • rehabilitation of the drilling pads and access tracks following completion of works • ongoing maintenance of existing access tracks required for geotechnical investigations within KNP <p>(Illustrated in Appendix D Figure 1j, 1k, 1l, 1m and 1n)</p>
Talbingo Laydown	<p>Outside of KNP, SHL is proposing to add four laydown locations to facilitate the construction of the communications cable linking Lobs Hole with the Tumut 3 Power Station.</p> <p>These are proposed on existing hardstand areas along Talbingo Reservoir within Snowy Hydro owned land.</p> <p>(Illustrated in Appendix D, Figure 1o)</p>
Tantangara Access	<p>Two additional geotechnical boreholes are required to facilitate the detailed design of cuttings, bridge foundations, retaining wall foundations, and drainage structures near Nungar Creek</p> <p>(Illustrated in Appendix D, Figure 1m and 1n)</p>

The Exploratory Works is estimated to take around 30 to 34 months to complete.

As with most of the existing Snowy Scheme, the majority of Snowy 2.0 is within Kosciuszko National Park. Snowy Hydro has been working with NSW National Parks and Wildlife Service (NPWS) since the announcement of Snowy 2.0 to ensure long term management objectives for Kosciuszko National Park are considered in project development.

The Project has been designed in a way that avoids and minimises impacts to Kosciuszko National Park where possible. This has included the planning of access roads and construction areas to avoid impacting the heritage listed Washington Hotel ruins at Lobs Hole, and Smoky Mouse habitat along Upper Lobs Hole Ravine Road. It also includes designing road upgrades to minimise impacts to geodiversity features including a block stream and a fossil outcrop along Lower Lobs Hole Ravine Road. The former copper mine at Lobs Hole is also considered a geo-heritage site, however it is also a source of known contamination and has therefore been avoided as much as possible to prevent disturbance.

While there are some unavoidable impacts during construction, the Exploratory Works will allow for a number of longer-term benefits and contributions to Kosciuszko National Park through a biodiversity offset program, improved access roads and recreational facility upgrades. The completion of Exploratory Works will also allow for the greater benefits of Snowy 2.0 to be realised.

1.2 Construction activities and sequencing

Exploratory Works will be delivered in three stages:

- **Stage 1a – Pre-construction Minor Works** - pending the approval process, works may commence in the first quarter of 2019. The scope of pre-construction minor works includes dilapidation studies, survey work, borehole installation, site office establishment, minor access roads, installation of monitoring equipment, installation of erosion and sediment controls, archaeological salvage and minor clearing;
- **Stage 1b – Exploratory Works Access Roads (EWAR)** - pending the approval process, works may commence in the first quarter of 2019. The scope includes roadworks and upgrades to enable access and haulage routes during Exploratory Works;
- **Stage 2 – Exploratory Works** - pending progress with Stage 1, works may commence in quarter three of 2019. The scope for Stage 2 will be the remainder of the Exploratory Works, including the exploratory tunnel, portal construction pad, accommodation camp and excavated rock management. Stage 2 also includes subaqueous emplacement within Talbingo Reservoir.

To present the staging of plans a separate Staging Report has been prepared and was submitted to Department of Planning and Environment. Timing of the Exploratory Work stages is presented below.

Exploratory Works	2019				2020				2021			
Stage 1 – Access Roads												
Stage 2 – Exploratory Works												

Figure 1 Timing of Exploratory Works stages

1.2.1 Exploratory Works Access Roads

The Exploratory Works Access Roads (EWAR) will provide early access to the tunnel portal located to the east of the Talbingo Reservoir, and to Talbingo Reservoir itself. The works include upgrades to and/or construction of the following roads:

- Ravine Road;
- Mine Trail Road;
- Lobs Hole Road;
- Wharf Road.

The EWAR scope includes but is not limited to the following:

- site survey and setting out;

- establishment of all site facilities required and removal upon completion, including all temporary safety and security measures required;
- locating and protecting all public and private utility services;
- maintenance of the existing roadway and associated infrastructure;
- clearing and grubbing of vegetation including creation of mulch and compost;
- establishment of short term and long-term (eg: detention and sedimentation basins) erosion and sedimentation control systems and devices;
- removal and disposal of existing infrastructure including pipes, culverts, drainage channels and other minor structures;
- excavation and stockpiling of topsoil;
- earthworks including excavation of cuttings, construction of fills including selected zone material, and placement of excess spoil in stockpile;
- progressive opening to traffic;
- treatment of cut and fill slope batter surfaces including slope retention systems where shown;
- construction of clean and dirty water drainage systems including culverts, open and subsoil drainage systems;
- construction of pavements including subgrades and pavements and road surfacing;
- design, supply, construction of temporary structures / bridges over Wallace Creek and the Yarrangobilly River and removal of completion;
- construction of permanent bridges over Wallace Creek and the Yarrangobilly River;
- installation of road furniture including but not limited to barriers, line marking, guide posts and road signs;
- placement / replacement of topsoil and revegetation and other surface treatments to disturbed earth surfaces including lining of open drains;
- clean up and restoration of work areas and areas disturbed by the contractor.

The works are proposed to commence in the first quarter of 2019.

The additional EWAR scope as a result of MOD1 will include:

- construction of a 330/33 kV substation within Kosciuszko National Park and adjacent to Line 2, which forms a 330-kV connection between Upper Tumut Switching Station and Yass Substation;
- geotechnical investigation works to inform the detailed design of the construction power substation;

- replacement of one transmission support structure (Structure 54) within the existing transmission easement. This will involve removal of the existing structure and establishment of one new steel lattice tower, approximately 50 m in height;
- short overhead 330 kV transmission line connections (approximately 100 m in length) between the substation and the new Structure 54;
- 33 kV feeder connection between the substation and the Exploratory Works construction power network. This will be either overhead lines or underground cables;
- establishment and upgrade of access tracks and roads to the new substation and transmission line structures;
- installation of a fibre optic communication link into the new substation from the approved communication network; and
- ancillary activities, including brake and winch sites, crane pads, site compounds and equipment laydown areas.
- minor changes to the project boundary identified through detailed design including:
 - additional disturbance area around Camp Bridge and Wallaces Creek Bridge required for improved constructability of the crossings. Works within these areas will include vegetation clearing, levelling earthwork, erection of falsework, sediment controls, laydown, parking and movement of equipment;
 - additional disturbance area required for the construction power connection to an existing transmission line at Lobs Hole. Works in this area will include establishing a substation, connection infrastructure, access roads and ancillary construction areas;
 - revised road upgrade for Lobs Hole/Ravine Road to improve access, drainage and safety; and
 - minor additions to construction areas for design optimisation.
- removal of dangerous trees on Lobs Hole Ravine Road. This will involve either complete or partial removal of up to 91 trees that have been identified to pose a safety risk to road users on Lobs Hole Ravine Road and Mine Trail Road;
- continued use of existing communications towers within KNP that were previously approved by the NPWS under a separate review of environmental factors (REF R – Wallaces Creek Geotechnical drilling) environmental impact assessment carried out under the NSW National Parks and Wildlife Act 1974 (NPW Act) and its regulation for the geotechnical investigation program; and
- increase in peak traffic volumes. Additional vehicles will be required to access the site to facilitate construction of Exploratory Works, however no change in impacts to the road network are expected.

This Plan identifies and describes the requirements for the management of Aboriginal heritage associated with the Project. It has been developed for Stage 1 of the Exploratory Works project and will be revised prior to commencement of Stage 2 works.

There will be some overlap of works as the Project transitions from Stage 1 to Stage 2 with, in some cases, a lag between Stage 1 works ceasing and Stage 2 commencing. The nature of heritage areas is such that the extent of a site is unknown until salvage work commences, which has led to some works lasting longer than first thought. This has been the case during Stage 1 works and will continue over Stage 2 works.

As the heritage scope is unchanged across both stages, this Plan has been updated to acknowledge the heritage works which have occurred during Stage 1 and will continue into Stage 2. While construction works will be quite distinct packages of work undertaken by different contractors, the heritage works will continue under the same team and methodology. Table 4.3 summarise the ongoing heritage works under both stages.

The timing of the preparation, consultation, submission and approval of this plan is shown within Figure 4.3 of the Environmental Management Strategy (EMS). During Stage 1 of the work ongoing revisions to the AHMP will occur in accordance with Section 1.6.1 of the EMS.

Table 1.2 Relationship to other plans

Heritage aspect	Relevant plan	Timing of plan*	
		Stage 1	Stage 2
Aboriginal heritage	This plan	P	R
Historic heritage	Historic and Natural Heritage Management Plan	P	R
Natural heritage - geodiversity	Historic and Natural Heritage Management Plan	P	R

Note: P – prepare, R - revise

Specific on-site management measures identified in this Plan will be incorporated into site documents which are to be prepared by the Contractor. These site-specific documents will be prepared for construction activities and will detail the management measures which are to be implemented on the ground. Construction personnel will be required to undertake works in accordance with the mitigation measures identified in the site-specific documents.

1.3 Background

Snowy Hydro Limited (Snowy Hydro) is the proponent of the Snowy 2.0 project which is a pumped hydro-electric storage and generation project proposed to address increasing demands for renewable energy supplies. Snowy 2.0 involves linking Talbingo and Tantangara reservoirs within the existing Snowy Mountains Hydro-electric Scheme (Snowy Scheme) and building an underground power station between the two reservoirs.

Snowy Hydro proposes to carry out Exploratory Works prior to the main construction works for the Snowy 2.0 project, to inform the detailed design and to reduce project risk. Exploratory Works are required to obtain detailed geological data for the location of the underground power station. An exploratory tunnel is to be constructed to gain this information. The Exploratory Works will predominantly be in the Lobs

Hole¹ area of Kosciuszko National Park. If the Exploratory Works are not undertaken, risks to the design and construct elements of the power station cavern are significantly increased.

The *Environmental Impact Statement Exploratory Works for Snowy 2.0* (EIS) was prepared to assess the impact of these works on the environment, including an assessment of Aboriginal heritage impacts within Chapter 5.5 and Appendix O. MOD1 also identified Aboriginal heritage values relevant to the modification area, assessed any impacts, and proposed any required mitigation measures within Chapter 6.2, 7.1 and Appendix C. The EIS identified that the Exploratory Works would impact on Aboriginal heritage in the form of stone artefact distributions that are located across the majority of proposed impact areas. The presence of these do not pose a constraint to works, however, management and impact mitigation measures are required.

The Aboriginal heritage in the project area recorded during the EIS, is documented in the Aboriginal Cultural Heritage Assessment Report (ACHAR) entitled:

Julie Dibden 2018. Snowy 2.0 Exploratory Works Aboriginal Cultural Heritage Assessment Report.
A report to Snowy Hydro Limited.

The ACHAR documents 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.

This AHMP provides a framework for the management and mitigation of impacts to Aboriginal heritage in the project area. In addition, the AHMP provides guidance for the management of any unexpected Aboriginal heritage objects or values and human remains which, while considered to be unlikely, may be encountered during construction.

The location of all heritage Survey Units and Aboriginal object locales recorded during the EIS are shown in Appendix A.

1.4 Environmental management system

The overall environmental management system for the Project is described in the Environmental Management Strategy (EMS).

This AHMP forms part of Snowy Hydro Limited's environmental management framework for the Project, as identified in Figure 1.1 and as described in Section 4 of the EMS.

This Plan aims to transfer the relevant requirements of the Approval documents into a management plan which can be practically applied on the Project site.

¹ In this document, the contemporary spelling, *Lobs Hole*, is used except for when a specific older name is referred to, such as for example, *Lobbs Hole Copper Mine*, when the original spelling is used.

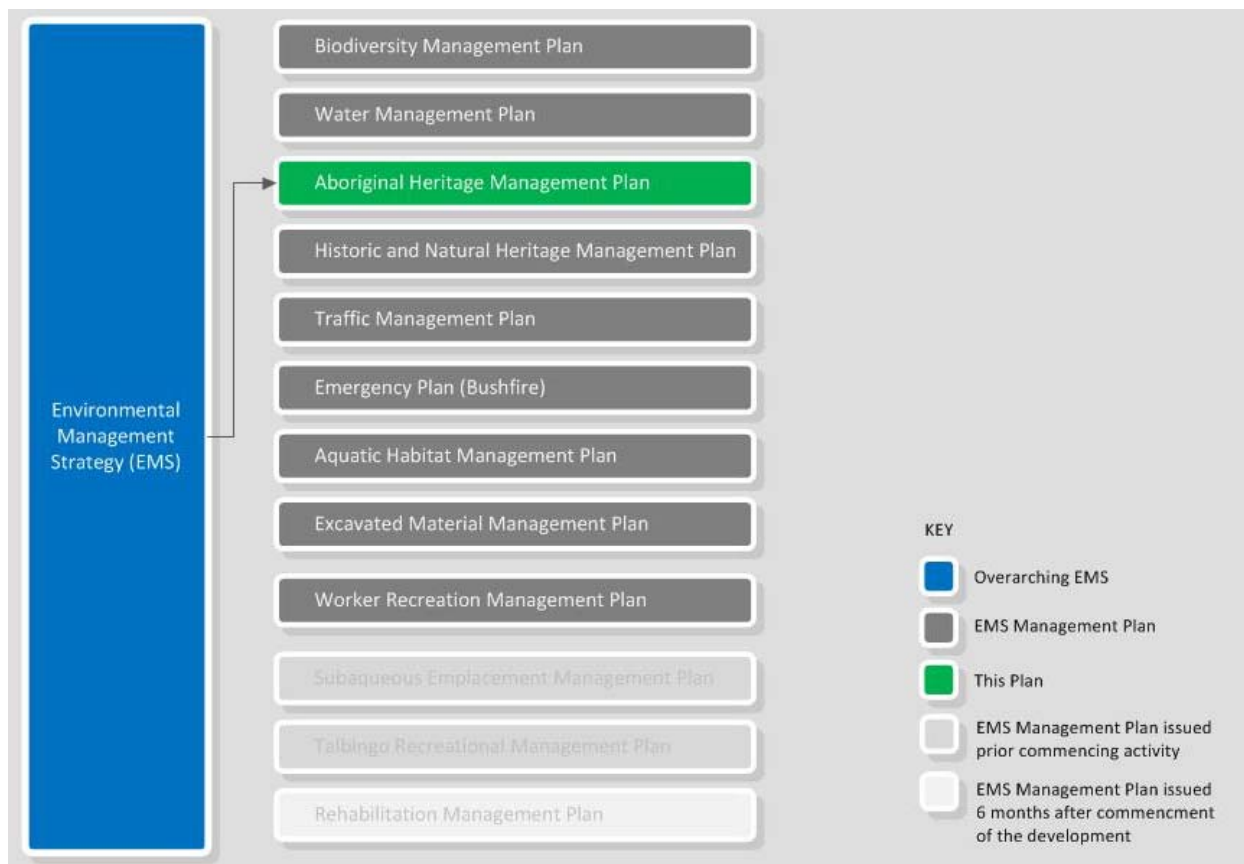


Figure 1.2 EMS structure

1.5 Purpose and objectives

In this plan, Aboriginal heritage refers to the stone artefacts and archaeological deposits located on and in the ground in the heritage Survey Units as identified in the Aboriginal Cultural Heritage Assessment Report (ACHAR) and mapping in Appendix A. In addition, the plan makes provision for the management of culturally or spiritually significant places or locations if they are identified during any stage of the Exploratory Works project.

The purpose of this Plan is to describe the management and mitigation measures that are to be implemented in accordance with the EIS and the Infrastructure Approval (Approval) for the Stage 1 works.

The key objective of the AHMP is to ensure that impacts to Aboriginal heritage are minimised and occur within the scope permitted by the Approval. To achieve this, Snowy Hydro and the Contractor will:

- ensure appropriate measures are implemented to address the relevant conditions of the Infrastructure Approval and the revised environmental management measures listed within the Submissions Report, as detailed within Table 2.1 and Table 2.2 of this Plan;
- ensure appropriate measures are implemented during construction to minimise impact to ground surfaces which are known or predicted to contain Aboriginal heritage, if feasible;

- ensure that it is clear where and when unmitigated impacts to Aboriginal heritage can occur;
- ensure that it is clear when and where further archaeological assessment and salvage excavations occur; and
- ensure that it provides useable guidance and protocols for the management of unexpected Aboriginal heritage objects or values and human burials.

Maps showing the location of the Survey Units which contain Aboriginal heritage provide the framework for management and are provided in Appendix A of this AHMP. This mapping is available as GIS layers and should be obtained and used for management of Aboriginal heritage prior to and during construction.

1.6 Plan preparation

In accordance with condition 14 of Schedule 3 of the Approval, the AHMP has been prepared by a suitably qualified and experienced person in accordance with guidelines made or approved under the *National Parks and Wildlife Act 1974* (NSW). This plan was prepared by Dr Julie Dibden, NSW Archaeology Pty Ltd.

1.7 Consultation

In accordance with condition 14(b) of the Approval, the AHMP is to be prepared in consultation with the National Park and Wildlife Service (NPWS), the NSW Office of Environment and Heritage (OEH), Registered Aboriginal Parties (RAPs) and NPWS Tumut Brungle Gundagai Aboriginal Community Executive Advisory Committee.

On 4 October 2018, the draft AHMP was issued to stakeholders, seeking review of this Plan. The draft AHMP has been endorsed by one RAP group and constructive feedback has been provided by OEH.

A final round of consultation commenced on 12 February 2019 after the Project was granted development consent.

This document is a final version of the AHMP, prepared following a review process with the RAPs, NPWS Tumut Brungle Gundagai Aboriginal Community Executive Advisory Committee, OEH and NPWS.

On 4th June 2019 during a Workshop with Future Generation and NPWS and OEH the concept of updating Stage 1 plan as an interim measure prior to Stage 2 management plan approval was discussed.

The MOD1 Assessment Report and associated technical studies were submitted by Snowy Hydro to DPIE in June 2019 and publicly exhibited in accordance with the EP&A Act between 26 June and 9 July 2019. Nine submissions were received during the public exhibition period, including one from a special interest group and two individual community submissions.

On 4th and 24th October 2019, the updated AHMP with changes as a result of MOD1 were issued to NPWS and OEH respectively. NPWS provided comments and the plans were subsequently revised while no comments were received from OEH.

1.7.1 Aboriginal consultation

The Snowy Mountains is country to several groups and many Aboriginal people have cultural and spiritual associations that have long histories embodied in objects which can be seen on the ground and other intangible values related to the past and current concerns and aspirations. The project area itself is located within the lands of the Wolgalu people.

A formal process of Aboriginal community consultation has been conducted as a component of assessment of heritage impacts (as documented in the ACHAR) in accordance with the guidelines as set out in the NSW OEH's Aboriginal cultural heritage consultation requirements for proponents 2010 (NSW DECCW 2010b).

The Registered Aboriginal Parties (RAPs) for this project are:

- Iris White, on behalf of the Ngarigo people;
- Corroboree Aboriginal Corporation;
- Bega Local Aboriginal Land Council;
- Lindsay Connolly, Steve Connolly and Ramsey Freeman;
- Brungle-Tumut Local Aboriginal Land Council
- Arnold Williams, on behalf of the Ngunnawal Elders Corporation;
- Ellen Mundy and Ngarigo people; and
- John Dixon and Ngarigo people.

In addition, Snowy Hydro has consulted independently with the Wagonga Local Aboriginal Land Council and the Northern and Southern Kosciuszko National Park Aboriginal Community Memorandum of Understanding Groups.

Consultation with the Registered Aboriginal Parties would be ongoing during the life of the project. This would include, but not be limited to:

- consultation in regard to processes and strategies as outlined in this AHMP;
- participation in the implementation of certain management and mitigation measures for heritage items including the conduct of test and salvage excavations; and
- ensuring that Aboriginal stakeholders are able to have reasonable access to cultural heritage sites on site. The process to obtain access will entail Aboriginal stakeholders making the request for access to the Snowy Hydro project manager. Snowy Hydro will then facilitate access construction site with Leed. The Aboriginal stakeholders will be taken into the construction site by Leed.
- consultation in the event of any unexpected Aboriginal heritage values/objects or burials being found during the construction of the project.

The matter of care and control of Aboriginal objects retrieved during salvage excavations would need to be determined in consultation with RAPs within six months of the salvage works taking place.

2 Environmental requirements

2.1 Legislation

Legislation relevant to Aboriginal Heritage management includes:

- *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act);
- *NSW Environmental Planning and Assessment Act 1979* (EP&A Act);
- Native Title Act 1993 (we note there are no native title claims relevant to the area);
- *National Parks and Wildlife Act 1974* (NPW Act).

Relevant provisions of the above legislation are explained in the register of legal and other requirements included in Appendix A1 of the EMS.

2.2 Conditions of approval

Project approval was granted by DPE on 7th of February 2019 with the following Aboriginal heritage management conditions included in the Infrastructure Approval. MOD1 was granted approval by DPIE on 2 December, 2019. The relevant conditions are presented in Table 2.1.

Table 2.1 Conditions of approval relevant to Aboriginal heritage management

Condition	Requirement	Where addressed
11	The Proponent must ensure that the development does not affect any Aboriginal heritage items outside the approved disturbance area (see Appendix 3).	AHMP - Sections 4.2 and 5.1
12	The Proponent must undertake archival recording, test excavation and/or salvage of the items listed in Table 3-1 in Appendix 3, in accordance with the approved program under the Aboriginal Heritage Management Plan.	AHMP - Section 5.1
13	The Proponent may damage the Aboriginal heritage items listed in Table 3-2 of Appendix 3 without carrying out any further management or mitigation measures.	AHMP - Section 5.1
14	Prior to carrying out any development that could affect the Aboriginal heritage items listed in Table 3-1 in Appendix 3, unless the Planning Secretary agrees otherwise, the Proponent must prepare an Aboriginal Heritage Management Plan for the development to the satisfaction of the Planning Secretary. This plan must: <ul style="list-style-type: none">(a) be prepared by a suitably qualified and experienced person/s whose appointment has been endorsed by the Planning Secretary;(b) be prepared in consultation with the NPWS, OEH, RAPs, NPWS Tumut Brungle Gundagai Aboriginal Community Executive Advisory Committee;(c) include a description of the measures that would be implemented to mitigate the impacts of the development on the Aboriginal heritage items listed in Table 3-1, including:<ul style="list-style-type: none">• test excavation and salvage of certain sites; and• archival recording of cultural features within the approved disturbance area shown in Appendix 3;	This plan AHMP - Section 1.6 AHMP - Section 5.1 AHMP - Section 1.6 and 5.1 AHMP - Section 1.6 and 5.1

Condition	Requirement	Where addressed
	(d) include a description of the measures that would be implemented to <ul style="list-style-type: none"> consult the RAPs on the conservation and management of Aboriginal cultural heritage onsite; maintain reasonable access for Aboriginal stakeholders to cultural heritage sites on site; protect and monitor the Aboriginal heritage sites outside the approved disturbance area; manage the discovery of human remains or previously unidentified Aboriginal artefacts; store and manage any salvaged Aboriginal heritage items; and ensure workers on site receive adequate training and inductions on Aboriginal heritage management. 	AHMP - Section 1.6 and 5.1
15	The Proponent must implement the approved Aboriginal Heritage Management Plan for the development.	This plan
3 Schedule 4	To ensure the strategies, plans and programs are updated on a regular basis, and incorporate any recommended measures to improve the environmental performance of the development, the Proponent may submit revised strategies, plans or programs required under this approval at any time. With the agreement of the Planning Secretary, the Proponent may also submit any strategy, plan or program required by this approval on a staged basis. The Planning Secretary may approve a revised strategy, plan or program required under this approval, or the staged submission of any of these documents, at any time. With the agreement of the Planning Secretary, the Proponent may prepare the revised or staged strategy, plan or program without undertaking consultation with all parties nominated under the applicable condition in this approval.	This plan
4 Schedule 4	Within 3 months, unless otherwise agreed with the Planning Secretary, of: <ul style="list-style-type: none"> (a) the submission of an incident report under condition 5 below; (b) the submission of an audit report under condition 7 below; and (c) the approval of any modification to the conditions of this approval; or (d) a direction of the Planning Secretary under condition 4 of schedule 2; The Proponent must review, and if necessary revise, the strategies, plans, and programs required under this approval to the satisfaction of the Planning Secretary. Where this review leads to revisions in any such document, then within 4 weeks of the review the revised document must be submitted to the Planning Secretary for approval, unless otherwise agreed with the Planning Secretary.	AHMP - Section 5.1 AHMP - Section 5.1 AHMP - Section 5.1 AHMP - Section 5.1

2.3 Revised environmental management measures

Environmental safeguards and management measures are included in the EIS in Section 6.3. During preparation of the Submissions Report, revised environmental management measures (REMM) were developed and are included in Section 8 of the Submissions Report. Likewise, MOD1 includes REMMs in Chapter 8 which are also included in Table 2.2 below.

The environmental management measures relevant to this Plan are listed in Table 2.2 below. If additional measures are cross-referenced from another section of the EIS or Submissions Report, these measures are also included.

Table 2.2 Revised environmental management measures relevant to Aboriginal heritage

Impact	Ref #	Environmental management measure	Where addressed
Aboriginal heritage	HER01	An Aboriginal Heritage Management Plan (AHMP) will be prepared and implemented to guide the process for management and mitigation of impacts to Aboriginal heritage. The AHMP will:	This plan
		<ul style="list-style-type: none"> be prepared in consultation with RAPs, NPWS Tumut Brungle Gundagai Aboriginal Community Executive Advisory Committee and OEH; 	Section 1.6
		<ul style="list-style-type: none"> Set out guidelines for ongoing consultation and opportunities for cultural values assessment; 	Section 1.6
		<ul style="list-style-type: none"> include procedures relating to the conduct of additional archaeological assessment, including monitoring and salvage excavations after clearance, if required. Should the additional archaeological assessment be required to occur prior to finalisation of the AHMP, the archaeological assessment will be prepared as a separate document, with any recommendations for monitoring incorporated into the AHMP; 	Section 5 Appendix B
		<ul style="list-style-type: none"> set out a protocol for unexpected Aboriginal heritage values and human skeletal material 	Appendix C
		<ul style="list-style-type: none"> A 50 m buffer zone from the bank of the Yarrangobilly River will be established to protect the likely presence of Aboriginal cultural items, except for those areas required for creek or river crossings and road construction. 	Section 4.2 and 5.1.2
	M1.4	<ul style="list-style-type: none"> The Aboriginal heritage management plan (AHMP) will be updated to account for the additional areas assessed for the proposed modification. 	Section 1.1
Loss of Aboriginal cultural heritage	HER02	Specific management and mitigation measures are listed for specific heritage Survey Units below:	Table 4.3
		<ul style="list-style-type: none"> monitoring after vegetation removal and salvage excavation will occur for heritage Survey Units – SU2, SU6, SU7 	Section 5 and Table 5.1
		<ul style="list-style-type: none"> salvage excavation will occur for heritage Survey Units – SU10, SU12, SU25 	Appendix B
		<ul style="list-style-type: none"> Aboriginal cultural heritage management measures to be included in the AHMP and implemented during construction include: 	Section 5 and Table 5.1
		<ul style="list-style-type: none"> impacts to ground surfaces should be kept to an absolute minimum; 	Section 5 and Table 5.1
		<ul style="list-style-type: none"> for Survey Units which are assessed to be of higher significance values, mitigated impacts in the form of partial impacts only (i.e. conservation of part of an Aboriginal site or Survey Unit) and/or salvage in the form of further research and archaeological analysis will occur prior to impacts. Should the additional archaeological analysis be required to occur prior to finalisation of the AHMP, the archaeological analysis will be prepared as a separate document, with any recommendations for monitoring incorporated into the AHMP; 	Section 5 and Table 5.1 Appendix B

Impact	Ref #	Environmental management measure	Where addressed
		<ul style="list-style-type: none"> salvage excavations in the Survey Units in order to mitigate impacts to the archaeological resource in the project area; and 	Section 5 and Table 5.1
		<ul style="list-style-type: none"> the AHMP is to include management measures of any further Aboriginal cultural heritage values which may be identified during construction. 	Appendix C

2.4 Licences and permits

No permits are required in respect of the current project.

2.5 Guidelines

The guidelines, policies and standards relevant to this Plan include:

- *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW*, NSW OEH (2011);
- *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (NSW DECCW 2010a); and
- Aboriginal cultural heritage consultation requirements for proponents 2010 (NSW DECCW 2010b).

3 Existing environment

3.1 Aboriginal Heritage

The Snowy Mountains is country to several groups and many Aboriginal people have cultural and spiritual associations that have long histories embodied in objects and intangible values related to the past and current concerns. Recent archaeological research has indicated an Aboriginal presence in the Snowy Mountains since the early Holocene period (from around 9,000 years ago) (Theden-Ringl 2016). The project itself is within the country of the Wolgalu people.

The Aboriginal heritage in the project area was recorded during the EIS, as documented in the report entitled:

Julie Dibden 2018. Snowy 2.0 Exploratory Works Aboriginal Cultural Heritage Assessment Report.
A report to Snowy Hydro Limited.

The Aboriginal heritage Survey Units (inclusive of all Aboriginal stone artefacts and archaeological deposits) recorded within the Development Corridor during the EIS are listed in Table 3.1 and Table 4.2. The start and finish grid reference details are presented in Co-ordinate System: GDA 1994 MGA Zone 55. The location of all the Survey Units and Aboriginal object locales are shown in Appendix A. The following sections summarise Aboriginal heritage within the project area based on the information provided within the EIS.

Table 3.1 Summary description of Survey Units including the AHIMS sites, Aboriginal object locales recorded during survey and test excavation (Test Transects).

ID	Start* (Easting/ Northing)	Finish* (Easting/ Northing)	Description	Disturbance	Predicted/Known Artefact Density	Aboriginal Objects
SU1 RSU2	628044. 6037763	628223. 6039044	Lower simple slope landform. Dry sclerophyll forest with a thick shrubby understory. Shale bedrock; occasional cobbles and shatter. Erosional context.	Previous timber extraction for domestic and mining use. Natural erosional processes. Water race race/road.	Very low/ negligible	Nil recorded
SU2 RSU2	627823. 6038005	628089. 6039134	Flat landform. Dry sclerophyll forest with a thick shrubby understory. Thickets of blackberry. Depositional context.	Previous timber extraction for domestic and mining use. Construction of water race/road.	Moderate	Nil recorded
SU3 RSU3	626834. 6037907	628280. 6037746	Flat landform. Dry sclerophyll forest with occasional grassy glades. Depositional context.	Previous timber extraction for domestic and mining use. Historic gardens. Construction of water race and road. Recreational use.	Low/Moderate	AHIMS 56-6-0009 SU3/L1 SU3/L2 SU3/L3 Test Transect 1 Test Transect 2 Test Transect 3 Test Transect 4
SU4	626834. 6037911	626705. 6038354	Crest/knoll landform. Cleared with some regrowth saplings. Scattered shrubs and blackberry. Shale bedrock. Negligible topsoil. Highly eroded with no or limited soil.	Previous clearance, original homestead site. Mining.	Low	AHIMS 56-6-0045 SU4/L1 SU4/L2

ID	Start* (Easting/ Northing)	Finish* (Easting/ Northing)	Description	Disturbance	Predicted/Known Artefact Density	Aboriginal Objects
SU5	626765. 6038102	626577. 6038570	Flat landform. Patches of regenerating dry sclerophyll forest and open grassland. Depositional context.	Previous clearance, cultivation and gardening. Mining. Recreation.	Moderate	SU5/L1 SU5/L2 Test Transect 1 Test Transect 2 Test Transect 3 Test Transect 4 Test Transect 5
SU6	626563. 6038141	626520. 6038637	Crest landform. Regenerating dry sclerophyll forest and open grassland. Shale bedrock. Generally negligible topsoil. Highly eroded to bedrock.	Previous clearance, historic occupation. Mining. Recreation	Moderate/high	SU6/L1 SU6/L2 SU6/L3 SU6/L4 Test Transect 1 Test Transect 2
SU7	625939. 6038408	626381. 6038621	Crest landform. Regenerating dry sclerophyll forest. Shale bedrock. Erosional context	Previous clearance, historic occupation including 1920 school.	Moderate	Nil recorded
SU8	626550. 6038617	626173. 6038961	Flat landform. Patches of regenerating dry sclerophyll forest and open grassland. Depositional context.	Previous clearance, cultivation and gardening. Mining. Recreation.	Low	AHIMS 56-6-0043 Test Transect 1 Test Transect 2 Test Transect 3 Test Transect 4
SU9	626223. 6038599	626124. 6038885	Steep simple slope. Patches of regenerating dry sclerophyll forest. Erosional context.	Previous timber extraction for domestic and mining use.	Negligible	Nil recorded
SU10	626142. 6038654	626025. 6039021	Crest landform. Regenerating native shrubs; mostly grassland. Shale bedrock. Erosional context	Previous clearance, historic occupation including police station.	Moderate/high	SU10/L1 SU10/L2 SU10/L3 Test Transect 1 Test Transect 2

ID	Start* (Easting/ Northing)	Finish* (Easting/ Northing)	Description	Disturbance	Predicted/Known Artefact Density	Aboriginal Objects
SU11	625700. 6038734	626110. 6039080	Flat landform. Patches of regenerating dry sclerophyll forest and open grassland. Depositional context.	Previous clearance, historic occupation including Washington Hotel, cultivation and gardening. Recreation.	Low	AHIMS 56-6-0041 AHIMS 56-6-0047 SU11/L1 SU11/L2 SU11/L3 Test Transect 1 Test Transect 2 Test Transect 3
SU12 RSU12	625700. 6038734	626110. 6039080	Flat landform. Patches of regenerating dry sclerophyll forest and open grassland. Surface river cobbles are visible throughout the SU, most likely a result of flood events as well as eroding conglomerate bedrock. The landform would be subject to periodic flooding. Depositional context.	Previous clearance, cultivation and gardening. Recreation.	Moderate/high	AHIMS 56-6-0042 AHIMS 56-6-0046 56-6-0478 (RSU13/L2) 56-6-0537 (RSU12/L1) SU12/L1 Test Transect 1 Test Transect 2 Test Transect 3 Test Transect 4 Test Transect 5 Test Transect 6 Test Transect 7 Test Transect 8
SU13	625526. 6039474	625463. 6039162	Crest landform. Regenerating dry sclerophyll forest and open grassland. Shale bedrock. Erosional context	Previous clearance, timber extraction for domestic and mining use.	Low	SU13/L1 SU13/L2
SU14	625680. 6039417	626438. 6039390	Steep simple slope. Regenerating dry sclerophyll forest. Erosional context.	Previous timber extraction for domestic and mining use.	Negligible	Nil recorded

ID	Start* (Easting/ Northing)	Finish* (Easting/ Northing)	Description	Disturbance	Predicted/Known Artefact Density	Aboriginal Objects
SU15	625934. 6039145	626558. 6039131	Crest landform. Regenerating dry sclerophyll forest. Shale bedrock. Erosional context	Previous clearance, timber extraction for domestic and mining use.	Low	Nil recorded
SU16	625871. 6039011	626571. 6039160	Gentle simple slope. Regenerating dry sclerophyll forest. Erosional context.	Previous timber extraction for domestic and mining use.	Low	SU16/L1 SU16/L2 SU16/L3 SU16/L4
SU17	626658. 6038178	626644. 6037763	Crest landform. Regenerating dry sclerophyll forest. Shale bedrock. Erosional context	Previous clearance, timber extraction for domestic and mining use. Dwellings etc of 'Struggle Street'.	Low	SU17/L1
SU18	626255. 6037617	627342. 6037529	Gentle simple slope. Regenerating dry sclerophyll forest with some grassland. Thickets of blackberry. Erosional context.	Previous timber extraction for domestic and mining use.	Low	SU18/L1
SU19	628321. 6037830	628289. 6039033	Steep simple slope. Dry sclerophyll forest. Erosional context.	Previous timber extraction for domestic and mining use.	Negligible	Nil recorded
SU20	628712. 6027495	627141. 6031868	Generally, gently undulating crest landform. Dry sclerophyll forest. Erosional context.	Previous timber extraction.	Low	SU20/L1 SU20/L2 SU20/L3 SU20/L4 SU20/L5 SU20/L6 SU20/L7 SU20/L8 SU20/L9 SU20/L10 SU20/L12 SU20/L12

ID	Start* (Easting/ Northing)	Finish* (Easting/ Northing)	Disturbance		Predicted/Known Artefact Density	Aboriginal Objects
			Description			
SU21	629075. 6027804	626360. 6038292	Gently undulating crest landform at south end, becoming steep to north. Dry sclerophyll forest. Erosional context.	Previous timber extraction.	Low	Nil recorded
SU22	625213. 6039987	624901. 6039838	Crest landform. Regenerating dry sclerophyll forest. Shale bedrock. Erosional context	Previous clearance, timber extraction for domestic and mining use.	Low	SU22/L1 SU22/L2 SU22/L3
SU23	625132. 6040059	624350. 6040552	Gentle simple slope. Regenerating dry sclerophyll forest. Thickets of blackberry. Erosional context.	Previous timber extraction for domestic and mining use.	Low	SU23/L1 SU23/L2 SU23/L3
SU24	625535. 6039474	625163. 6040069	Gently undulating crest landform at south end, becoming steep to north. Dry sclerophyll forest. Erosional context.	Previous timber extraction.	Low	SU24/L1
SU25	627154. 6031875	627038. 6032150	Gently undulating crest landform. Dry sclerophyll forest. Erosional context.	Cleared electricity easement.	Low	AHIMS 56-6-0038 AHIMS 56-6-0039 AHIMS 56-6-0040
SU26	617274. 6056791	616718. 6059014	Generally steep simple slopes.	SMA infrastructure.	Negligible	Nil recorded
SU27	618303. 6056461	616989. 6058557	Generally steep simple slopes.	SMA infrastructure.	Negligible	Nil recorded

ID	Start* (Easting/ Northing)	Finish* (Easting/ Northing)	Description	Disturbance	Predicted/Known Artefact Density	Aboriginal Objects
RSU28			<p>A series of short moderate to steep simple slopes with gradients ranging from 20° to 32°. The aspect is mainly northerly. SU dissected by minor drainage lines.</p> <p>Vegetation is scattered shrubs with occasional small Eucalypt becoming very dense in areas. Heavy infestations of blackberry throughout SU. Geology is a mix of conglomerate and meta-sedimentary shales presenting as outcrops, cobble, gravels and very high levels of shatter. The SU is very rocky. Tuff and chert occurring naturally as rounded and angular pebbles.</p> <p>Traces of low-quality quartz was observed in the background stone profile, none of which is likely to be artefactual. Soils are skeletal and very gravelly. The landform is eroding.</p>	SMA infrastructure.	Negligible	Nil recorded
RSU29			<p>A very gently to gently undulating crest landform with a south-westerly aspect. Vegetation is an open mixed age Eucalypt forest with an understory of banksias and heath. Geology is metasedimentary presenting as outcrops, shatter, cobbles and gravels. Large area of smooth conglomerate boulder outcropping along break of slope along western boundary of SU.</p> <p>Outcrops are greater than 2 m wide. Soils are a shallow brown gravelly silty loam. Landform is eroding.</p>	SMA infrastructure.	Negligible	<p>AHIMS 56-6-0048 (KNP91-63)</p> <p>AHIMS 56-6-0540 (RSU29/L1)</p>

*Co-ordinate System: GDA 1994 MGA Zone 55


4 Environmental aspects, impacts and risks

4.1 Environmental aspects

An environmental aspect is an element of an organisation's activities, products, or services that has or may have an impact on the environment (ISO 14001 Environmental management systems). The relationship of aspects and impacts is one of cause and effect.

Key aspects of the Project that could result in Aboriginal heritage impacts are identified in Table 4.1. The extent of these impacts will depend on the nature, extent and magnitude of construction activities and their interaction with the natural environment (Column 2). This is further exacerbated by environmental factors (Column 3). This identification process has considered the proposed project activities and the types of potential impacts to Aboriginal heritage.

Table 4.1 Project aspects and impacts relevant to Aboriginal heritage items

 Aspects (Construction and human activities likely to cause damage to Aboriginal heritage items)	Impacts to Aboriginal Heritage items	Environmental Factors (Conditions)
	Direct	Presence of unknown Aboriginal heritage items
Vegetation clearing	Physical disturbance and damage to heritage items	
Topsoil stripping		
Bulk earthworks	Indirect	
Soil movement and transfer	Inadvertent or deliberate damage to Aboriginal items	
Indirect	The removal of Aboriginal items via inadvertent damage/theft	
Off-road human and vehicular activity during and after construction	Soil disturbance through excessive erosion from surface water runoff	
Increased visitation by Exploratory workforce at Lobs Hole		
Increased recreational visitation to Lobs Hole after Exploratory Works		
Soil erosion		

4.2 Impacts to Aboriginal heritage

The assessment of harm is conducted within an analytical framework based on Survey Units (Table 4.2 and Table 4.3). An impact assessment is outlined in the table below. It is noted that not all areas within Survey Units would be impacted during the activity, and accordingly, impacts will be partial rather than comprehensive. It is noted that in particular, a riparian exclusion zone of 50 m in width adjacent to the Yarrangobilly River, will result in a conservation outcome of any Aboriginal object incidence within that zone.

Anticipated impacts to Aboriginal heritage are set out in the tables below. Not all heritage Survey Units and Aboriginal artefact locales located during the EIS would be impacted during construction of the development. The location of all Survey Units and Aboriginal object locales recorded at the Project Site is shown in Appendix A.

Table 4.2 Summary description of Survey Units including the AHIMS sites, Aboriginal object locales recorded during survey and test excavation (Test Transects) located in impact zones.

SU ID	ID	Impact
SU3	SU3/L2	Mine Trail Road Upgrade
SU3	SU3/L3	Mine Trail Road Upgrade
RSU3	RSU3/L1	Wallaces Creek bridge works
SU4	56-6-0045	Mine Trail Road Upgrade
SU4	SU4/L2	Excavated Material Stockpile
SU4	SU4/L1	Excavated Material Stockpile
SU6	SU6/L3	Excavated Material Stockpile
SU6	SU6/L4	Excavated Material Stockpile
SU6	SU6/L1	Excavated Material Stockpile
SU6	SU6/L2	Other - Between Stockpiles
SU10	SU10/L3	Lower Lobs Hole Ravine Road Upgrade
SU10	SU10/L2	Lower Lobs Hole Ravine Road Upgrade
SU10	SU10/L1	Lower Lobs Hole Ravine Road Upgrade
RSU12	RSU12/L1	Yarrangobilly River Camps Bridge construction
SU16	SU16/L1	Accommodation Camp
SU16	SU16/L4	Accommodation Camp
SU16	SU16/L2	Accommodation Camp
SU16	SU16/L3	Accommodation Camp
SU13	SU13/L2	Lower Lobs Hole Ravine Road Upgrade
SU24	SU24/L1	Lower Lobs Hole Ravine Road Upgrade
RSU24	RSU24/L1	
SU23	SU23/L1	Middle Bay Wharf Access
SU23	SU23/L3	Middle Bay Wharf Access
SU25	56-6-0039	Upper Lobs Hole Ravine Road
	56-6-0048	
RSU29	RSU29/L1	Lobs Hole substation disturbance area

Table 4.3 **Aboriginal heritage management measures for each heritage Survey Unit**

ID	Aboriginal Objects	Significance	Type of harm	Degree of harm	Management measure	Stage
SU1	Nil recorded	-	Direct Construction Pad Mine Trail Road Extension	Partial <i>Not all of SU would be impacted</i>	Unmitigated impact: Avoidance or salvage not required	N/A
SU2	Nil recorded	Potentially moderate local significance	Direct Construction Pad Mine Trail Road Extension	Partial <i>Not all of SU would be impacted</i>	Test excavation after vegetation clearance and salvage excavation, if required	2
SU3	AHIMS 56-6-0009, SU3/L1, SU3/L2, SU3/L3, Test Transect 1, Test Transect 2, Test Transect 3, Test Transect 4	Low/moderate local significance	Direct Mine Trail Road Upgrade	Partial <i>Not all of SU would be impacted</i>	Unmitigated impact: Avoidance or salvage not required	N/A
RSU3	AHIMS 56-6-0009, 56-6-0495, SU3/L1, SU3/L2, SU3/L3, Test Transect 1, Test Transect 2, Test Transect 3, Test Transect 4	Low/moderate local significance	Direct Mine Trail Road Upgrade	Partial <i>Not all of SU would be impacted</i>	Unmitigated impact: Avoidance or salvage not required	N/A
SU4	AHIMS 56-6-0045, SU4/L1, SU4/L2	Low local significance	Direct Mine Trail Road Upgrade Excavated material stockpile	Partial <i>Not all of SU would be impacted</i>	Unmitigated impact: Avoidance or salvage not required	N/A
SU5	SU5/L1, SU5/L2, Test Transect 1, Test Transect 2, Test Transect 3, Test Transect 4, Test Transect 5	Moderate local significance	Direct Excavated material stockpile	Partial <i>Not all of SU would be impacted</i>	Nil required; Impacts minimal	N/A
SU6	SU6/L1, SU6/L2, SU6/L3, SU6/L4, Test Transect 1, Test Transect 2	Moderate local significance	Direct Excavated material stockpile	Partial <i>Not all of SU would be impacted</i>	After vegetation clearance salvage excavation	2
SU7	Nil recorded	Potentially moderate local significance	Direct Excavated material stockpile, Other	Partial <i>Not all of SU would be impacted</i>	Salvage excavation	2
SU8	AHIMS 56-6-0043, Test Transect 1, Test Transect 2, Test Transect 3, Test Transect 4	Low local significance	Direct Excavated material stockpile	Partial <i>Not all of SU would be impacted</i>	Unmitigated impact: Avoidance or salvage not required	N/A

ID	Aboriginal Objects	Significance	Type of harm	Degree of harm	Management measure	Stage
SU9	Nil recorded	Low local significance	Direct Excavated material stockpile	Partial <i>Not all of SU would be impacted</i>	Unmitigated impact: Avoidance or salvage not required	N/A
SU10	SU10/L1, SU10/L2, SU10/L3, Test Transect 1, Test Transect 2	Moderate local significance	Direct Lobs Hole Ravine Road Upgrade, Other	Partial <i>Not all of SU would be impacted</i>	Salvage excavation	1
SU11	AHIMS 56-6-0041, AHIMS 56-6-0047, SU11/L1, SU11/L2, SU11/L3, Test Transect 1, Test Transect 2, Test Transect 3	Low local significance	Direct Lobs Hole Ravine Road Upgrade, Other	Partial <i>Not all of SU would be impacted</i>	Unmitigated impact: Avoidance or salvage not required	N/A
SU12	AHIMS 56-6-0042, AHIMS 56-6-0046, Test Transect 1, Test Transect 2, Test Transect 3, Test Transect 4, Test Transect 5, Test Transect 6, Test Transect 7, Test Transect 8	Moderate local significance	Direct Lobs Hole Ravine Road Upgrade	Partial <i>Not all of SU would be impacted</i>	Depending on the extent of impacts, salvage excavations may be appropriate	2
RSU12	56-6-0537 (RSU12/L1) is Adjacent to river crossing where modification footprint represents wider construction corridor	Moderate local significance	Modification Construction footprint	Partial Not all of SU would be impacted	Increased impacts have determined that salvage excavation is required within RSU12 Depending on the extent of impacts, salvage excavations may be appropriate	2
SU13	SU13/L1, SU13/L2	Low local significance	Direct Lower Lobs Hole Ravine Road Upgrade	Partial <i>Not all of SU would be impacted</i>	Unmitigated impact: Avoidance or salvage not required	N/A
SU14	Nil recorded	Low local significance	Nil	Nil	N/A	N/A
SU15	Nil recorded	Low local significance	Direct Accommodation camp	Partial <i>Not all of SU would be impacted</i>	Unmitigated impact: Avoidance or salvage not required	N/A
SU16	SU16/L1, SU16/L2, SU16/L3, SU16/L4	Low local significance	Direct Accommodation camp	Partial <i>Not all of SU would be impacted</i>	Unmitigated impact: Avoidance or salvage not required	N/A
SU17	SU17/L1	Low local significance	nil	<i>nil</i>	N/A	N/A

ID	Aboriginal Objects	Significance	Type of harm	Degree of harm	Management measure	Stage
SU18	SU18/L1	Low local significance	Direct Mine Trail Road Upgrade Rock emplacement Area	Partial <i>Not all of SU would be impacted</i>	Unmitigated impact: Avoidance or salvage not required	N/A
SU19	Nil recorded	Low local significance	Direct Construction Pad	Partial <i>Not all of SU would be impacted</i>	Unmitigated impact: Avoidance or salvage not required	N/A
SU20	SU20/L1, SU20/L2, SU20/L3, SU20/L4, SU20/L5, SU20/L6, SU20/L7, SU20/L8, SU20/L9, SU20/L10, SU20/L12, SU20/L12	Low local significance	Nil	Nil	N/A	N/A
SU21	Nil recorded	Low local significance	Direct Lobs Hole Ravine Road upgrade	Partial <i>Not all of SU would be impacted</i>	Unmitigated impact: Avoidance or salvage not required	N/A
SU22	SU22/L1, SU22/L2, SU22/L3	Low local significance	Direct Lower Lobs Hole Ravine Road Upgrade	Partial <i>Not all of SU would be impacted</i>	Unmitigated impact: Avoidance or salvage not required	N/A
SU23	SU23/L1, SU23/L2, SU23/L3	Low local significance	Direct Middle Bay Wharf Access Wharf laydown	Partial <i>Not all of SU would be impacted</i>	Unmitigated impact: Avoidance or salvage not required	N/A
SU24	SU24/L1	Low local significance	No longer within Exploratory Works construction footprint Direct Lower Lobs Hole Ravine Road Upgrade	Partial <i>Not all of SU would be impacted</i> No additional impacts anticipated	Unmitigated impact: Avoidance or salvage not required	N/A

ID	Aboriginal Objects	Significance	Type of harm	Degree of harm	Management measure	Stage
SU25	AHIMS 56-6-0038 AHIMS 56-6-0039 AHIMS 56-6-0040	Low local significance	Direct Lobs Hole Ravine Road Upgrade Laydown	Partial <i>Not all of SU would be impacted</i>	Salvage excavation in the area of the three AHIMS sites in this Survey Unit for the purposes of providing a comparative analysis with the archaeology in Lobs Hole (regardless of low significance)	2
SU26	Nil recorded	Low local significance	Direct Talbingo access	Partial <i>Not all of SU would be impacted</i>	Unmitigated impact: Avoidance or salvage not required	N/A
SU27	Nil recorded	Low local significance	nil	nil	N/A	N/A
RSU29	56-6-0048 (KNP91-63) is within modification footprint	Generally of negligible significance with the exception of certain micro topographies which may potentially be of low/moderate local significance	Direct Modification construction footprint	Partial <i>Not all of SU will be impacted</i>	Unmitigated impact: Avoidance or salvage not required. Note: site 56-6-0540 (Ravine SU29/L1) is 30 m west of the proposed modification footprint and features a hatchet head. This site will be avoided Establish no-go zone to ensure no inadvertent impacts.	2

4.3 Environmental risk assessment

The environmental aspects and impacts for soil are further considered within Appendix A3 of the EMS. This includes a risk assessment process. The risk assessment is based on (1) the likelihood of an impact occurring as a result of the aspect; and (2) the consequences of the impact if the event occurred.

5 Environmental management measures

5.1 Management measures

A range of environmental requirements and control measures are identified in the EIS, Submissions Report and the draft baseline conditions. Safeguards and management measures will be implemented to avoid, minimise or manage impacts to Aboriginal heritage across the site.

Specific safeguards and management measures to address the impacts to Aboriginal heritage are outlined in Table 5.1.

This section of the plan provides the management measures that will be used to manage and mitigate potential impacts of the project on Aboriginal heritage. This section aims to outline the appropriate actions that will be undertaken for the purposes of managing impacts to Aboriginal heritage and to comply with the conditions of Infrastructure Approval.

In this section the following matters are addressed:

- a) The procedures for the management of known and predicted Aboriginal objects within the Project area.
- b) The procedures to be followed if any unexpected Aboriginal heritage values and/or human remains are found during the development works.
- c) The impact mitigation procedures to be followed (salvage excavations).
- d) The process for how the AHMP procedures will be managed and adhered to during the construction and operation of the project.
- e) The process that will be followed for continuing consultation with the Aboriginal stakeholders, NPWS Tumut Brungle Gundagai Aboriginal Community Executive Advisory Committee and the NSW OEH, where required.

For the purposes of this AHMP, the activity is inclusive of all ground disturbing impacts relating to the Exploratory works. Aboriginal objects in the form of stone artefacts were recorded in a number of heritage Survey Units across the project area. The majority of Survey Units in which Aboriginal stone artefacts have been recorded are predicted to contain additional items which, because of ground cover (grasses etc), were undetectable during field survey. The construction of the project may therefore result in impacts to known stone artefact locales and undetected artefact distributions as described in respect of each Survey Unit (Table 3.1).

Due to the cultural significance of the Aboriginal heritage in the development area, a strategy of impact mitigation is required. Where feasible the Project will avoid and minimise impacts to ground surfaces containing heritage items, to ensure as little impact as possible to Aboriginal objects in the Project area. It is also appropriate to salvage artefacts from certain Survey Units (via archaeological excavation) prior to commencing construction works on the site as a form of impact mitigation.

In summary, it is appropriate to implement practical measures that may be taken to protect, conserve or salvage Aboriginal objects in the Project area.

Note: Timing and completion of the management measures described in this document must be incorporated into the project program as some activities will require substantial time-frames to complete before construction commences.

The following management and mitigation measures are proposed:

5.1.1 Further investigation

In certain Survey Units (SUs 2, 6 & 7), further investigation (test excavation) is required. Test excavation in these Survey Units (except for SU6 where limited excavation was conducted) was not able to be undertaken during the assessment for the EIS due to thick undergrowth, blackberry thickets etc. The test excavation is required in order to determine whether or not impact mitigation such as salvage excavations are required.

The areas would need to be cleared of vegetation in order to provide access. This would need to be done under the supervision of the project archaeological so as to ensure that ground surfaces are disturbed as minimally as possible. Test excavation would be conducted in accordance with Requirement 16a - Test excavations, Requirement 16b – Objects recovered during test excavations and Requirement 17 – When to stop test excavations, as outlined in the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (NSW DECCW 2010a).

The further investigations would need to be conducted as soon as practicable so as to ensure that an appropriate length of time is available to conduct the test excavation and, thereafter, to develop management and mitigation strategies, and implement these prior to construction. It is noted that if archaeological deposits of moderate or high significance are found, salvage excavations are likely be required before construction.

5.1.2 Conservation

The development of a conservation strategy is not relevant or warranted in respect of the Aboriginal heritage in the Project area. However, impacts to ground surfaces should be kept to an absolute minimum where possible.

As noted previously, a riparian exclusion zone adjacent to the Yarrangobilly River measuring 50 m wide (except for nominated river and creek crossings) will result in a conservation outcome in these areas.

The management of the riparian exclusion zone adjacent to the Yarrangobilly River would entail appropriate identification of the area on project plans and the installation of temporary barriers and signage denoting the no-go areas.

5.1.3 Mitigated impacts

Mitigated impact would entail salvage excavations in some Survey Units (SU10, possibly SU12 [depending on the extend of proposed impacts], and SU25) (see table below). In addition, it is likely that salvage excavations will be required in SUs 2, 6 and 7. The Salvage would be designed to maximise the number of artefacts retrieved in order to conduct meaningful analyses of artefact technology and related factors, so as to provide a higher level of understanding of the nature of Aboriginal use and occupation of the local landscape. The methodology to be implemented is set out in Appendix B.

Table 5.1 **Aboriginal heritage management measures**

ID	Measure / Requirement	Stage	When to implement	Responsibility	Source document
General					
AH01	<p>Training will be provided to all project personnel, including relevant sub-contractors on Aboriginal heritage requirements from this plan through inductions, toolboxes and targeted training. Training would include details of heritage values of the project site and the procedure in the event of discovery of unexpected heritage values or bones (potential human remains).</p> <p>All project personnel will attend a mandatory induction on mobilisation to site, which addresses Aboriginal heritage. Toolboxes and targeted training will be extended to scope based activities where applicable.</p>	All	Pre-construction and construction	Contractor	Condition 11 and 14
AH02	For areas avoided by construction, exclusion zones would be put in place by an archaeologist to ensure archaeological deposits are not incidentally damaged. These would be fenced with parawebbing or some other similar fencing that would exclude entry by people or plant to avoid incidental impacts on the site.	All	Pre-construction and construction	Contractor	Condition 11 and 14
AH03	Impacts to ground surfaces will be kept to an absolute minimum where practicable.	All	Construction	Contractor	Condition 11 and 14
AH04	<p>A riparian exclusion zone adjacent to the Yarrangobilly River measuring 50 m wide (except for nominated river and creek crossings and sections of Mine Trail Road) will be established and appropriately demarcated prior to construction. The exclusion zone will be:</p> <ul style="list-style-type: none"> designated as an exclusion zone and identified on the Sensitive Area Plans; and marked in the field with temporary barriers and signage denoting a “no-go” area. 	All	Pre-Construction and construction	Contractor	Condition 11 and 14
AH05	<p>If any part of the project (such as an ancillary facility) is located in an area which has not been subject to Aboriginal heritage field survey and assessment, an assessment by the project archaeologist will be undertaken before that part of the project proceeds.</p> <p>Appendix A shows survey units covered by this AHMP.</p>	All	Pre-construction and construction	Contractor	Conditions 11, 13 and 14
AH06	If the project design changes and further impacts are proposed to any Aboriginal object, sites which are currently outside of the identified impacted area the changes will be referred to the project archaeologist for review. This may warrant the implementation of additional impact mitigation strategies.	All	Pre-Construction and construction	Contractor	Conditions 11, 13 and 14
Test excavation and salvage					

ID	Measure / Requirement	Stage	When to implement	Responsibility	Source document
AH07	Salvage excavations are to be undertaken in Survey Units SU10 and SU25 . Salvage of Survey Unit SU12 is also required if impacts are anything other than negligible. This would need to be determined in consultation with the project archaeologist. Salvage excavations will be undertaken in accordance with the salvage methodology included in Appendix B.	Stage 1 Stage 2	Pre-Construction and construction	Snowy Hydro	Conditions 11, 13 and 14
AH08	In Survey Units SU2 , SU6 and SU7 , some further investigation (test excavation) is required after vegetation clearance in order to get access. The following steps are recommended for Survey Units SU2 , SU6 and SU7 : <ul style="list-style-type: none"> • vegetation clearance would need to be conducted under the supervision of the project archaeologist so as to ensure that ground disturbed is minimised; • test excavation would be conducted in accordance with the <i>Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales</i> (NSW DECCW 2010a); • the test excavations should be conducted as soon as practicable so as to ensure that an appropriate length of time is available to conduct the test excavation and, thereafter, to develop management and mitigation strategies, if required, to be implemented prior to construction. <p>Note: if archaeological deposits of moderate or high significance are found, salvage excavations would be required before construction.</p> <p>Salvage excavations will be undertaken in accordance with the salvage methodology included in Appendix B.</p>	Stage 1 Stage 2	Pre-Construction and Construction	Snowy Hydro	Conditions 11, 13 and 14
Unexpected finds					
AH09	The unexpected finds procedure included within Appendix C will be followed in the unlikely event that unexpected Aboriginal heritage objects or values are identified during construction.	All	Pre-Construction and construction	Contractor	Condition 11 and 14
AH10	In the unlikely event that human remains are found during construction, the protocol outlined in Appendix C would need to be followed.	All	Construction	Contractor	Condition 11 and 14

6 Compliance management

6.1 Monitoring and inspection

Weekly environmental inspections of the Aboriginal heritage in project will occur in accordance with Section 7 of the EMS. The monitoring will review the heritage located in each area in which works are scheduled to occur, are occurring and have occurred, in order to ensure that appropriate management and mitigation strategies are implemented, in accordance with this AHMP.

The weekly monitoring would ensure that the project archaeologist is engaged in accordance with appropriate scheduling and time frames as set out in Table 5.1 to:

- supervise vegetation clearance prior to test excavation, if required;
- conduct test excavation and salvage excavations where and as required;
- assist in the establishment of *no go* zone to ensure that no inadvertent impacts occur to areas which may be outside the immediate project area; and
- and otherwise to ensure that the procedures as set out in this AHMP are adequately implemented.

6.2 Training

All site personnel will undergo site induction training relating to Aboriginal heritage management issues.

In order for site workers and contractors to be able to know what processes to follow in regard to this AHMP, they would be provided training on heritage matters through the Project induction.

The construction contractor would need to engage the project archaeologist to provide input to induction training on the following matters:

- the identification of Aboriginal objects and skeletal material;
- Aboriginal cultural awareness; and
- the AHMP procedures to be followed during the operational life of the project.

6.3 Protocol for continued Aboriginal community consultation

Consultation with the Registered Aboriginal Parties will be on-going throughout the construction. Consultation will include but not be limited to:

- ensuring that Aboriginal stakeholders are able to have reasonable access to cultural heritage sites on site. The process to obtain access will entail Aboriginal stakeholders making the request for access to the Snowy Hydro project manager. Snowy Hydro will then facilitate access construction site with Leed. The Aboriginal stakeholders will be taken into the construction site by Leed.
- Test excavations;
- Salvage excavations.

The matter of care and control of Aboriginal objects retrieved during salvage excavations would need to be determined in consultation with RAPs within six months of the salvage works taking place.

6.4 Incidents and auditing

In the event of the occurrence of any of the following incidents, the proponent will contact the project archaeologist, Snowy Hydro, NSW DPE, OEH, NPWS and the RAPs within 24 hours:

1. If any breaches to the procedures as set out in this AHMP occur;
2. If any unexpected Aboriginal objects and/or Aboriginal skeletal remains are found; or
3. If any areas are to be impacted that have not as yet been surveyed for the presence of Aboriginal sites.

All reporting to DPIE and NPWS will be via the Major Projects portal.

Further details regarding the staff induction and training are outlined in Section 4.4 of the EMS.

Audits will be undertaken to assess the effectiveness of the management measures, compliance with this AHMP, the draft baseline conditions, EIS, Submissions Reports and other relevant approvals, licences and guidelines.

Audit requirements are detailed in Section 7 of the EMS.

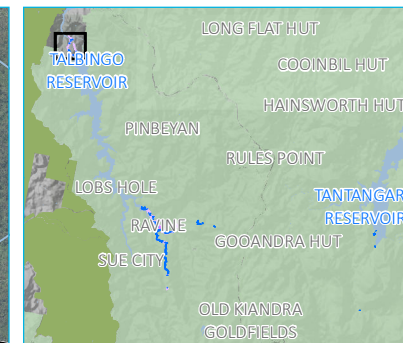
6.5 Reporting

Reporting will include monthly internal project reports and six monthly compliance reports as required by the conditions of Approval. The six-monthly reports will track compliance against the conditions of Approval (Schedule 4, Condition 7) and the revised environmental management measures. Training, induction and other reporting requirements and responsibilities are documented in Sections 4,6 and 7 of the EMS. All reporting to DPIE and NPWS will be via the Major Projects portal.

The Aboriginal cultural heritage salvage report will be provided to the NSW DPE, OEH and Registered Aboriginal Parties.

Appendix A

Location mapping of known Aboriginal heritage items

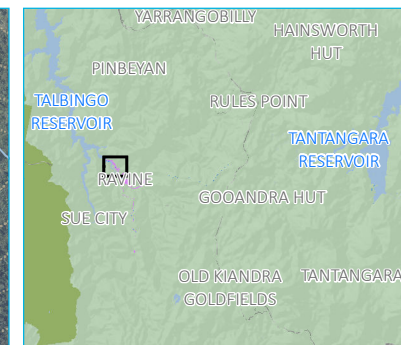
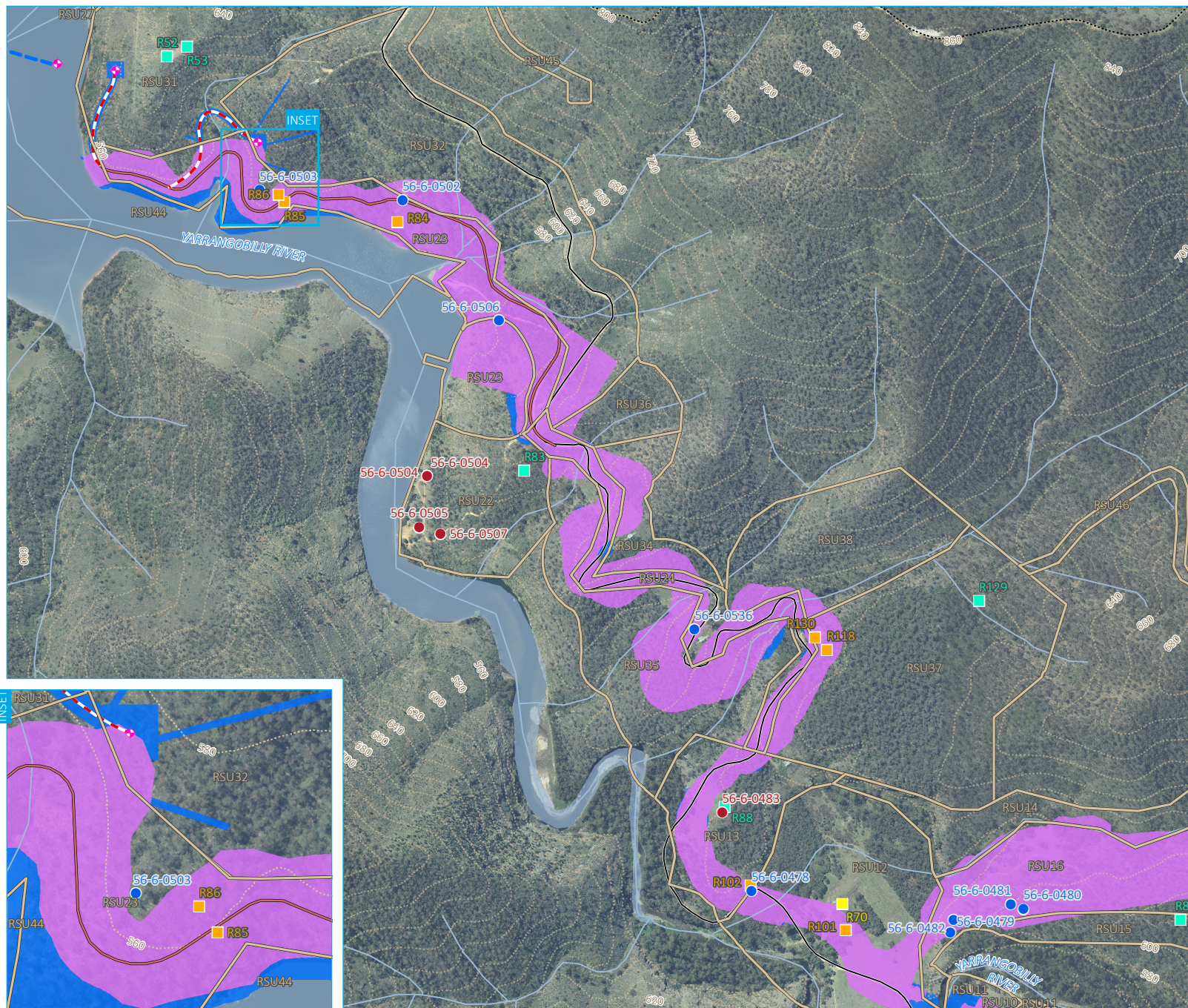


KEY

- Historic site
- Historic site - In impact area
- Heritage survey unit
- EW Disturbance footprint
- MOD 1 Disturbance footprint
- Waterbody
- Main road
- Local road
- Vehicular track
- Watercourse

Aboriginal and historic heritage sites - Talbingo

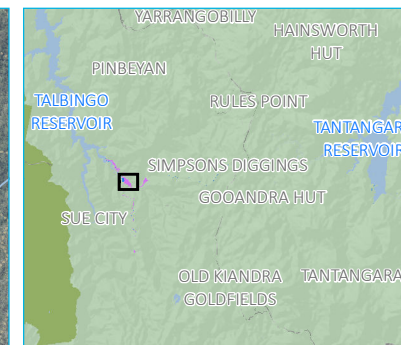
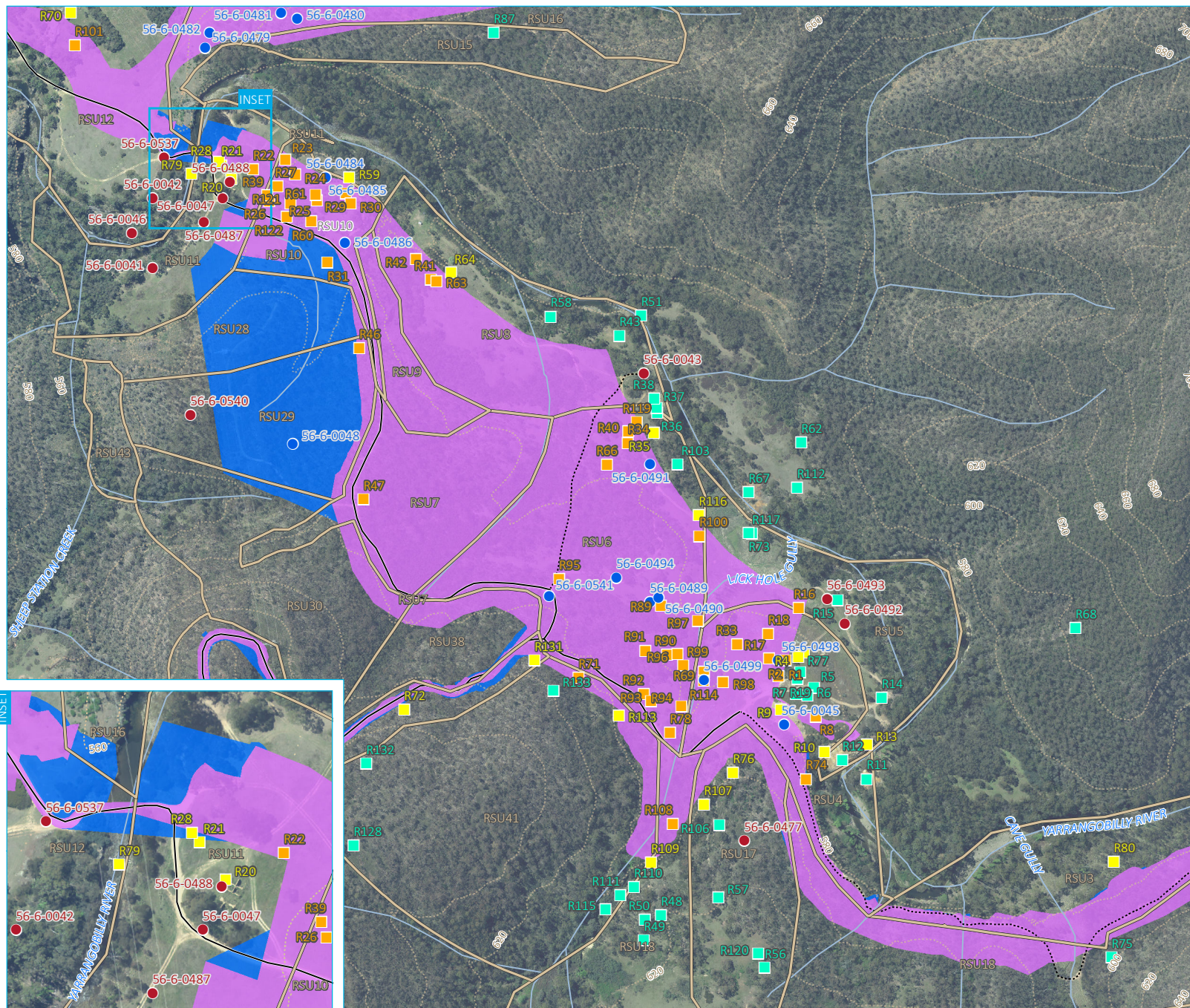
Snowy 2.0
Exploratory Works EIS
Modification 1
Figure A 1



- KEY**
- ◆ Proposed borehole
 - AHIMS
 - AHIMS - In impact area
 - Historic site
 - Historic site - Within 20 m of impact area
 - Historic site - In impact area
 - ▭ Heritage survey unit
 - EW Disturbance footprint
 - MOD 1 Disturbance footprint
 - Waterbody
 - Proposed access track
 - Approved access as part of EW EIS
 - Boat access
 - Local road
 - Vehicular track
 - 20 m contour
 - Watercourse

Aboriginal and historic heritage sites - Lobs Hole (1)

Snowy 2.0
Exploratory Works EIS
Modification 1
Figure A 2



KEY

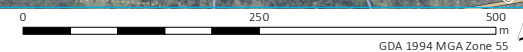
- AHIMS
- AHIMS - In impact area
- Historic site
- Historic site - Within 20 m of impact area
- Historic site - In impact area
- ▭ Heritage survey unit
- ▭ EW Disturbance footprint
- ▭ MOD 1 Disturbance footprint
- Local road
- Vehicular track
- 20 m contour
- Watercourse

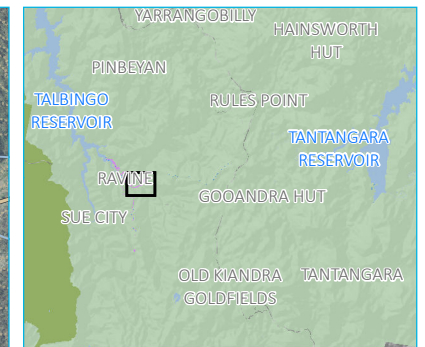
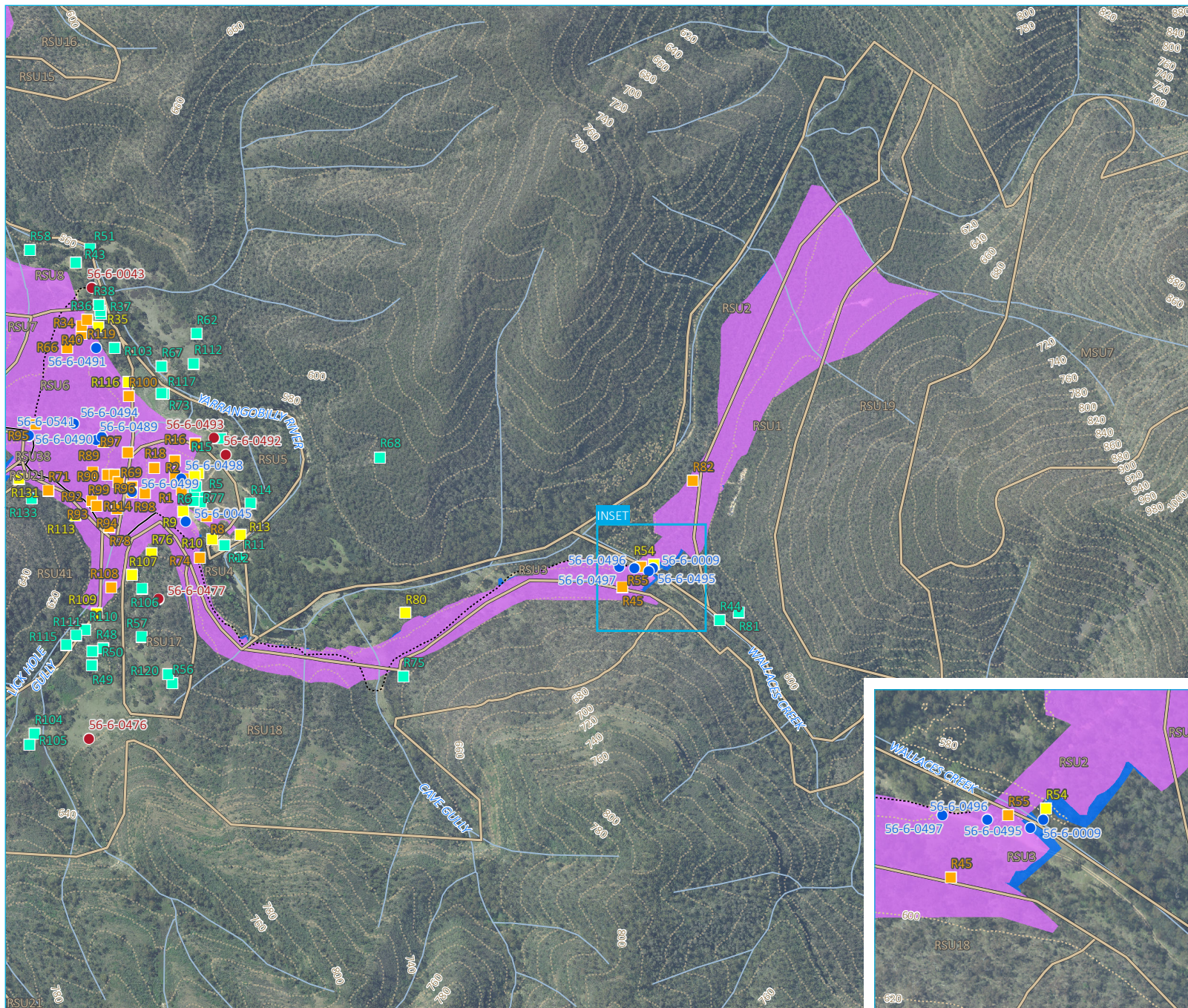
Aboriginal and historic heritage sites - Lobs Hole (2)

Snowy 2.0
Exploratory Works EIS
Modification 1
Figure A 3

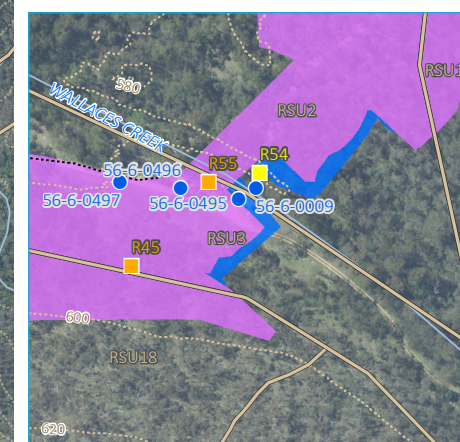
Source: EMM (2019); Snowy Hydro (2019); LPI (2019); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011); NSW Archaeology (2019)

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- KEY**
- AHIMS
 - AHIMS - In impact area
 - Historic site
 - Historic site - Within 20 m of impact area
 - Historic site - In impact area
 - ▭ Heritage survey unit
 - ▭ EW Disturbance footprint
 - ▭ MOD 1 Disturbance footprint
 - Local road
 - Vehicular track
 - 20 m contour
 - Watercourse



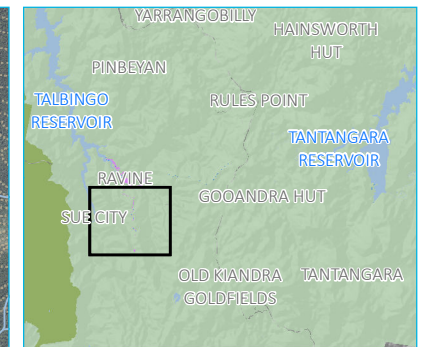
Aboriginal and historic heritage sites
- Portal construction pad

Source: EMM (2019); Snowy Hydro (2019); LPI (2019); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011); NSW Archaeology (2019)

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Snowy 2.0
Exploratory Works EIS
Modification 1
Figure A 4





KEY

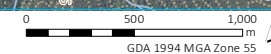
- AHIMS
- AHIMS - In impact area
- Historic site
- Heritage survey unit
- EW Disturbance footprint
- MOD 1 Disturbance footprint
- Waterbody
- Boat access
- Main road
- Local road
- Vehicular track
- 20 m contour
- Watercourse

Aboriginal and historic heritage sites - Lobs Hole Ravine Road

Snowy 2.0
Exploratory Works EIS
Modification 1
Figure A 5

Source: EMM (2019); Snowy Hydro (2019); LPI (2019); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011); NSW Archaeology (2019)

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Appendix B

Mitigated Impacts Salvage methodology

Mitigated Impacts Salvage Methodology

No culturally or spiritually significant places or locations have been identified during the formal Aboriginal consultation process and the field surveys of the project area. However, if such places were identified at any time during the Exploratory Works project, an archival recording methodology would be implemented in accordance with the NSW OEH 2010 Code of Practice and the OEH 2011 Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW and include but not be limited to:

- The establishment of protocols to ensure the archival recording of the cultural features process will be conducted sensitively and appropriately;
- The collection of relevant knowledge, oral histories and further research (if relevant);
- Recording methods such as photography, mapping and written documentation;
- Curation of the archival material in accordance with the instructions from the relevant Aboriginal stakeholders.

For certain known Aboriginal cultural features such as the stone artefact and archaeological deposit recordings, mitigated impact would entail salvage excavations in some Survey Units which are assessed to be of higher significance value (see table 4.3). An area of at between 100 and 400 square metres in each Survey Unit is suggested for the initial consideration of stakeholders. The following is a methodology to be implemented:

The Salvage is designed to maximise the number of artefacts retrieved in order to conduct meaningful analyses of artefact technology and related factors, so as to provide a higher level of understanding of the nature of Aboriginal use and occupation of the local landscape.

The key aspects of the proposed Salvage excavation methodology we would highlight are:

- The excavations would be conducted over a one metre square grid network. Exploratory squares would be excavated at 5 or 10 metre intervals to identify artefact hotspots and geomorphological variability (if relevant). Where artefacts occur in relatively high densities, excavation of those squares would be extended into broad area excavations. The excavation would be conducted by hand, using spades and trowels, in arbitrary 10 cm units or stratigraphic units if warranted. It is expected that excavations would be shallow given high levels of erosion. Artefacts are likely to be present as shallow lag deposits in local gravels rather than buried in deep soil profiles. Therefore, it is likely that in some areas single stratigraphic units will be excavated. Given the presence of extensive cobbles, these would need to be removed by hand from each excavation area, stacked and returned at the completion of works.
- All spoil recovered from individual squares/spits would be shovelled into colour coded, labelled buckets and transported to a sieving station. The sieving station would be set up adjacent to the river or at a contracted water truck and the spoil would be wet sieved (if at all possible, otherwise dry sieving would be used) through either 2.5mm or 5 mm sieves (sieve size would be dependent on sieving method).
- All material retrieved in sieves would be sorted by qualified personnel on a sorting table on-site. All stone known or suspected of being artefactual would be retained for later identification under low powered microscopy. A tally of artefact counts would be made, and this information would be used to inform the excavation of the site. ie the identification of high artefact counts from a square would trigger the commencement of open area excavation at that square.
- The excavation stratigraphy would be recorded by a geomorphologist, and the excavated area would be mapped and surveyed. This would allow for a fine grained level of information to be produced in regard to the relationship between site location, Aboriginal activity areas and

landforms. Recording would include detailed section drawing, photography and pH testing of units, and examination of sections and inclusions. Reference sediment sampling of drawn sections would be undertaken. The logs and descriptions of the Salvage Squares would provide an archive record of the stratigraphy observed.

- Descriptive terminology would follow published standards and methodologies used internationally for archaeological soils and stratigraphy (see for example Goldberg and Macphail 2006; Courty et al. 1989; Davidson and Simpson 2001) and for Quaternary sediments and soils (for example Gale and Hoare 1991; Kemp 1985). Where conflicts exist with Australian soil systems and taxonomy, inclusive regolith methodology and terminology are preferred (see Ollier and Pain 1996) over other soil landscape approaches.
- Description would focus on sedimentological trends through and between excavated units, and on the nature of the stratigraphic boundaries (interfaces) between units as aids to sequence or deposit unit interpretation. Descriptive terminology would be kept distinct and separate from interpretation. Descriptions in the field will form the site archive.
- Stratigraphic descriptions will include visual estimates of particle size sorting, grading (ie vertical changes in the modal particle size up and down the profiles) and occasionally trends in grading are identified eg. terms like 'fining-upwards' may be used. When the term massive is used it will mean an absence of stratification or structure within the deposit (Fritz and Moore 1988). Boundaries observed between visually or texturally different deposit units will be defined in terms of how sharp or gradual they were ie. in terms of boundary distinctiveness (sharp, clear gradual) and also boundary form (wavy, undulating etc.) (see Courty et al. 1989). Evidence for mixing or movement of sediment across boundaries will be noted.

The stone artefacts would be described, analysed and bagged off-site in the NSW Archaeology Pty Ltd laboratory and would be conducted by qualified archaeologists. The analysis will entail inspection under low powered stereoscopic magnification, measuring, and description according to technological attributes.

The lithic analysis would focus on addressing the following issues:

- artefact density;
- the identification of knapping or part knapping events;
- variability across the landscape;
- technological and behavioural activities represented by the lithic material;
- raw material origins.

Aboriginal cultural material must be stored in a specified location (anticipated to be NSW Archaeology Pty Ltd laboratory) until it can be returned to country (note. a Plan of Management for artefact would not be necessary). A report would be produced to accompany the curated material. The report would be provided to the relevant RAPs within twelve (12) months of the salvage being completed.

The archaeologist must complete and submit any related Aboriginal Site forms to NSW OEH within 30 days of the reburial taking place. Specifically, Aboriginal Site Impact Forms would be completed and submitted to OEH in order for site status to be updated on the AHIMS database.

A salvage report (the archival record) would be compiled and provided to all stakeholders relevant to the project including but not limited to DPE, OEH, NPWS, Snowy Hydro and Raps.

Appendix C

Unexpected Finds Protocol

Unexpected finds procedure - Aboriginal objects or values

In the unlikely event that unexpected Aboriginal objects or values are encountered during construction (such as very high artefact distributions in areas previously assessed to contain low densities), the following steps should be followed:

1. All construction that could potentially harm the Aboriginal objects or values must cease (including stopping all construction within at least 20 m). Only construction that is required to comply with occupational and environmental health and safety standards and/or to protect the cultural heritage should occur.
2. The person who identified the Aboriginal objects or values must immediately notify the person in charge of the activity. The Project Superintendent or Foreman and the Contractor's Environmental Site Representative is to be notified.
3. The item is to be protected by the establishment of 20 metre no-go zone.
4. The Contractor's Environmental Site Representative is to notify Snowy Hydro.
5. If the item is likely to be a human bone, follow the ancestral human remains process below and notify the Police.
6. Works may continue outside of the minimum 20 m barrier.
7. The project archaeologist is to be notified within 24 hours of the discovery.
8. The project archaeologist is to attend site where required and conduct a preliminary assessment and recording of the item. The location and context of the Aboriginal object or value is to be recorded.
9. Within five (5) days of the Aboriginal objects or values being discovered, the archaeologist is to facilitate the involvement of any relevant RAPs and, in consultation, recommend the most appropriate course of action.
10. Where the item is an Aboriginal object, the discovery must be reported to the NSW OEH as soon as practicable.
11. The project archaeologist must assess the scientific significance of the Aboriginal objects or values. If the Aboriginal objects or values are assessed as being of:
 - a) **Low scientific significance** (eg isolated artefacts or disperse/small artefact scatters less than three artefacts, eroding earth features) and where avoidance is impossible, no further work is required once the steps outlined above have been completed.
 - b) **Moderate or higher scientific significance**, it is preferable to avoid impact if possible. If avoidance is not possible, a salvage excavation should be undertaken, if relevant. The aims of the salvage excavation will be to obtain as much information as possible from the material and/or deposit.
 - Salvage must occur within 30 working days unless constraints (eg weather) occur. The archaeologist must facilitate the involvement of any relevant RAPs and develop a suitable methodology for salvage excavation in consultation with the RAPs. The location and context of the cultural heritage material must be recorded in detail and an Aboriginal Site Impact Recording Form completed and submitted to NSW OEH

within four (4) months from the end of salvage excavations. A report detailing the excavation, analysis and results must be provided to NSW OEH within twelve (12) months of completion of the salvage.

- In the event that Aboriginal objects are salvaged, regardless of significance, they must be curated in accordance with conventional archaeological practice, that is, the material must be identified, packaged, labelled with reference to provenance, appropriately catalogued and packed securely. The proponent must arrange for the secure storage of Aboriginal cultural material in a specified location until it can be transferred to the relevant RAPs or buried in country. A report must be produced to accompany the curated material.
 - Curated Aboriginal objects together with the aforementioned report must be provided to the relevant RAPs within three (3) months of the salvage being completed.
 - If reburial of any cultural material is to take place, it must be in accordance with the relevant RAPs requirements or to the satisfaction of the project archaeologist. The archaeologist must complete and submit any related Aboriginal Site forms to NSW OEH within 30 days of the reburial taking place.
12. Within 60 days of being notified, complete and submit relevant recording forms to NSW OEH.
13. Work may commence within the area of exclusion when:
- a) the appropriate protective measures have been undertaken;
 - b) where the relevant Aboriginal cultural heritage records have been updated and/or completed; and
 - c) there is no other prudent or feasible course of action.

Ancestral human remains

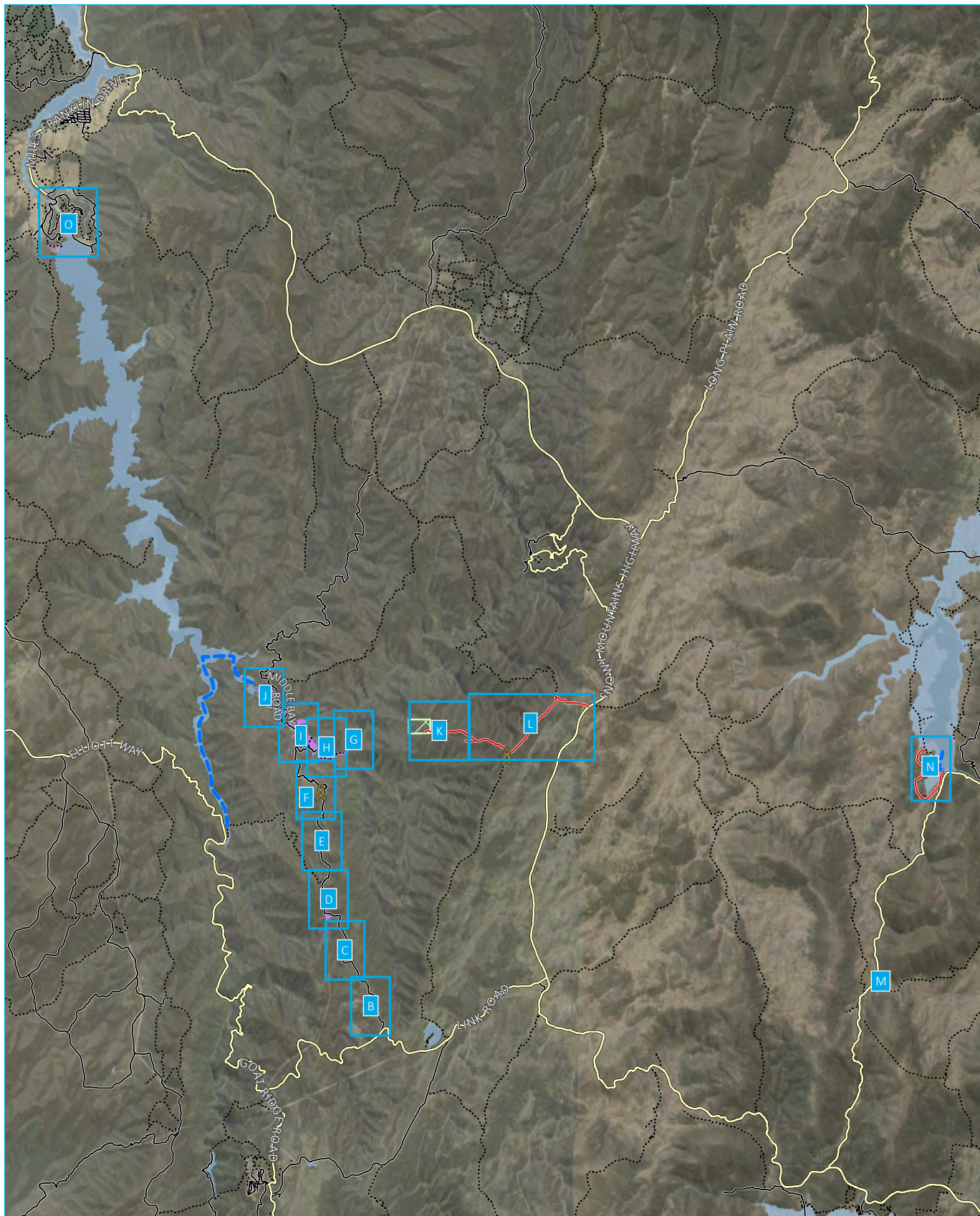
Should suspected ancestral human remains be encountered, the following process will be adhered to.

1. Do not further disturb or move the remains.
2. Immediately cease work in the vicinity and cordon area off (with buffer of 2m).
3. Notify the NSW Police.
4. Notify the project archaeologist and the NSW OEH Environment Line on 131 555 as soon as practicable and provide available details of the remains and their location.
5. In the event that the bones are not human, works may recommence.
6. If the bones are human, and are archaeological in nature (ie likely to be Aboriginal remains), the relevant Aboriginal communities must be notified.
7. If the bones are required to be subject to Police investigation, then direction from the Police shall be followed.

8. If the bones are considered to have historic heritage value, the Historic Heritage Management Plan shall be followed.
9. For bones that are considered to be Aboriginal remains, an Archaeological Management Plan will be prepared. An assessment will also occur to determine whether the impact is consistent with the Infrastructure Approval, or if modification is required.

Appendix D

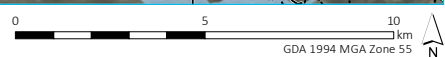
Project boundary



Source: EMM (2019); Snowy Hydro (2019); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

KEY

- Proposed temporary communications upgrade location
- Existing access track
- Boat access
- Main road
- Local road
- Vehicular track
- Map index
- EW approved construction footprint
- EW modification construction footprint (additional)
- Boreholes requiring on-site adjustment
- Waterbody

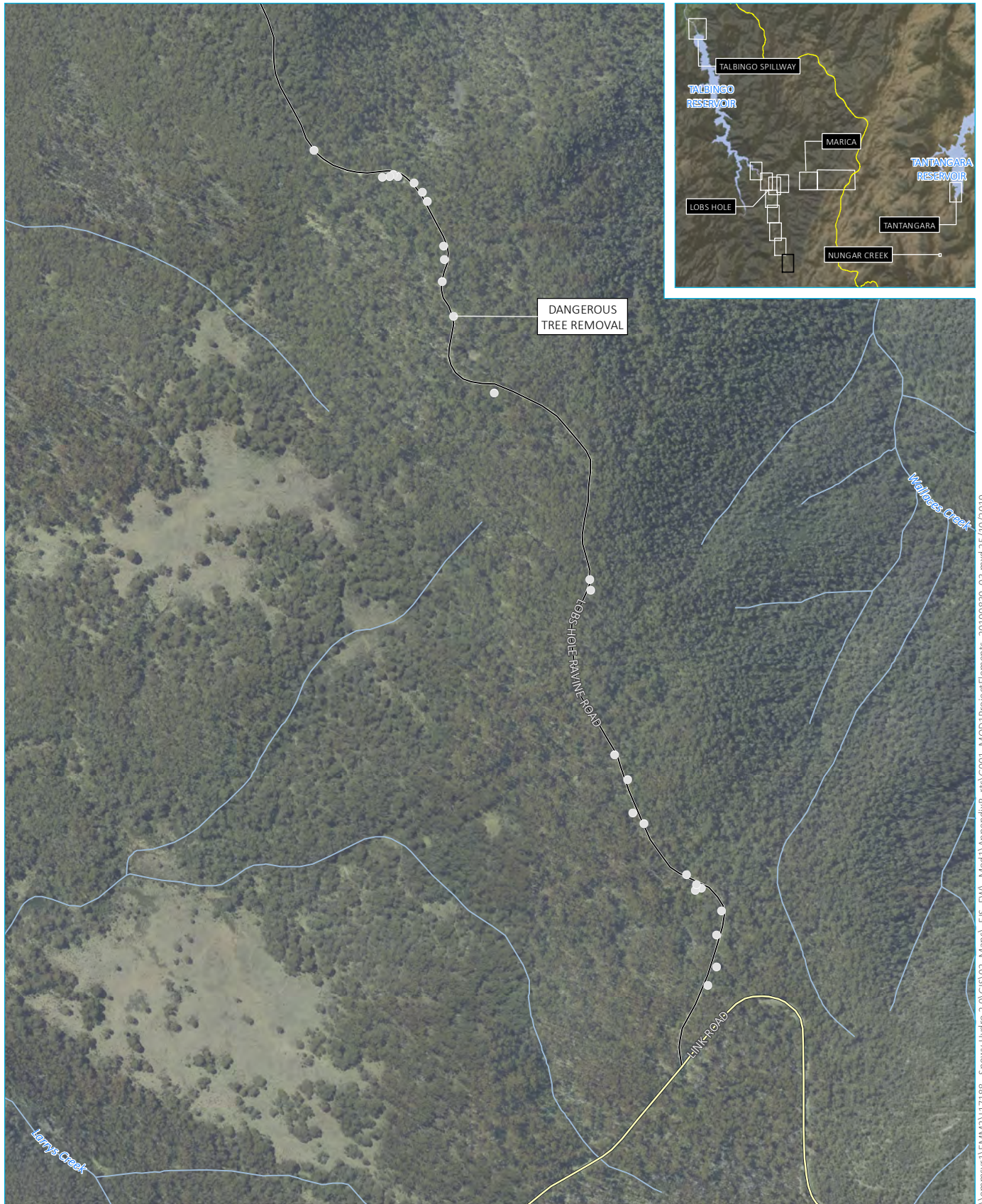


Exploratory Works project boundary - overview

Snowy 2.0
Exploratory Works EIS
Modification 1
1 a



\\emmsvr1\EMM\2017188 - Snowy Hydro 2.0\GIS\02_Maps\EIS_EW_Mod1\AppendixB_rts\G002_MOD1ProjectElementsOVERVIEW_20191119_04.mxd 19/11/2019



Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

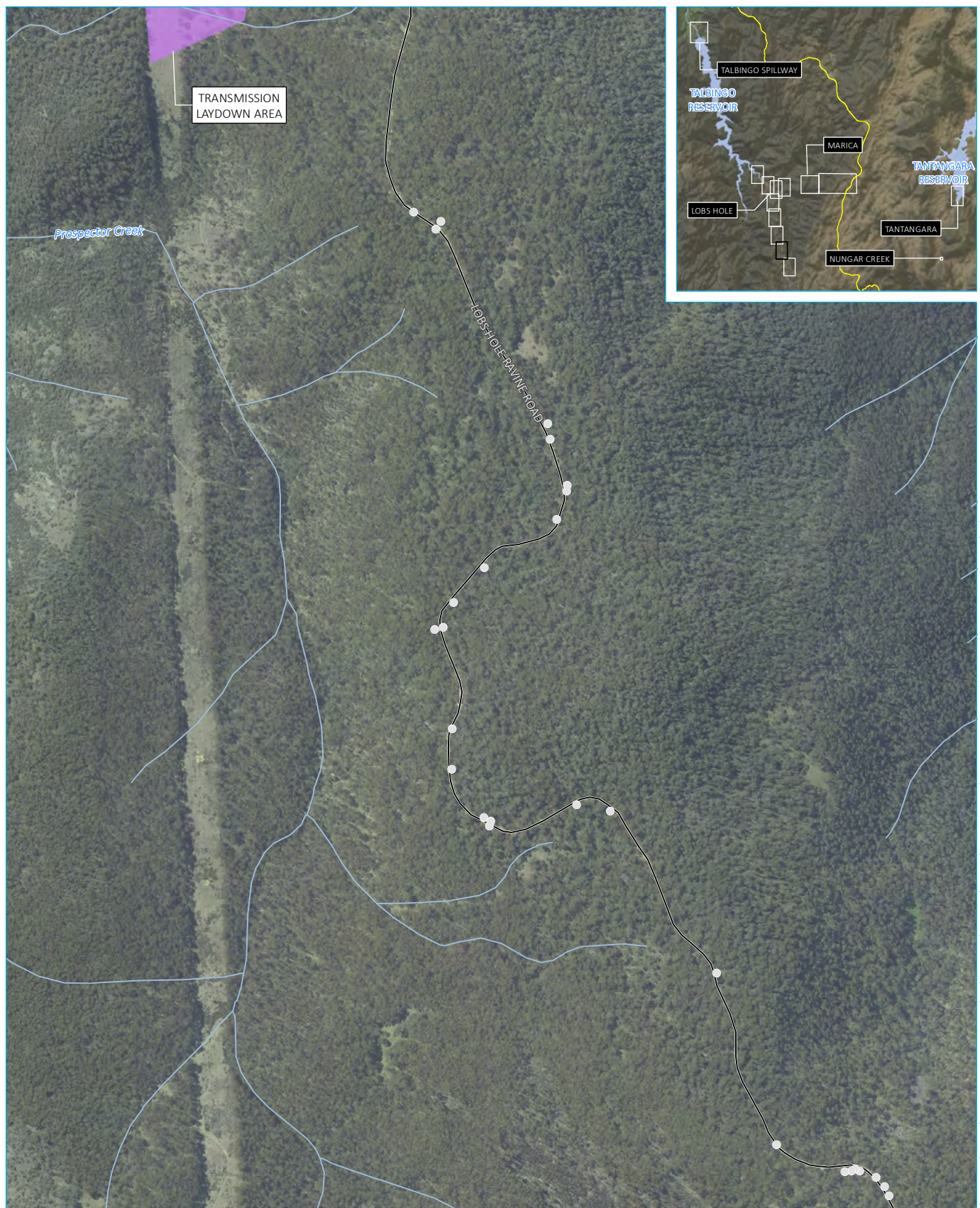
KEY

- Dangerous tree
- Main road
- Local road
- Watercourse/drainage line

Exploratory Works project boundary
- Lobs Hole Ravine Road (Upper) 1

Snowy 2.0
Exploratory Works EIS
Modification 1
1 b





Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

KEY

- Dangerous tree
- Local road
- Watercourse/drainage line
- EW approved construction footprint

Exploratory Works project boundary
- Lobs Hole Ravine Road (Upper) 2

Snowy 2.0
Exploratory Works EIS
Modification 1
1 c





Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

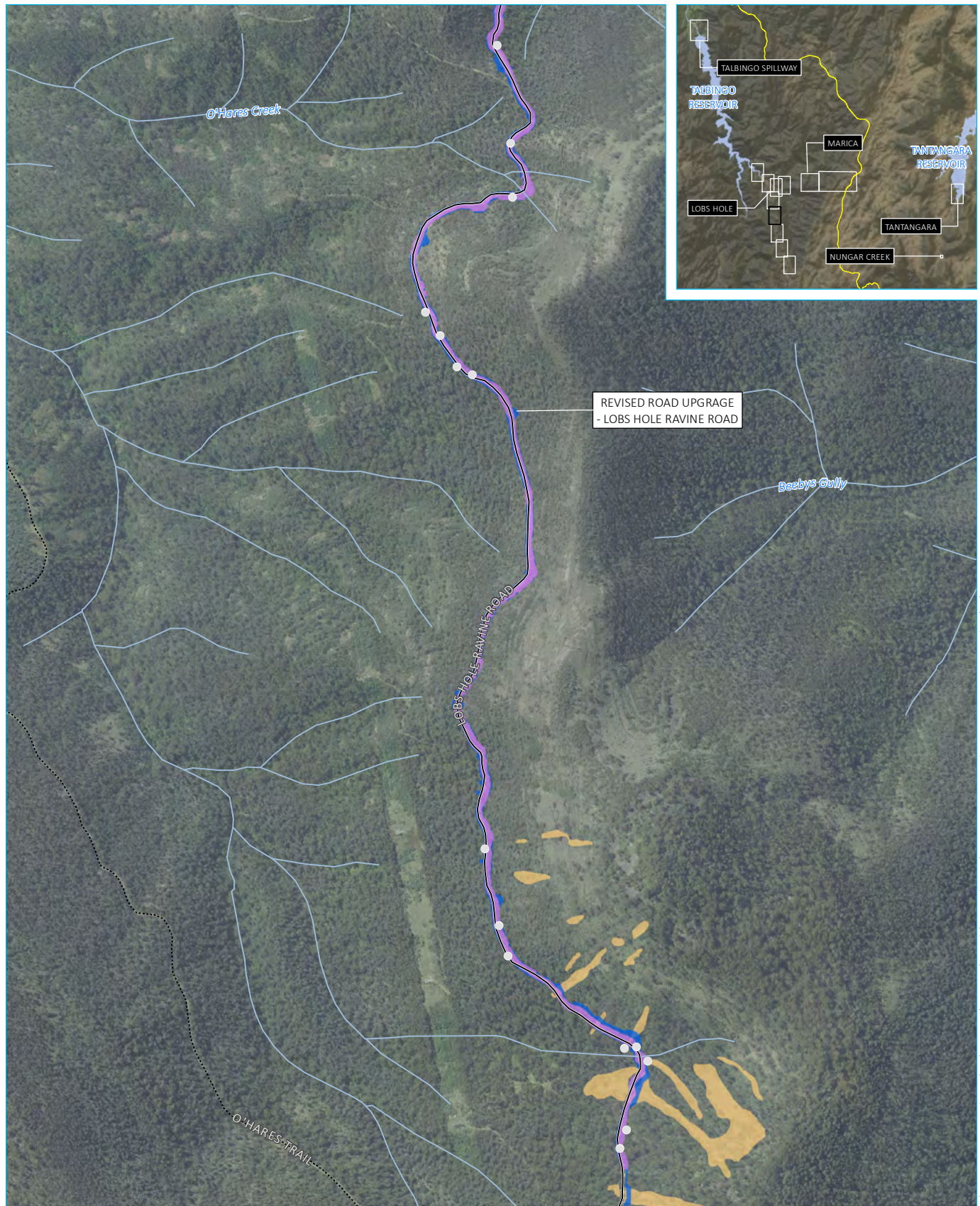
KEY

- Dangerous tree
- Local road
- Vehicular track
- Watercourse/drainage line
- EW approved construction footprint
- EW modification construction footprint (additional)

Exploratory Works project boundary
- Lobs Hole Ravine Road (Upper) 3

Snowy 2.0
Exploratory Works EIS
Modification 1
1 d





Source: EMM (2019); Snowy Hydro (2019); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

KEY

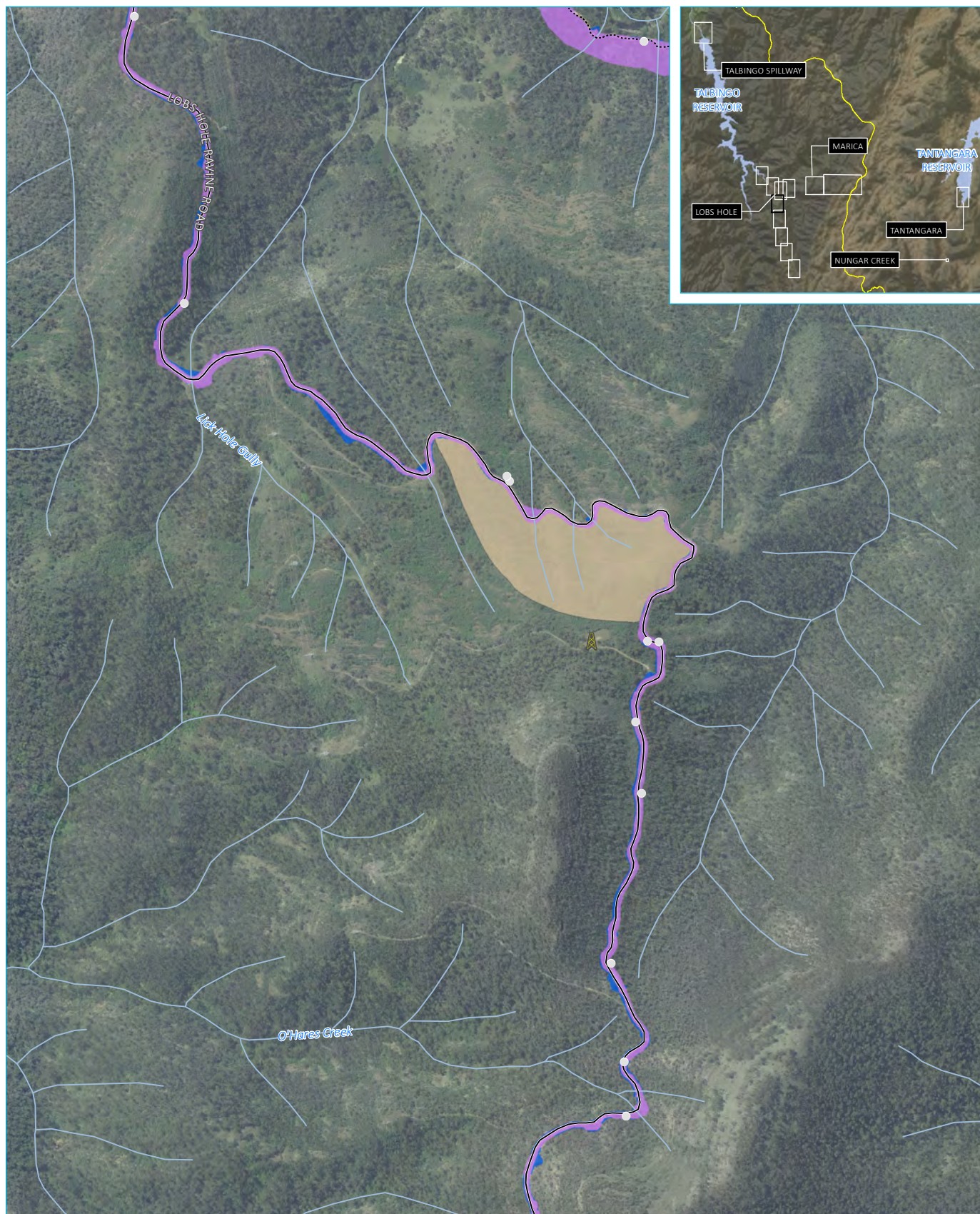
- Dangerous tree
- Local road
- Vehicular track
- Watercourse/drainage line
- EW approved construction footprint
- EW modification construction footprint (additional)
- Boulder stream

Exploratory Works project boundary
- Lobs Hole Ravine Road (Lower) 1

Snowy 2.0
Exploratory Works EIS
Modification 1
1 e



OV17188 - Snowy Hydro 2.0\GIS\02_Maps\EIS_EWA_Mod1\AppendixB_rts\G001_MOD1ProjectElements_20191127_05.mxd 27/11/2019



Source: EMM (2019); Snowy Hydro (2019); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

KEY

- Dangerous tree
- ▲ Existing temporary communications
- Local road
- Vehicular track
- Watercourse/drainage line
- EW approved construction footprint
- EW modification construction footprint (additional)
- Fossil area

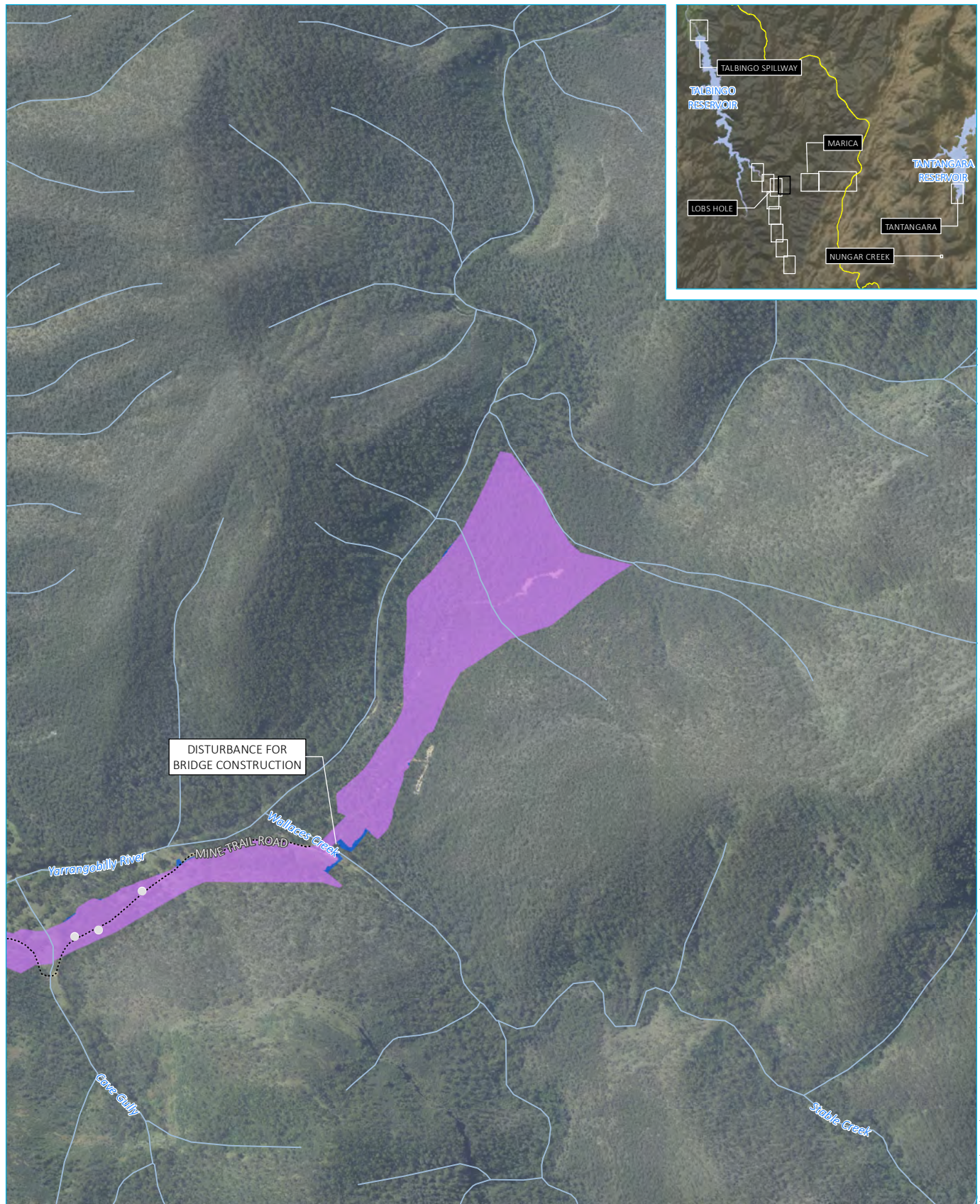
0 50 100
m
GDA 1994 MGA Zone 55
N

Exploratory Works project boundary
- Lobs Hole Ravine Road (Lower) 2

Snowy 2.0
Exploratory Works EIS
Modification 1
1 f



OU17188 - Snowy Hydro 2.0\GIS\02_Maps\EIS_EWA_Mod1\AppendixB_rts\G001_MOD1ProjectElements_20191127_05.mxd 27/11/2019



Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

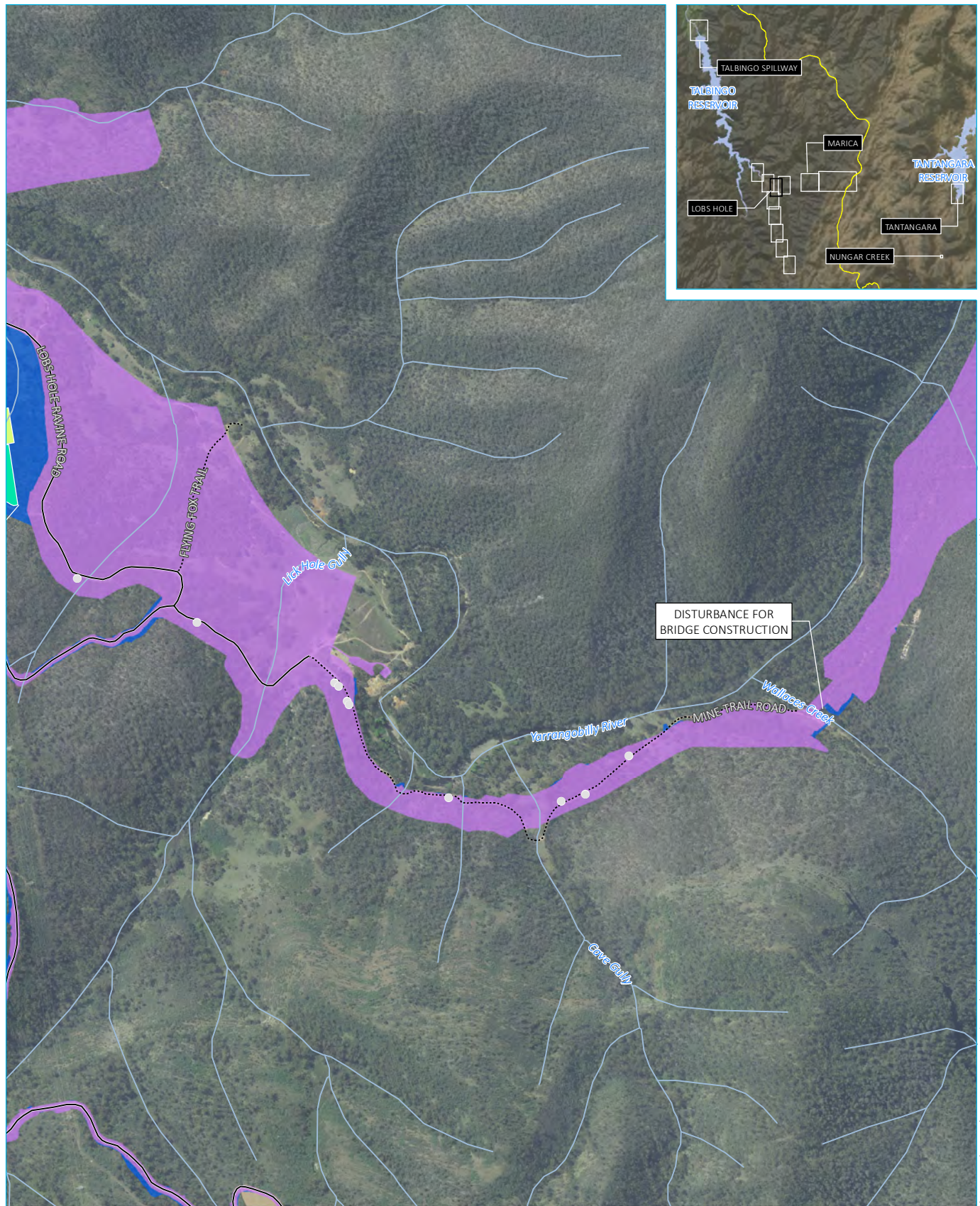
KEY

- Dangerous tree
- Vehicular track
- Watercourse/drainage line
- EW approved construction footprint
- EW modification construction footprint (additional)

Exploratory Works project boundary
- Mine Trail Road 1

Snowy 2.0
Exploratory Works EIS
Modification 1
1 g





Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

KEY

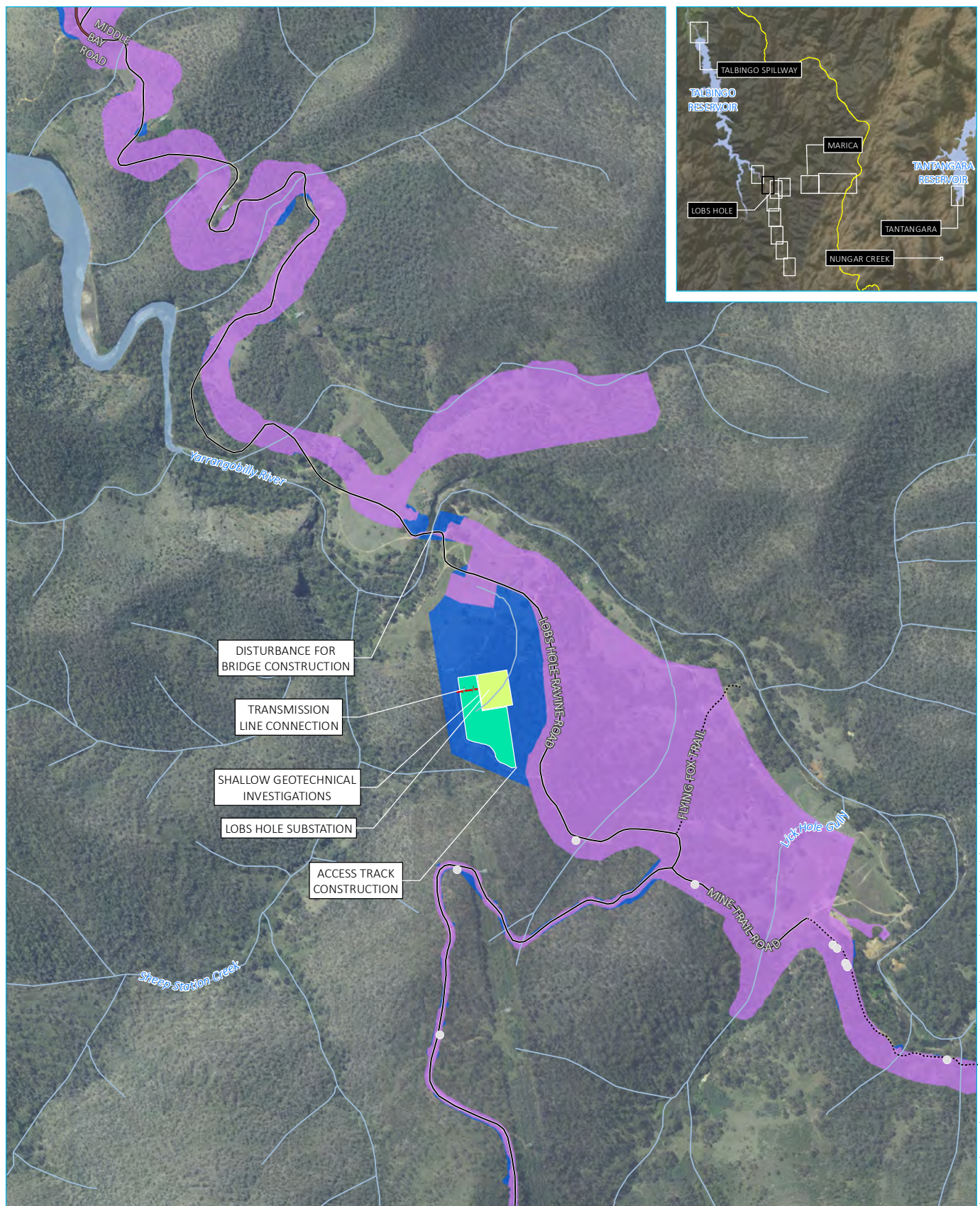
- Dangerous tree
- Local road
- Vehicular track
- Watercourse/drainage line
- EW approved construction footprint
- EW modification construction footprint (additional)
- Indicative laydown area
- Proposed substation
- Fossil area

0 250 500
m
GDA 1994 MGA Zone 55

Exploratory Works project boundary
- Mine Trail Road 2

Snowy 2.0
Exploratory Works EIS
Modification 1
1 h





Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPGA (2011)

KEY

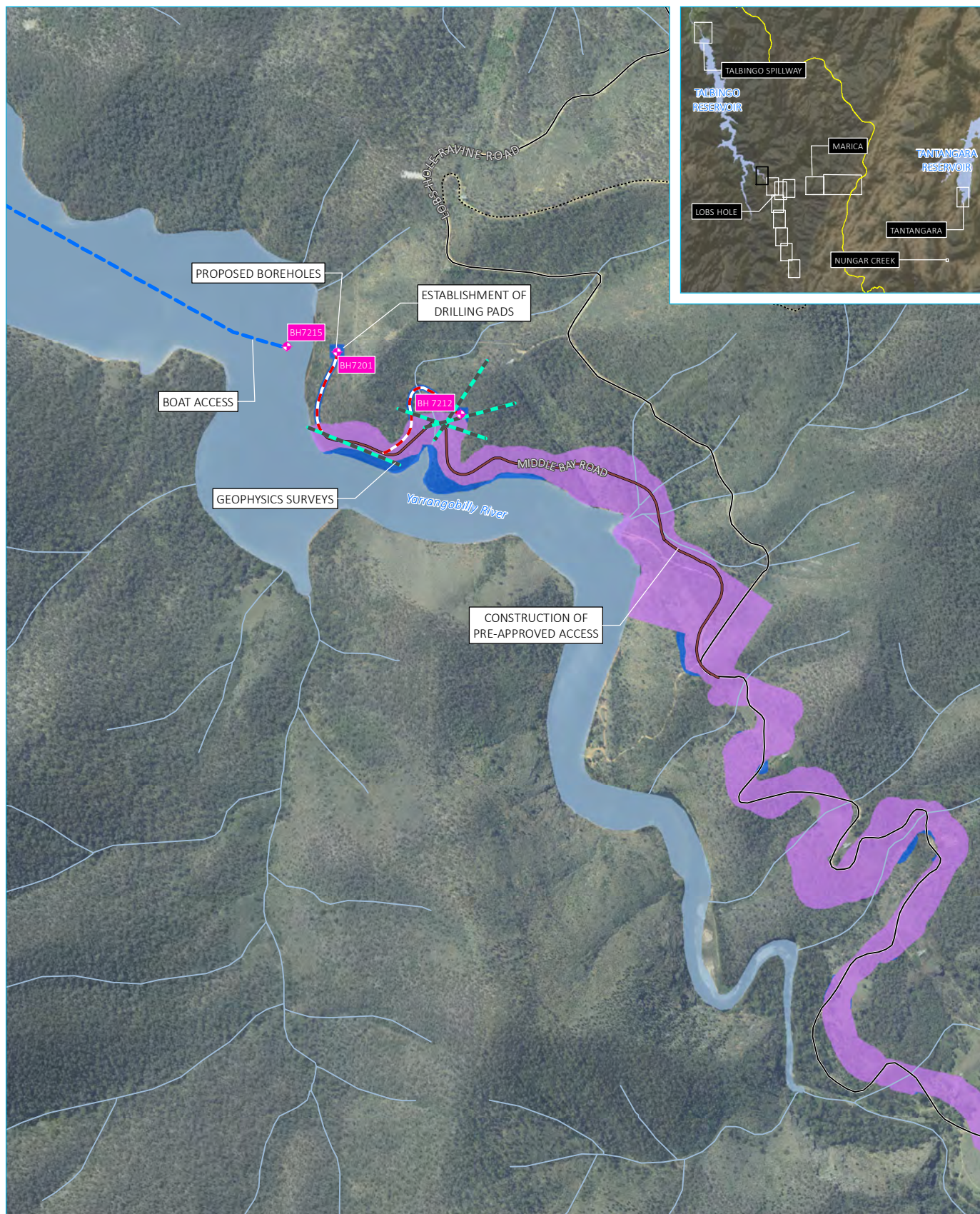
- Dangerous tree
- Approved EW access
- Transmission line connection
- Local road
- Vehicular track
- Watercourse/drainage line
- EW approved construction footprint
- EW modification construction footprint (additional)

- Indicative laydown area
- Proposed substation
- Waterbody

Exploratory Works project boundary
- Lobs Hole

Snowy 2.0
Exploratory Works EIS
Modification 1
1 i





Source: EMM (2019); Snowy Hydro (2019); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

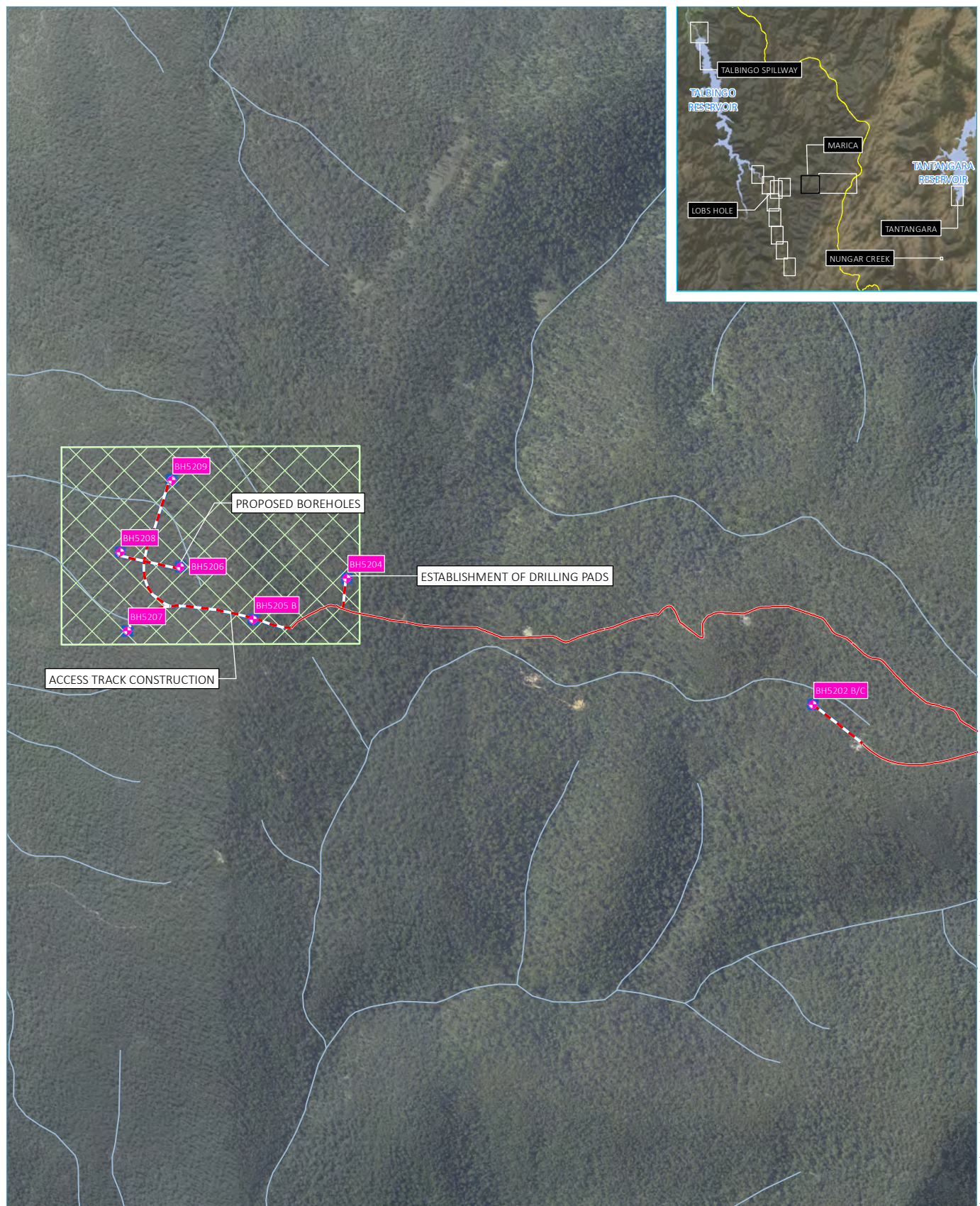
KEY

- ◆ Proposed borehole
- Proposed geophysics
- Proposed access track
- Approved EW access
- Boat access
- Local road
- ⋯ Vehicular track
- Watercourse/drainage line
- EW approved construction footprint
- EW modification construction footprint (additional)
- Waterbody

Exploratory Works project boundary
- Lobs Hole Ravine Road

Snowy 2.0
Exploratory Works EIS
Modification 1
1 j





Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

KEY

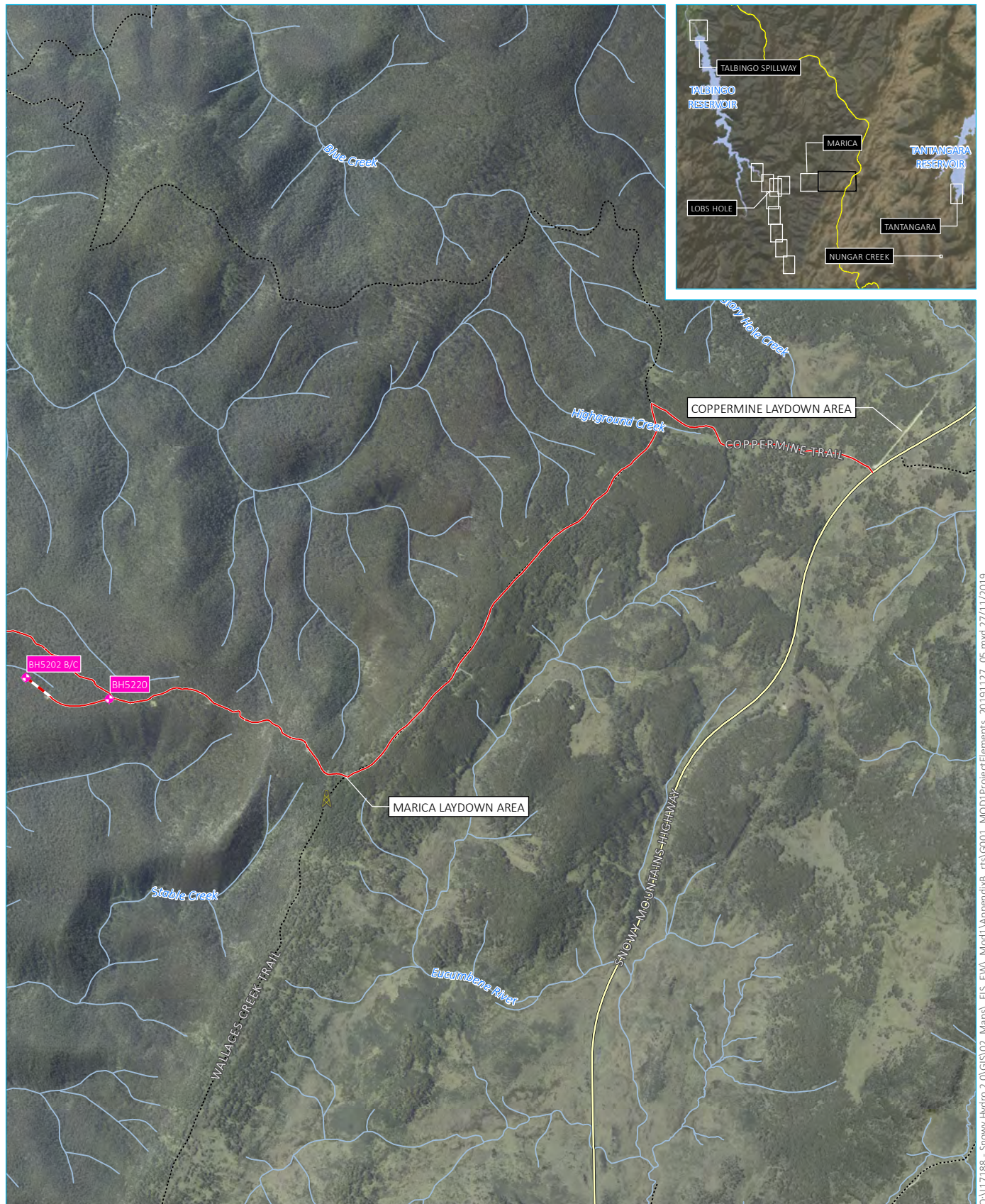
- Proposed borehole
- Existing access track
- Proposed access track
- Watercourse/drainage line
- EW modification construction footprint (additional)
- Boreholes requiring on-site adjustment

Exploratory Works project boundary
- Marica 1

Snowy 2.0
Exploratory Works EIS
Modification 1
1 k



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Source: EMM (2019); Snowy Hydro (2019); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

KEY

- ◆ Proposed borehole
- ▲ Existing temporary communications
- Existing access track
- - - Proposed access track
- Main road
- Vehicular track
- Watercourse/drainage line
- EW modification construction footprint (additional)

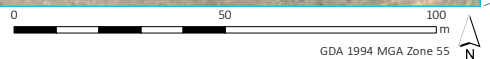
Exploratory Works project boundary
- Marica 2

Snowy 2.0
Exploratory Works EIS
Modification 1
11





Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)



KEY

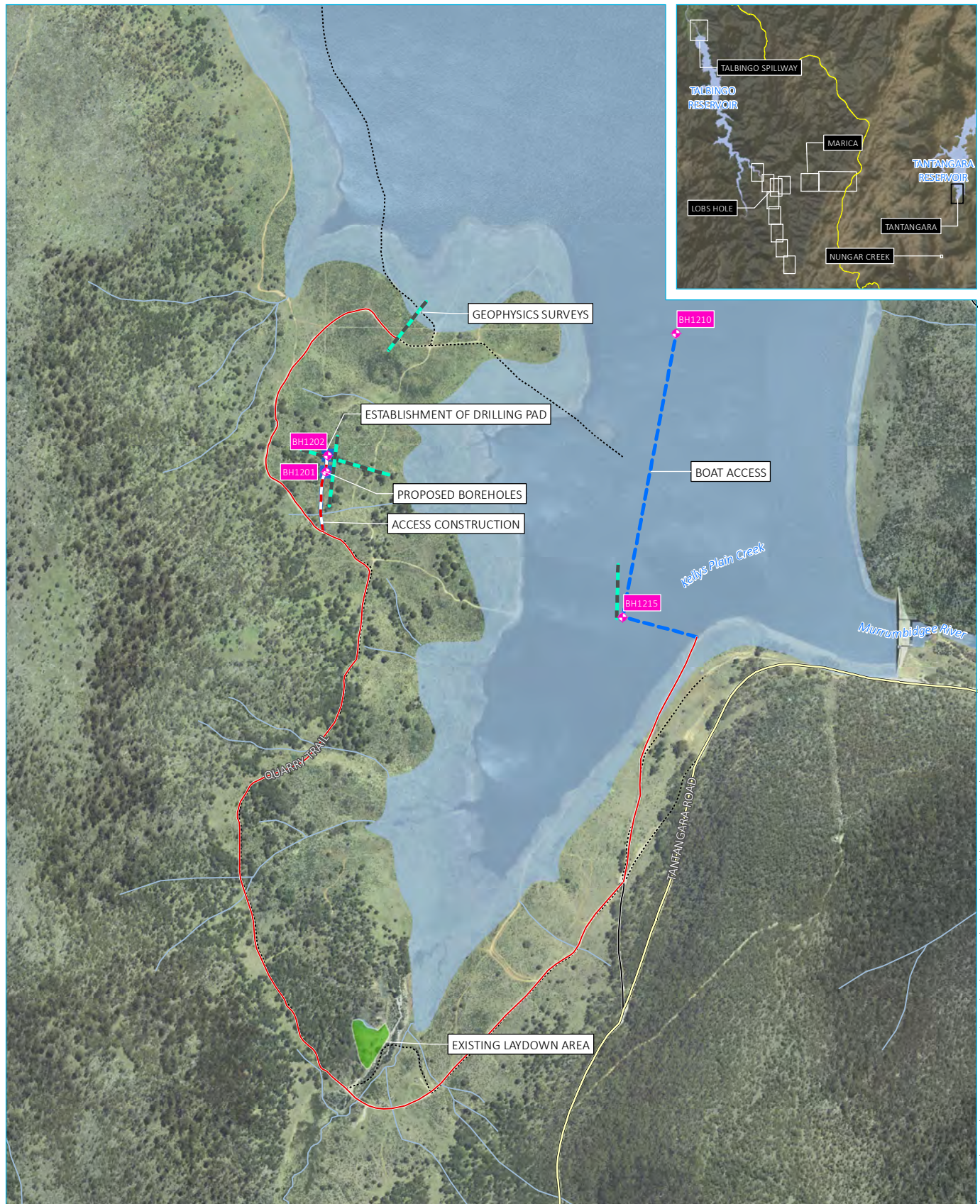
- Proposed borehole
- Main road
- Watercourse/drainage line
- Proposed work area

Exploratory Works project boundary
- Nungar Creek

Snowy 2.0
Exploratory Works EIS
Modification 1
1 m



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Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

KEY

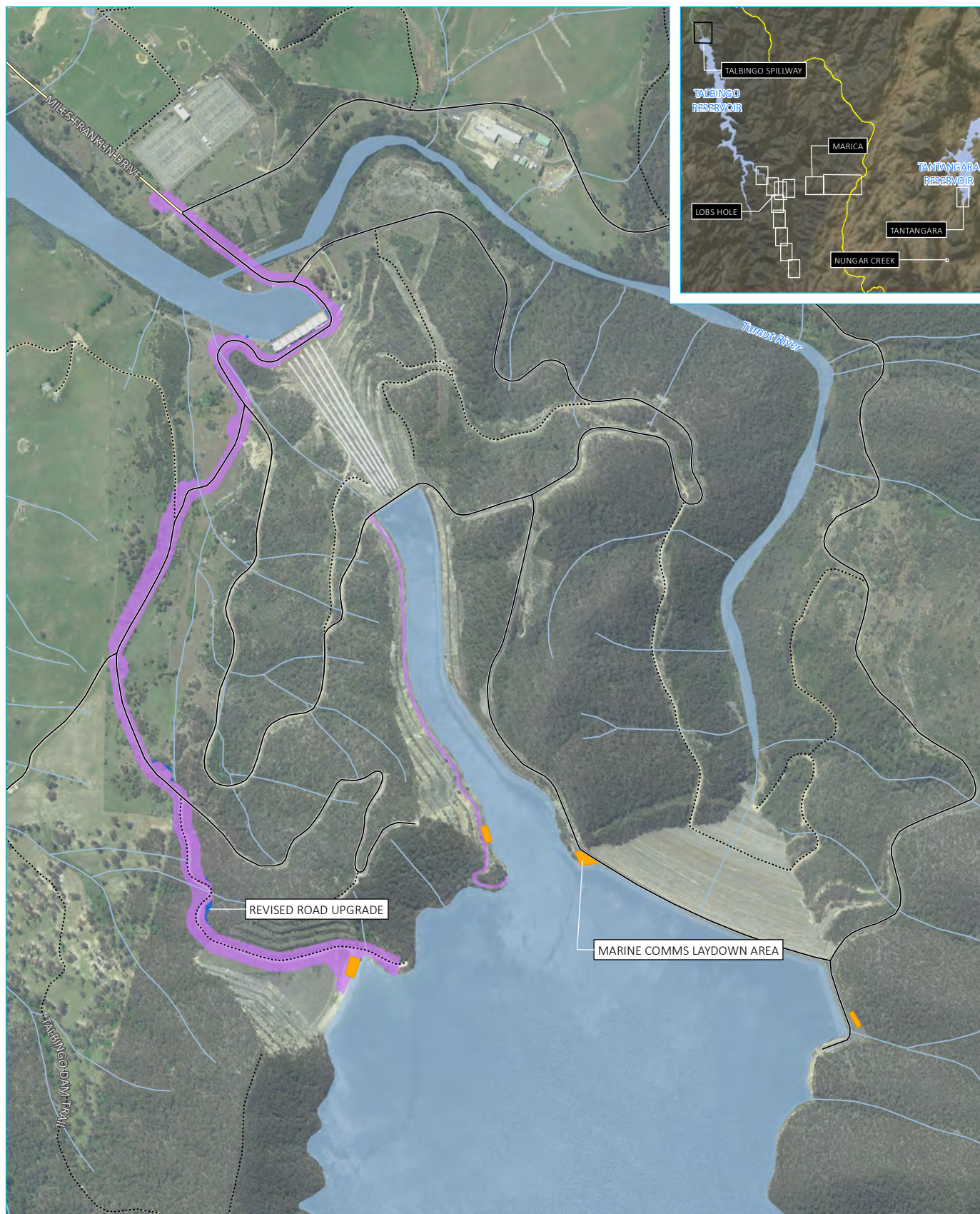
- | | |
|-----------------------|---|
| Proposed borehole | Watercourse/drainage line |
| Proposed geophysics | EW modification construction footprint (additional) |
| Existing access track | Existing laydown area |
| Proposed access track | Waterbody |
| Boat access | |
| Main road | |
| Local road | |
| Vehicular track | |

Exploratory Works project boundary
- Tantangara Reservoir

Snowy 2.0
Exploratory Works EIS
Modification 1
1 n



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Source: EMM (2019); Snowy Hydro (2019); PhotoMapping (2018); SMEC (2019); DFSI (2017); GA (2015); LPMA (2011)

KEY

- Main road
- Local road
- Vehicular track
- Watercourse/drainage line
- EW approved construction footprint
- EW modification construction footprint (additional)
- Marine comms laydown (proposed)
- Waterbody

Exploratory Works project boundary
- Talbingo spillway

Snowy 2.0
Exploratory Works EIS
Modification 1
10

