

Christina McNally
Senior Environmental Advisor
Snowy Hydro Limited
22/09/2026

Subject: Snowy 2.0 Main Works – Surface Water Management Plan - Tantangara Intake - Stage 3 - Phase 2

Dear Mrs McNally,

I refer to the Surface Water Management Plan - Tantangara Intake - Stage 3 - Phase 2 submitted in accordance with Condition 31(c), Schedule 3 of the Infrastructure Approval (the approval) for Snowy 2.0 Main Works (SSI-9687 as modified). I also acknowledge your response to the Department's review comments and request for additional information.

I note the Surface Water Management Plan Tantangara Intake - Stage 3 - Phase 2 Management Plan:

- has been prepared in consultation with the NSW Environment Protection Authority (EPA), National Parks and Wildlife Service (NPWS), the Department of Primary Industries and Regional Development (DPIRD Fisheries) and the Department of Climate Change, Energy, the Environment and Water (DCCEE Water Group); and
- contains the information required by the conditions of approval.

The Department has carefully reviewed the document and is satisfied that it meets the requirements of the relevant conditions in the approval (SSI-9687).

Accordingly, as nominee of the Planning Secretary, I approve the Surface Water Management Plan - Tantangara Intake - Stage 3 - Phase 2 Management Plan (Revision G dated 18 September 2026).

You are reminded that if there are any inconsistencies between the document and the conditions of approval, the conditions prevail.

Please ensure you make the document publicly available on the project website at the earliest convenience.

If you wish to discuss the matter further, please contact Katie Weekes on 4927 3223.

Yours sincerely,



Nicole Brewer
Director
Energy Assessments
As nominee of the Planning Secretary



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MANAGEMENT PLAN

SNOWY 2.0 MAIN WORKS – TANTANGARA INTAKE – STAGE 3 – PHASE 2

S2-ENV-OT-TNI-PLN-FGJV0463

REV G

SEPTEMBER 2026

ABSTRACT

The key objective of this plan is to detail management measures and inform site procedures for the Tantangara Intake – Stage 3 – Phase 2 works so that the impact of the intake works is minimised and within the scope permitted by the Infrastructure Approval.

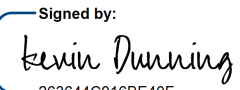
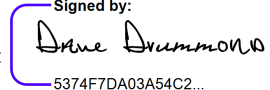
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G	16.09.2026	Updated to address DPHI comments	C. Pedraza	M. Boyle	K. Dunning D. Drummond
Rev.	Date	Reason for Issue	Responsible	Accountable	Endorsed



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Revision Tracking

Rev.	Date	Description of Revision
A	28.11.2025	Initial draft for issue to SHL
B	03.03.2026	Updated to address SHL comments
C	10.04.2026	Updated to address SHL comments
D	10.06.2026	Updated to address EPA, NPWS and DCCEEW comments
E	06.08.2026	Updated to address DPHI comments
F	18.08.2026	Updated to address DPHI and SHL comments
G	16.09.2026	Updated to address DPHI comments

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ABBREVIATIONS AND DEFINITIONS

Acronym	Definition
CoA	Conditions of Approval
Construction envelope	The envelope within which the disturbance area of the development may be located
CSSI	Critical State significant infrastructure
DEC	Department of Environment and Conservation (now Department of Planning, Housing and Infrastructure)
DECC	Department of Environment and Climate Change (now Department of Planning, Housing and Infrastructure)
Disturbance area	The area within the construction envelope where development may be carried out; the precise location of the disturbance area will be fixed within the construction envelope following final design
DPHI	Department of Planning, Housing and Infrastructure
DPIE	NSW Department of Planning, Industry and Environment (now Department of Planning, Housing and Infrastructure)
EHC Act	<i>Environmentally Hazardous Chemicals Act 1985</i>
EIS	Environmental Impact Statement
Main Works EIS	<i>Snowy 2.0 Main Works - Environmental Impact Statement</i>
EMS	Environmental Management Strategy
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EPA	NSW Environment Protection Authority
EPL	Environment Protection Licence
Exploratory Works	The development of an exploratory tunnel and associated infrastructure described in the Environmental Impact Statement for the Snowy 2.0 Exploratory Works (CSSI 9208) dated July 2018, and modified by the: • Submissions Report dated October 2018 and additional information provided to the Department on 17 October 2018, 19 November 2018 and 23 January 2019; • Modification Report dated 6 June 2019 and associated Submissions Report dated 2 September 2019 and amendment letter date 4 October 2019; and • Modification Report dated 17 October 2019 and associated Submissions Report dated 10 January 2020
FGJV	Future Generation Joint Venture
FGJV PMS	Project Management System
In-reservoir emplacement	It refers to the temporary spoil emplacement within the reservoir between the full supply level and minimum operating level during phase 1 and phase 2 (dry conditions) of the intake works.
KFH	Key Fish Habitat
Main Works	The development of an underground power station and associated infrastructure described in the Environmental Impact Statement for the Snowy 2.0 Main Works (CSSI 9687) dated September 2019, and modified by the: • Preferred Infrastructure Report and Response to Submissions – Snowy 2.0 Main Works, dated February 2020; and • Additional information provided to the Department by EMM on 24 March 2020 and 7 April 2020
MET	Murrumbidgee-Eucumbene Tunnel

Acronym	Definition
NPWSN	National Park and Wildlife Service
POEO Act	<i>Protection of the Environment Operations Act 1997</i>
Project	Snowy 2.0 Main Works
Project area	The project area is the broader region within which Snowy 2.0 will be built and operated, and the extent within which direct impacts from Snowy 2.0 Main Works are anticipated. The project area does not represent a footprint for the construction works, but rather indicates an area that was investigated during environmental assessments.
REMMs	Revised environmental management measures
Rock Forest site	The development on the Rock Forest property, including the Rock Forest emplacement area, logistics laydown area and ancillary infrastructure including access roads.
SHL	Snowy Hydro Limited
Submissions Report or RTS	<i>Snowy 2.0 Main Works Response to Submission</i>
SWMP	Surface Water Management Plan
SSI	State Significant Infrastructure under EP&A Act
Talbingo Reservoir site	The development in and around the Talbingo Reservoir, including the Ravine Bay emplacement area; development at Middle Bay, including the water intake and associated structures, barge launch ramp, and construction facilities; and ancillary infrastructure, including access roads and utilities.
Tantangara Reservoir site	The development in and around the Tantangara Reservoir, including the Tantangara emplacement area; water intake and associated infrastructure; barge launch infrastructure; construction and laydown facilities, including workers' camp; fish screens; and ancillary infrastructure, including access roads and utilities.
TARP	Trigger Action Response Plan
WQO	Water Quality Objective
WTP	Water Treatment Plant

1. INTRODUCTION

1.1. Project Description

1.1.1. Overview

Snowy Hydro Limited (SHL) is constructing a pumped hydro-electric expansion of the Snowy Mountains Hydro-electric Scheme (Snowy Scheme), called Snowy 2.0. Snowy 2.0 will be built by the delivery of two projects: Exploratory Works and Snowy 2.0 Main Works, which commenced in May 2020.

Snowy 2.0 is a pumped hydro-electric project that will link the existing Tantangara and Talbingo reservoirs through a series of new underground tunnels and a hydro-electric power station. Most of the project's facilities will be built underground, with approximately 27 kilometres of concrete-lined tunnels constructed to link the two reservoirs and a further 20 kilometres of tunnels required to support the facility. Intake and outlet structures will be built at both Tantangara and Talbingo Reservoirs.

Snowy 2.0 will increase the generation capacity of the Snowy Scheme by an additional 2,200 MW, and at full capacity will provide approximately 350,000 MWh of large-scale energy storage to the National Electricity Market (NEM). This will be enough to ensure the stability and reliability of the NEM, even during prolonged periods of adverse weather conditions.

As part of the Snowy 2.0 Main Works, the Tantangara intake and access roads to the reservoir emplacement area are determined as critical infrastructure components of the Snowy scheme. The intake is related to several infrastructure components in and around the Tantangara Reservoir, including the Tantangara emplacement area; water intake and other infrastructure such as the entrance to the headrace tunnel via adit portal and sediment basins; construction and laydown facilities, parking, access roads and utilities. Associated infrastructure critical to the Project will enable the intake to be constructed safely and maintain access across the full operating range of water levels at Tantangara Reservoir.

1.2. Project Approval

On 7 March 2018 the NSW Minister for Planning declared Snowy 2.0 to be State Significant Infrastructure (SSI) and Critical State Significant Infrastructure (CSSI) under the *Environmental Planning and Assessment Act 1979* (EP&A Act) on the basis that it is critical to the State for environmental, economic or social reasons.

An environmental impact statement for the first stage of Snowy 2.0, the *Environmental Impact Statement Exploratory Works for Snowy 2.0* (Exploratory Work EIS) was submitted to the then Department of Planning and Environment in July 2018 and publicly exhibited between 23 July 2018 and 20 August 2018. Approval for the first stage of Snowy 2.0 was granted for Exploratory Works by the Minister for Planning on 7 February 2019. The purpose of Exploratory Works is primarily to gain a greater understanding of the underground geological conditions at the new power station. In accordance with section 5.25 of the EP&A Act, the infrastructure approval for the Exploratory Works was modified on 2 December 2019 and on 27 March 2020.

An environmental impact statement for the second stage of Snowy 2.0, the Main Works for Snowy 2.0 (Main Work EIS) was submitted to then Department of Planning, Industry and Environment (DPIE) in September 2019 and was publicly exhibited between 26 September 2019 and 7 November 2019. A total of 222 submissions were received during the public exhibition period, including 10 from government agencies, 30 from special interest groups and 182 from the public. In February 2020, the response to submissions report (RTS or Submissions Report) was issued to DPIE to address the public and agency submissions (*Snowy 2.0 Main Works - Preferred Infrastructure Report and Response to Submissions, February 2020*).

Following consideration of the Main Works EIS and RTS, approval was granted by the Minister for Planning and Public Spaces on 20 May 2020, through issue of Infrastructure Approval SSI 9687.

Further to the Infrastructure Approval, the Main Works RTS includes revised environmental management measures (REMMs) within Appendix C which will also be implemented for the Project.

On 27 January 2022, a modification to CSSI-9687 was granted under Section 2.22 and clause 20 of Schedule 1 of the EP&A Act (CSSI-9687-Mod 1)¹. The scope of the modification included horizontal directional drilling (HDD) to establish water and electricity services between the Lobs Hole and Marica areas of the Project.

On 29 November 2023, a second modification to CSSI-9687 was granted under S5.25 of the EP&A Act (CSSI-9687-MOD2)² approving the undertaking of sinkhole rectification works near the adit portal at Tantangara, inclusive of geotechnical investigations and remediation.

A subsequent planning application (SSI-9687-MOD-3)³ was approved on 16 December 2024 to permit the construction of an additional adit and launching of a fourth tunnel boring machine at Marica West to facilitate excavation of a section of the headrace tunnel (HRT) through the long plain fault zone (LPFZ). The LPFZ is the most geologically complex section of the HRT and represented a significant risk to the overall project completion date. The application was approved in accordance with Section 5.25 of the EP&A Act, 1979.

In addition to the State approval, a referral (EPBC 2018/8322) was prepared and lodged with the Commonwealth Department of Agriculture, Water and the Environment (DAWE) under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act). The Commonwealth Minister’s delegate determined on 5 December 2018 that Snowy 2.0 Main Works is a “controlled action” under the EPBC Act. The EPBC Act referral decision determined that the project will be assessed by accredited assessment under Part 5, Division 5.2 of the *NSW Environmental Planning and Assessment Act 1979*.

1.3. Disturbance Area

A key refinement following public exhibition of the Main Works EIS was a change to and clarification of disturbance area terminology. The revised disturbance area terminology as defined by the Infrastructure Approval and Submissions Report is outlined in Table 1-1.

Table 1-1: Disturbance Area Terminology

Term	Definition	Reasoning
Project area	The project area is the broader region within which Snowy 2.0 will be built and operated, and the extent within which direct impacts from Snowy 2.0 Main Works are anticipated.	The project area does not represent a footprint for the construction works, but rather indicates an area that was investigated during environmental assessments.
Construction envelope	The envelope within which the disturbance area of the development may be located.	The Tantangara intake design is within the Construction envelope area. Site controls, such as rope and no-go zone demarcation, will be placed before work commences not to exceed the limits defined by the construction envelope.
Disturbance area	The disturbance area for the proposed works in this management plan is within the Construction envelope.	

¹ SSI-9687-Mod1: Modification of Infrastructure Approval, 27 January 2022
² SSI-9687-Mod2: Modification of Infrastructure Approval, 29 November 2023
³ SSI-9687-Mod3: Modification of Infrastructure Approval, 16 December 2024

1.4. Construction Environmental Management System

The overall environmental management system for the project is described in the Environmental Management Strategy (EMS). The EMS forms part of the Project Management System (FGJV-PMS) and will include any requirements specified in the contract documents, where appropriate. All FGJV-PMS procedures will support, interface or directly relate to the development and execution of the plan.

This Tantangara Intake Stage 3 Excavation – Phase 2 Management Plan (the Plan) forms part of FGJV's environmental management framework as described in 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.

This Plan has been prepared for construction purposes; it does not address the operational phase of the project Snowy 2.0.

1.5. Purpose and Objectives of this Plan

The key objective of the Plan is to ensure that related impacts associated with works are minimised and within the scope permitted by the Conditions of Approval as per Table 2-1.

To achieve this objective, SHL, and FGJV will:

- Ensure appropriate measures are implemented during construction to minimise, and avoid or manage impacts
- Ensure appropriate measures are implemented to address the revised environmental management measures relevant legislation and other requirements as described in Section 2

The purpose of this plan is to address the construction environmental management requirements detailed in:

- the Infrastructure Approval (SSI 9687) issued for Snowy 2.0 Main Works on 20 May 2020
- the Infrastructure Approval (SSI 9208) issued for Snowy 2.0 Exploratory Works on 07 February 2019;
- the Main Works Snowy 2.0 - Environmental Impact Statement;
- the Main Works Snowy 2.0 – Modification 1 Assessment Report;
- the Main Works Snowy 2.0 – Modification 2 Assessment Report
- the Main Works Snowy 2.0 – Modification 3 Assessment Report; and
- the revised environmental management measures (REMMs) within the Main Works RTS.

This Plan has been compiled to provide additional detail on how the works would be constructed and therefore building on information presented in the EIS. This Plan should be read in conjunction with the following documents:

- Spoil Management Plan (S2-FGJV-ENV-PLN-0019)
- Water Management Plan (S2-FGJV-ENV-PLN-0010)
- Surface Water Management Plan (S2-FGJV-ENV-PLN-0011)
- Groundwater Management Plan (S2-FGJV-ENV-PLN-0012)
- Aquatic Habitat Management Plan (S2-FGJV-ENV-PLN-0009)
- Nitrogen Management Plan (S2-FGJV-ENV-PLN-0367)

1.6. Construction Staging

1.6.1. Tintangara Intake Stage 3

Tintangara Intake Stage 3 works cover the removal of the existing rock plug to form the permanent intake approach channel.

The channel is approximately 350 m long and features a constant slope of 5% from the mouth into the diffuser. The channel is approximately 135 m wide at the mouth at a design elevation of 1,200 m Australian Height Datum (AHD), tapering down to approximately 55 m at the intake diffuser at an elevation of 1183.45 m AHD.

Figure 1-1 below shows in light brown the excavation required to form the approach channel.

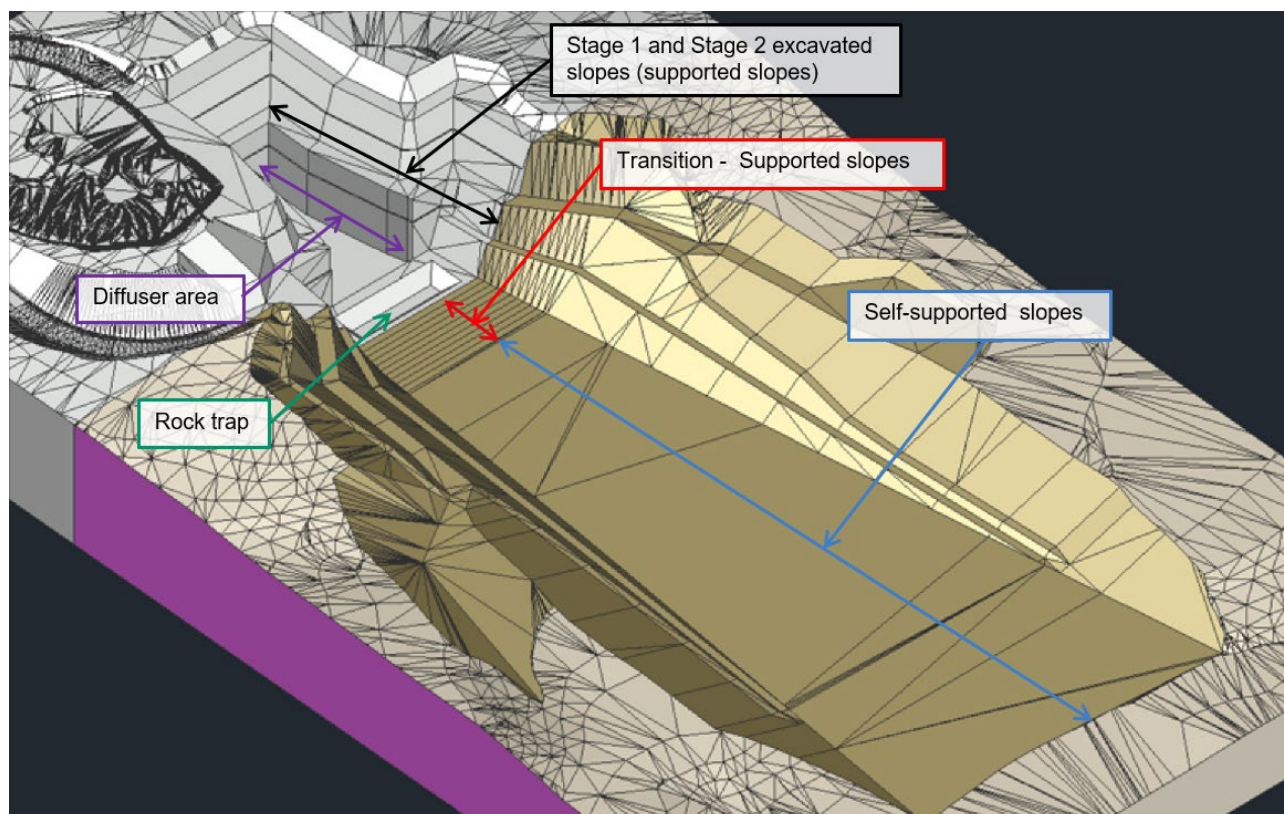


Figure 1-1: Tintangara Approach Channel

The transition area, approximately 30m long, shown in Figure 1-1 is required to shift from the vertical slopes already excavated during Stages 1 and 2 to the self-supported slopes. Within the transition area, rock anchors with associated face protection will be installed (similar to Stage 1 and 2), whilst the self-supported slopes represent an open pit excavation only with no support elements. The design of the approach channel has been optimised to minimise the length of supported slopes, thereby reducing the overall quantity of required support elements (rock anchors, mesh, etc).

The excavation of the approach channel has been divided into five sub-stages, all illustrated in Figure 1-2 and Figure 1-3. The sequence of works has been developed to maximise the volume of excavation in dry working conditions and to minimise the volume of dredging, in line with the reservoir storage modelling during low and high inflow season cycles and as per Table 3-5 in the EIS response to Submissions.

The Tintangara Intake Stage 3 excavation area has no means of access and so for material haulage a dedicated temporary access track has been designed. Several options have been considered and the design has been revisited to minimise the disturbance area and cut / fill volumes required for the body of the temporary access tracks.

1.6.2. Tintangara Intake Stage 3 – Construction Stages

Tintangara Intake Stage 3 will include dry excavation (facilitated by the access tracks) and all related activities, including but not limited to clearing, grubbing, drilling and blasting, slope support installation and dredging / marine works.

The work to complete the Tintangara intake will be split into three phases which is shown in Figure 1-2 and Figure 1-3. This Management Plan covers Phase 2 works only.

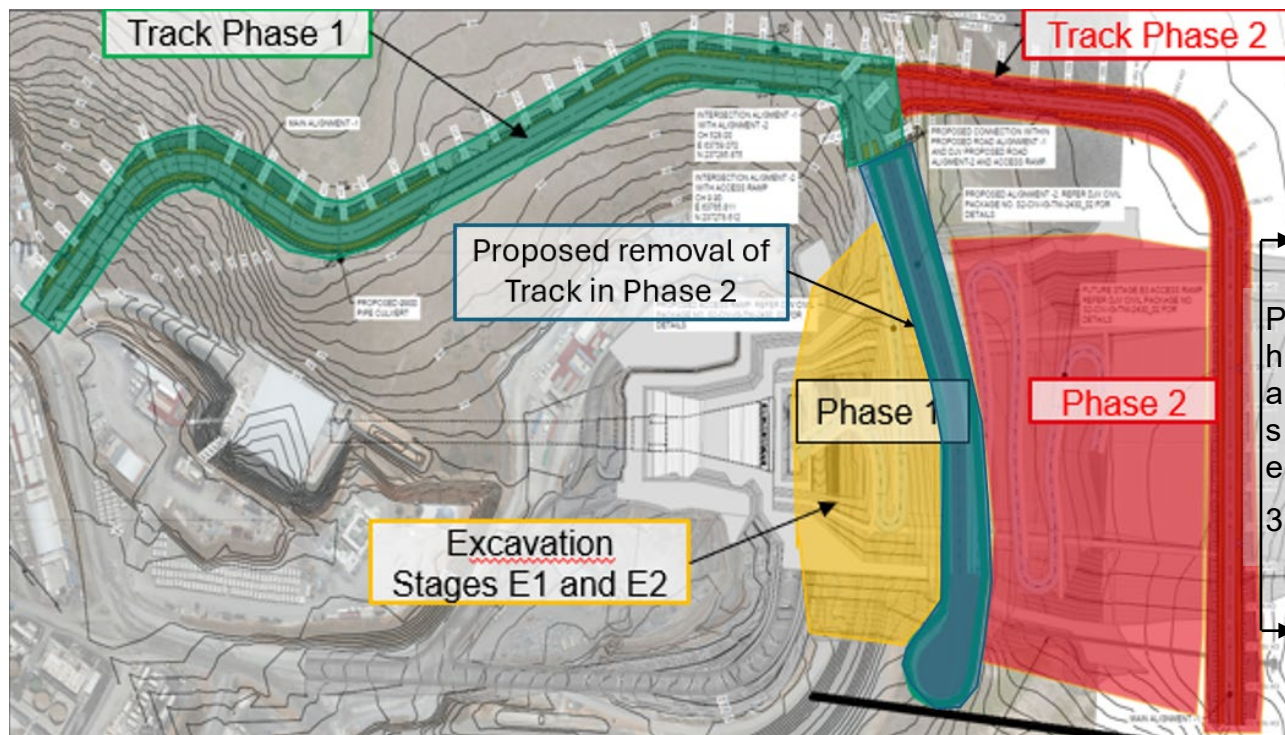
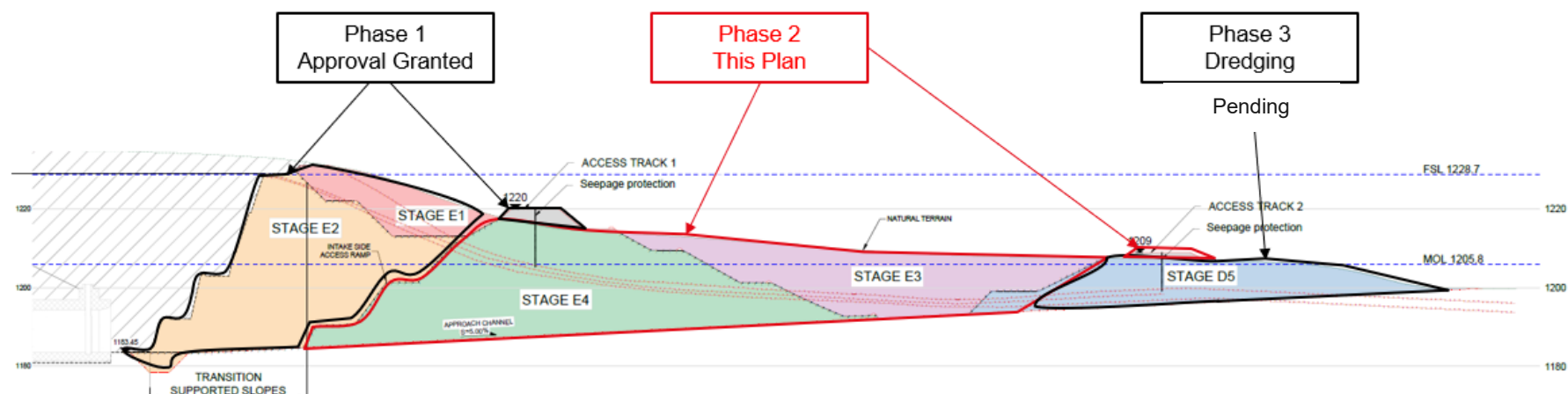


Figure 1-2: Staging of Tintangara Intake Stage 3 Excavation (phase 2 red and blue colour)



Stage	Track 1	Track 2	E1	E2	E3	E4	D5	Controlling Documents
Phase 1	☒	☐	☒	☒	☐	☐	☐	Tantangara Intake Stage 3 Excavation – Phase 1 (S2-FGJV-ENV-PLN-0429)
Phase 2	☐	☒	☐	☐	☒	☒	☐ ⁴	This Plan (S2-ENV-OT-TNI-PLN-FGJV0463)
Phase 3	☐	☐	☐	☐	☐	☐	☒	Managed under Tantangara Dredging Management plan S2-ENV-OT-GEN-PLN-FGJV-0466)

Figure 1-3 Staging of Tantangara Intake Stage 3 Excavation (Phase 2 in Red)

⁴ As per Figure 1-3 a small section of Stage D5 may be excavated should dry conditions allow

1.6.3. Tintangara Intake – Stage 3 - Phase 2 Works

Tintangara Intake – Stage 3 - Phase 2 works which are the subject to this Plan include the following:

- Completion of the temporary access track to serve Phase 2 works
 - Part of the temporary access track 1, constructed in Phase 1, spanning across the intake channel, will be removed during the excavation of Stage E4.
- Excavation of Stages E3 and E4 carried out in dry conditions
 - A small section of Stage D5 may be excavated, if this is able to be completed in dry conditions
- Dewatering as per Section 5.5
 - Regular operational dewatering (Water generated from routine dewatering activities will be directed to the Water Treatment Plant (WTP) for processing)
 - Floodwater removal from the excavation area should flooding occur

1.7. Consultation

The plan will be issued to stakeholder agencies for review and comment. Comments from the consultation will be incorporated into this plan where appropriate. Response to the comments will be provided back to the stakeholder agencies.

Table 1-2: Consultation Undertaken as Part of this Plan

Date	Consultation	Outcomes
20.11.2025	EPA, NPWS, DPHI, DCCEEW	First presentation outlining works involved in the Tintangara Intake Stage 3 – Phase 2.
03.03.2026	NPWS, DPHI, DCCEEW	Presentation to NPWS, DPHI, DCCEEW directors
24.03.2026	EPA	Presentation to EPA
15.05.2026	EPA, NPWS, DPIRD, DCCEEW	Plan issued for review
11.06.2026	EPA, NPWS, DPIRD, DCCEEW	Revision D of this Management Plan has been updated to incorporate feedback received from regulatory authorities. The key amendments are summarised below: • Emergency Water Evacuation Monitoring: An emergency water evacuation monitoring program will be developed in consultation with the EPA. • Streamlined Incident Notification: Regulators are going to be notified (EPA, NPWS, DCCEEW, and DPHI) immediately in the event of any site incident or flooding. • Refined Trigger Action Response Plans (TARPs): Updated and clarified the TARPs to differentiate between natural-cause events and project-related incidents, ensuring clearer operational response process.
22.07.2026	DPHI	Revision E of this Management Plan has been updated to incorporate feedback received from DPHI. The key amendments are summarised below:

		• Floodwater Evacuation Monitoring and Reporting: clarifying frequency of inspections, monitoring points, analytical suite. • Minor changes in terminology such as the consistent use of Water Quality Objectives rather than Triggers, throughout the document.
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2. ENVIRONMENTAL REQUIREMENTS

2.1. Legislation

Legislation relevant to in-reservoir emplacement management includes:

- Environmental Planning and Assessment Act 1979 (EP&A Act);
- Environment Protection and Biodiversity Conservation Act 1999;
- National Parks and Wildlife Act 1974;
- Protection of the Environment Operations Act 1997 (POEO Act);
- Biodiversity Conservation Act 2016;
- Fisheries Management Act 1994; and
- Contaminated Land Management Act 1997.

Relevant provisions of the above legislation are explained in the register of legal and other requirements included in Appendix A2 of the EMS.

2.2. Guidelines

The key guidelines, standards and Licenses relevant to this plan include:

- Environmental Protection License 21266
- Acid Sulfate Soils Manual (Stone et al 1998)
- AMIRA ARD test handbook (AMIRA, 2002)
- Waste Classification Guidelines Part 1: Classifying waste (NSW EPA 2014)
- Managing Urban Stormwater: Soils and Construction (Landcom, 4th Edition March 2004 (reprinted 2006) (the Blue Book)) Volume 1 and Volume 2
- Australian and New Zealand Guidelines for Freshwater and Marine Water Quality (ANZECC 2000)
- Guidelines for Controlled Activities on Waterfront Land (Department of Primary Industries 2012)
- NSW Office of Water Guidelines for working within riparian corridors
- Approved Methods for Sampling and Analysis of Water Pollutants in NSW (March 2004)
- NSW Water Quality and River Flow Objectives (DECCW 2006)
- Fisheries NSW Policy and Guidelines for Fish Habitat Conservation and Management (Department of Primary Industries 2013)
- Survey guidelines for Australia's threatened fish. Guidelines for detecting fish listed as threatened under the Environment Protection and Biodiversity Conservation Act 1999 (DSWPac 2011)
- Policy for the Translocation of Threatened Fauna in NSW: Policy and Procedure Statement No. 9 Threatened Species Unit, Hurstville NSW (NSW National Parks and Wildlife Service 2001)
- DPI Policy and Guidelines: Aquatic Habitat Management and Fish Conservation (NSW Fisheries 1999)
- National Assessment Guidelines for Dredging (Commonwealth of Australia, 2009).

2.3. Conditions of Approval

Table 2-1 details the conditions from the Snowy 2.0 Main Works Infrastructure Approval which are relevant to facilitate construction works and demonstrates where these conditions are addressed.

Table 2-1: Relevant Infrastructure Approval Conditions

Condition	Requirement	Where addressed
Main Works (CSSI 9687)		
Schedule 3, condition 4	The Proponent must: - minimise the spoil generated by the development; - test and classify the relevant physical and chemical characteristics of the spoil; - manage, use or dispose of the spoil in accordance with its classification; - develop and implement suitable procedures for handling, storing and disposing of any: - potentially acid forming material; - asbestiform mineral fibres; - contaminated material; - only place non-reactive spoil, which has a low geochemical risk and is suitable for reuse, in the western emplacement area; - maximise the reuse of non-reactive spoil on site and in other parts of the Kosciuszko National Park; - maximise the use of the permanent spoil emplacement areas; - minimise the spoil left at Lobs Hole and Marica for incorporation into the final landform; - minimise the water quality impacts of the temporary and permanent emplacement areas; - not place any spoil from the tunnel boring machines in the active storages or below the full supply level of either the Talbingo Reservoir or Tantangara Reservoir without the approval of the Planning Secretary; and - not place any spoil from dredging, channel excavation or underwater blasting in the eastern and western emplacement areas, or in the active storages or below the full supply level of either the Talbingo Reservoir or Tantangara Reservoir without the approval of the Planning Secretary.	Spoil Management Plan (S2-FGJV-ENV-PLN-0019). Section 5.3 and Section 5.4 of this plan Currently it is not proposed to place TBM spoil below FSL as part of these works.
Schedule 3, condition 7	Prior to the commencement of construction, the Proponent must prepare a Spoil Management Plan for the development to the satisfaction of the Planning Secretary. This plan must: - be prepared by a suitably qualified and experienced person in consultation with the NPWS, EPA, Water Group, NRAR, NSW DPI and TfNSW; - provide an overarching framework for the management of all spoil generated on site - including the testing, classification, handling, temporary storage and disposal of spoil – that complies with the spoil management requirements in condition 4 above; - include a detailed plan for managing the temporary spoil stockpiles of the development, which includes suitable triggers for remedial measures (if necessary) and describes the contingency measures that would be implemented to address any water quality risks; - include a detailed plan for managing all the reactive or contaminated spoil generated on site, including the contingency measures that would be implemented if the volumes of this spoil are greater than expected and unsuitable for land disposal;	Spoil Management Plan (S2-FGJV-ENV-PLN-0019) Section 5.3 and Section 5.4 of this plan

Condition	Requirement	Where addressed
Main Works (CSSI 9687)		
	e) detailed plans for each of the permanent spoil emplacement areas that have been prepared using both analogue and erosional-based methods, these plans must: - describe how the development of each emplacement area would be co-ordinated with the rehabilitation of the site in accordance with the approved Rehabilitation Management Plan; - describe the measures that would be implemented to comply with the spoil management requirements in condition 4 above and the design objectives in Table 2; - include a topsoil strategy, outlining the measures that would be implemented to ensure the surface of the emplacement area will be suitable to sustain the target PCTs in the long term, having regard to the approved strategy in the Rehabilitation Management Plan; - identify the key risks for the successful completion of each emplacement area and the contingency measures that would be implemented to address these risks; and - include detailed completion criteria and performance indicators for each emplacement area, including criteria for triggering remedial action (if necessary); f) include a program to monitor and publicly report on: - the management of spoil on site; - the implementation of each of the detailed plans, including the effectiveness of the proposed mitigation and contingency measures; and - progress against the detailed completion criteria and performance indicators of each permanent spoil emplacement area. <i>Note: The Proponent may stage the preparation of the Spoil Management Plan, including the preparation of detailed plans for each permanent spoil emplacement area. However, the detailed plans must be approved prior to any construction occurring in the relevant emplacement area.</i>	
Schedule 3, condition 20	The Proponent must: - minimise the development-related biosecurity risks, including the movement and spread of weeds, pests and pathogens; - minimise the impact of the development on threatened fish species and their habitat, particularly the Macquarie Perch, Stocky Galaxias and Murray Crayfish; and - minimise the impact of the development on recreational fishing in Tantangara Reservoir and Lake Eucumbene.	Aquatic Habitat Management Plan (S2-FGJV-ENV-PLN-0009)
Schedule 3, condition 29	Water Pollution Unless an environment protection licence authorises otherwise, the Proponent must comply with Section 120 of the POEO Act. Note: Section 120 of the POEO Act makes it an offence to pollute any waters.	Surface Water Management Plan (S2-FGJV-ENV-PLN-0011)
Schedule 3, condition 30	The Proponent must: - maximise the recycling and reuse of water on site; - maximise the diversion of clean water runoff around the disturbance areas; - minimise the flow rates and velocities of any clean water runoff diversions to adjoining watercourses; - minimise the flooding impacts of the development;	Water Management Plan (S2-FGJV-ENV-PLN-0010) Section 5 of this plan

Condition	Requirement	Where addressed
Main Works (CSSI 9687)		
	e) minimise groundwater take from the Gooandra Volcanics and Kellys Plain Volcanics using pre and post grouting of the tunnel, to minimise the loss of stream flows in the waterways above these geological formations, including Gooandra Creek and the headwaters of the Eucumbene River; f) minimise erosion and the generation and dispersion of sediment using suitable controls in accordance with the relevant requirements in the Managing Urban Stormwater: Soils and Construction guidance series; g) design all instream works, particularly the inlet and outlet works, to minimise scour and erosion; h) unless permitted by this approval, avoid carrying out of any development within 40 metres of any watercourse; i) carry out all instream works or development within 40 metres of any watercourse generally in accordance with the requirements in the Guidelines for Controlled Activities on Waterfront Land; j) treat all wastewater and surplus process water prior to discharging it at the approved discharge points at the Talbingo Reservoir or Tantangara Reservoir; k) reduce the number of diffuser points for low velocity discharges to the Talbingo Reservoir or Tantangara Reservoir; l) not discharge any surplus process water to the stormwater basins on site; m) minimise the surface water quality impacts of the development, including: - the development carried out in the vicinity of waterways, particularly the Talbingo Reservoir, Tantangara Reservoir and Yarrangobilly River; - all instream works, including dredging, channel excavations, underwater blasting, barge infrastructure, fish barriers and screens, culverts and bridges, and service crossings; - the temporary and permanent spoil emplacement areas; - development at the Marica, Plateau and Rock Forest sites; - road works; - the operation of the power station and associated infrastructure, including the operation of the inlets and outlets to minimise sediment disturbance risks and the dewatering of the tailrace tunnel; n) minimise the risk of spills or leaks on site, and clean up any spills or leaks as quickly as possible; o) minimise the groundwater quality impacts of the development, particularly through the design of the temporary and permanent spoil emplacement areas and all water storages on site; p) store chemicals and hydrocarbon products in bunded areas in accordance with the relevant Australian Standards.	
Schedule 3, condition 31	Prior to the commencement of construction, the Proponent must prepare a Water Management Plan for the development to the satisfaction of the Planning Secretary. This plan must: a) be prepared by a suitably qualified and experienced person in consultation with the EPA, NPWS, the Water Group, NRAR and NSW DPI; b) include a Site Water Balance for the development with a program to review and update this water balance each calendar year;	Water Management Plan (S2-FGJV- ENV-PLN-0010)

Condition	Requirement	Where addressed
Main Works (CSSI 9687)		
	c) include a Surface Water Management Plan, containing detailed plans for the Talbingo Reservoir, Lobs Hole, Marica, Plateau, Tantangara Reservoir, and Rock Forest sites, with: • detailed baseline data on surface water flows and quality in the watercourses that could be affected by the development, and a program to augment this baseline data over time; • detailed criteria for determining the surface water impacts of the development (flows, quality and flooding), including criteria for triggering remedial action (if necessary); • a description of the measures that would be implemented to minimise the surface water impacts of the development and comply with the relevant water management requirements in conditions 4, 6 and 30 above, including specific plans covering: – the temporary or permanent emplacement of spoil; – dredging, channel extraction and underwater blasting in the Talbingo Reservoir and Tantangara Reservoir; – operation of the discharge points; – the design of the inlets and outlets; and – dewatering of the tailrace tunnel during operations; • identify the key risks to the successful implementation of these measures, and describe the contingency measures that would be implemented to address these risks; • a program to monitor and publicly report on the surface water impacts of the development; d) include a Groundwater Management Plan with: detailed baseline data of groundwater levels, yield and quality on the aquifers that could be affected by the development, and a program to augment this baseline data over time; • a program to validate and calibrate the groundwater model for the development as new information is collected; • detailed criteria for determining the groundwater impacts of the development, including criteria for triggering remedial action (if necessary); • a description of the measures that would be implemented to comply with the water management requirements in condition 30 above; • a program to monitor and publicly report on: – groundwater inflows to the tunnel; – water take from the groundwater bores and connected water sources; – the impacts of the development on: ○ regional and local (including alluvial) aquifers; ○ base flow to surface water sources. <i>Note: The Proponent may stage the preparation of the Water Management Plan, including the preparation of each of the detailed plans required under the Surface Water Management Plan. However, the detailed plans must be approved prior to any construction occurring on the relevant site.</i>	
Schedule 3, condition 52	Excluding the spoil generated by the development, the Proponent must: (a) minimise the waste generated by the development; (b) maximise the reuse and recycling of any waste;	Waste Management Plan - S2-FGJV-ENV-PLN-0048 Waste classification reports for potentially contaminated soil.

Condition	Requirement	Where addressed
Main Works (CSSI 9687)		
	(c) classify all waste generated on site in accordance with the Waste Classification Guidelines (NSW EPA 2014), or its latest version; (d) store and handle all waste generated on site in accordance with its classification; and (e) ensure all waste is disposed of off-site at facilities that are lawfully permitted to accept such waste.	Waste Tracking Register kept on internal FGJV server.
Schedule 4, condition 6	Notification of Dates At least 1 week prior to the relevant notification date, the Proponent must notify the Department, NPWS and NSW DPI via the Major Projects Portal of the date of the: (a) commencement of the development of the Main Works; (b) commencement of development on the following sites under this approval: • Marica site; • Plateau site; • Tantangara site; and • Rock Forest site; (c) commencement and completion of the required road upgrades; (d) commencement and completion of construction; (e) commencement of commissioning and testing the power station; (f) completion of the initial rehabilitation of the site following construction; (g) completion of the ecological rehabilitation of the site, apart from the areas used for operations; (h) commencement and completion of operations; (i) commencement of decommissioning the development; (j) completion of the final rehabilitation of the site; and (k) completion of the ecological rehabilitation of the areas used for operations.	FGJV-TRANSMIT-004876 (30/11/2020)
Schedule 4, condition 7	Incident Reporting The Proponent must notify the Department and NPWS via the Major Projects Portal immediately after it becomes aware of an incident on site. This notice must set out the location and nature of the incident.	Environmental Management Strategy S2-FGJV-ENV-PLN-0007 Aquatic Habitat Management Plan S2-FGJV-PLN-0009

2.4. Revised Environmental Management Measures

Environmental safeguards and management measures are included in the EIS in Appendix G. During preparation of the Submissions Report, revised environmental management measures were developed and are included in Appendix C of the Submissions Report.

The REMMs relevant to this plan are listed in Table 2-2 below. If additional measures are cross-referenced from another section of the Main Works EIS or Submissions Report, these measures are also included.

Table 2-2: Revised Environmental Management Measures Relevant to these Works

Impact	Reference	Environmental management measures	Where addressed
General	WM02	Water monitoring will be developed in accordance with Section 7.2 of this Management Plan to assess the impacts of quality and quantity on surface water, groundwater, and reservoirs. The water monitoring program will incorporate and update the existing monitoring network and detail monitoring frequencies and water quality constituents. (Surface Water Monitoring Program: S2-FGJV-ENV-PLN-0011 - Annexure A of the Surface Water Management Plan).	Water Management Plan: S2-FGJV-ENV-PLN-0010 Surface Water Management Plan: S2-FGJV-ENV-PLN-0011 Surface Water Monitoring Program: S2-FGJV-ENV-PLN-0011 - Annexure A Trigger Action Response Procedure: S2-FGJV-ENV-PLN-0011 - Annexure B Spill Response Procedure: S2-FGJV-ENV-PLN-0011 - Annexure C Groundwater Management Plan: S2-FGJV-ENV-PLN-0012 Groundwater Monitoring Program: S2-FGJV-ENV-PLN-0012 - Annexure A Trigger Action Plan Appendix B of this Management Plan
Erosion and sediment	WM04	An Erosion and Sediment Control Plan (ESCP) will be prepared for each construction area that will include relevant information presented in the water management report (Annexure D to water assessment)	Progressive Erosion and Sediment Control Plan
Erosion and sediment	WM05	A suitably qualified erosion and sediment control professional(s) will be engaged to: • oversee the development of ESCPs; • inspect and audit controls; • train relevant staff; and progressively improve methods and standards as required.	Progressive Erosion and Sediment Control Plan have been prepared by a suitably qualified person (John Wright of T.R.E.E.S, Andrew Macleod and / or Liam O'Rourke of SEEC) in consultation with construction personnel and the Project Soil Conservationist to guide staff on the appropriate controls for specific work stages. The ESCPs will be updated as required based on the progression of new areas of ground disturbance and changing site conditions.
Impacts to aquatic habitats	AE01	An Aquatic Habitat Management Plan will be prepared and implemented to guide management of impacts to aquatic habitat. The plan will: • be prepared in consultation with NPWS and DPI-Fisheries; • include a description of measures that would be implemented to: – minimise impacts to aquatic habitat outside the approved disturbance areas; – minimise the loss of key aquatic habitat; – minimise the impacts of the development on threatened fauna species; – minimise the impact of the development on fish habitat;	Aquatic Habitat Management Plan (S2-FGJV-ENV-PLN-0009)

Impact	Reference	Environmental management measures	Where addressed
		– relocate Murray crayfish from the shallower parts of the approved disturbance area in Talbingo Reservoir prior to disturbing these areas – notify DPI-Fisheries of any fish kills; • include a trigger action and response plan for the Murray crayfish, which would be implemented if monitoring shows the development is adversely affecting the species;	
Excavated rock waste management and transport	CONTAM04	Material which has been assessed as not suitable for reuse on land or for temporary subaqueous disposal or cannot be reused will be classified in accordance with the <i>Waste Classification Guidelines</i> (NSW EPA 2014). Depending on the classification of the material, a licensed waste transport company will be used to transport material which is required to leave the project, to an appropriately licensed facility. Excavated material may be subject to treatment and application on site.	Spoil Management Plan (S2-FGJV-ENV-PLN-0019)
PAF rock	CONTAM07	An Excavated Rock Management Plan would be developed which would include measures identified in them Preliminary Site Investigation – Contamination (Table 9.1, Item 4 of Appendix N.1).	Spoil Management Plan (S2-FGJV-ENV-PLN-0019)

2.5. Licences and Permits

The Environmental Protection Licence (EPL) 21266 relevant conditions for this plan are listed in Table 2-3 below.

Table 2-3 EPL Conditions

Condition	Requirement	Where addressed
EPL 21266		
A1.3	Prior to commencing each stage to the scheduled development works (or subsection of that stage), the licensee must receive written notification from the EPA that it has no objection to the commencement of works. A note has been placed next to all stages or subsections that have commenced for transparency. The stages and their subsections are: (4) Reservoir Works • Talbingo water intake and associated structures • Talbingo barge launch • Tantangara water intake and associated structures • Tantangara barge launch	The EPA granted written notification to commence the “Tantangara water intake and associated structures” in accordance with Condition A1.3 of EPL 21266 on 20.10.2025.
P1.2/P1.3	The monitoring locations listed under Condition 2 (P1.2/P1.3) will be monitored in accordance with the requirements outlined in Condition 5.	Water Management Plan S2-FGJV-ENV-PLN-0010 Surface Water Management Plan S2-FGJV-ENV-PLN-0011

Condition	Requirement	Where addressed
EPL 21266		
		Groundwater Management Plan S2-FGJV-ENV-PLN-0012 Section 7.2 of this Management Plan Tantangara Intake excavation – Phase 2 S2-ENV-GN-TNI-PLN-FGJV0463
L1.1	Except as may be expressly provided in any other condition of this licence, the licensee must comply with section 120 of the Protection of the Environment Operations Act 1997.	Section 4.3 of this Plan
O2.1	All plant and equipment installed at the premises or used in connection with the licensed activity: • must be maintained in a proper and efficient condition; and • must be operated in a proper and efficient manner	Preventative Maintenance schedule by Plant Department. Verification Of Competency (VOC) and training certifications.
O3.1	All operations and activities occurring at the premises must be carried out in a manner that minimises or prevents the emission of dust from the premises.	Exposure Control Plan – Airborne Contaminants S2-FGJV-HSA-PLN-0029 Visual inspections
O4.1	The licensee must assess, classify and manage any waste generated at the premises in accordance with the Waste Classification Guidelines 2014 and the Act. Waste need to be transported to a place that can lawfully accept that waste.	Waste tracking register Waste classification reports Spoil Management Plan (S2-FGJV-ENV-PLN-0019)
O5.2	All treatment of spoil including but not limited to the temporary storage of spoil, and treatment of Potentially Acid Forming (PAF) material and material at risk of resulting in Acid Mine Drainage or Neutral Mine Drainage, must be undertaken in a manner that: • achieves permanent neutralisation of the material • prevents pollution of waters; and • prevents contamination of land	Spoil Management Plan S2-FGJV-ENV-PLN-0019 Spoil Management Plan Appendix I - S2-FGJV-ENV-PLN-0019 Tantangara Emplacement Area S2-FGJV-ENV-PRO-0057 - Leachate Detection Procedure – Tantangara
E4	Nitrogen Management Plan The licensee must prepare a Nitrogen Management Plan when undertaking blasting operations on the premises using Ammonium Nitrate Fuel Oil (ANFO) explosives or emulsions. The Nitrogen Management Plan must be developed in consultation with the EPA and must: 1. Specify how ANFO explosives will be selected, handled and used at the premises to minimise the impact of nitrate residues upon the surrounding environment. 2. Specify how nitrate residues from blasting activities will be monitored and managed by the licensee; 3. Specify arrangements for suitable water sampling regime of surface water and groundwater in the vicinity of all waste rock emplacement areas; 4. Specify how waste rock emplacement areas will be monitored, characterised and managed by the licensee; and 5. Specify how surface and groundwater impacts will be monitored and managed by the licensee.	Nitrogen Management Plan S2-FGJV-ENV-PLN-0367

Condition	Requirement	Where addressed
EPL 21266		
	6. Specify what remediation measures will be undertaken by the licensee in relation to any elevated nitrate residue levels. 7. Consider and include monitoring for all forms of nitrogen residues in soils, water and groundwater. The licensee must comply with the Nitrogen Management Plan The licensee must monitor its compliance performance with the Nitrogen Management Plan and report any non-compliances to the EPA immediately.	
U1.6	Under Stage 3 of this program the Licensee will develop an Improvement Implementation Plan that outlines feasible short, medium, and long-term actions to address key gaps, risks, and improvement opportunities identified during Stage 2, with indicative implementation timeframes assigned to each action.	The Water Reuse Management Plan is under development

3. EXISTING ENVIRONMENT

3.1. Water Levels

Water levels within the Tantangara Reservoir are provided in Table 3-1.

During the construction of the Tantangara intake approach channel, the reservoir water level will be kept as close to the Minimum Operating Level (MOL) as practicable by SHL.

Table 3-1: Reservoir Water Levels

Water Levels	Tantangara Reservoir
Minimum Operating Level (MOL)	1205.85 m AHD
Full Supply Level (FSL)	1228.70 m AHD
Design Flood Level (DFL)	1230.80 m AHD

SHL carried out a hydrological modelling for Tantangara Reservoir and provided it to FGJV for information to assist with the construction methodology development.

A mass-balance model, which considers the historical inflows and outflows, was developed to simulate reservoir level fluctuations over time, utilising historical data collected between year 1994 and 2024. The model assumes known outflows from Tantangara Dam, with the Murrumbidgee-Eucumbene Tunnel (MET) operating at full capacity relative to reservoir levels, effectively simulating a fully open gate.

Figure 3-1 shows the model results, where the blue line represents the measured historical data and orange line represents the simulated water level based on historical data and MET operating at full capacity.

Figure 3-2 shows a six-month cycle simulation during the dry / low inflow season (usually between February and July).

The works for Phase 2 are planned to take place during the dry season (usually between February and July) which has a lower flooding risk than the remainder of the year. The key inflows into the reservoir are related to seasonal environmental influences such as snow melting and rain events in the reservoir and Murrumbidgee River catchment areas. Prior to commencement, inflow data (e.g. snow) and meteorological forecasts will be updated to provide high-fidelity reservoir level predictions and inform operational planning.

Potential flooding scenarios are explored further in Section 4.3.

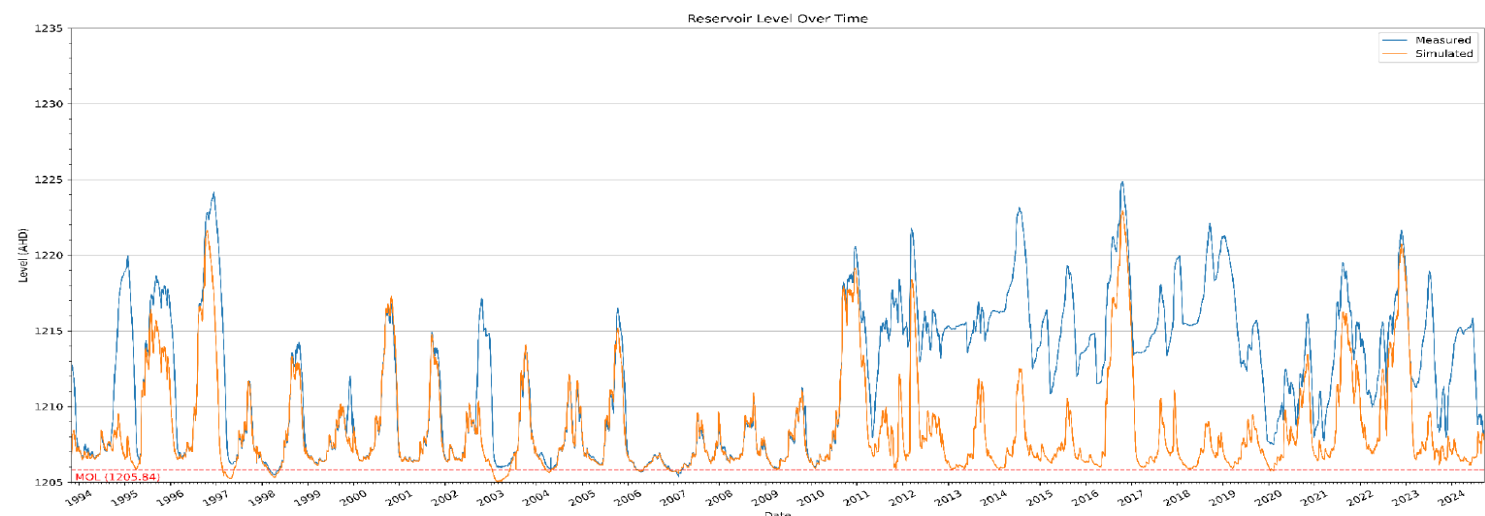


Figure 3-1 Measured (blue) vs simulated (orange) water levels in Tantangara reservoir (For Information by SHL)

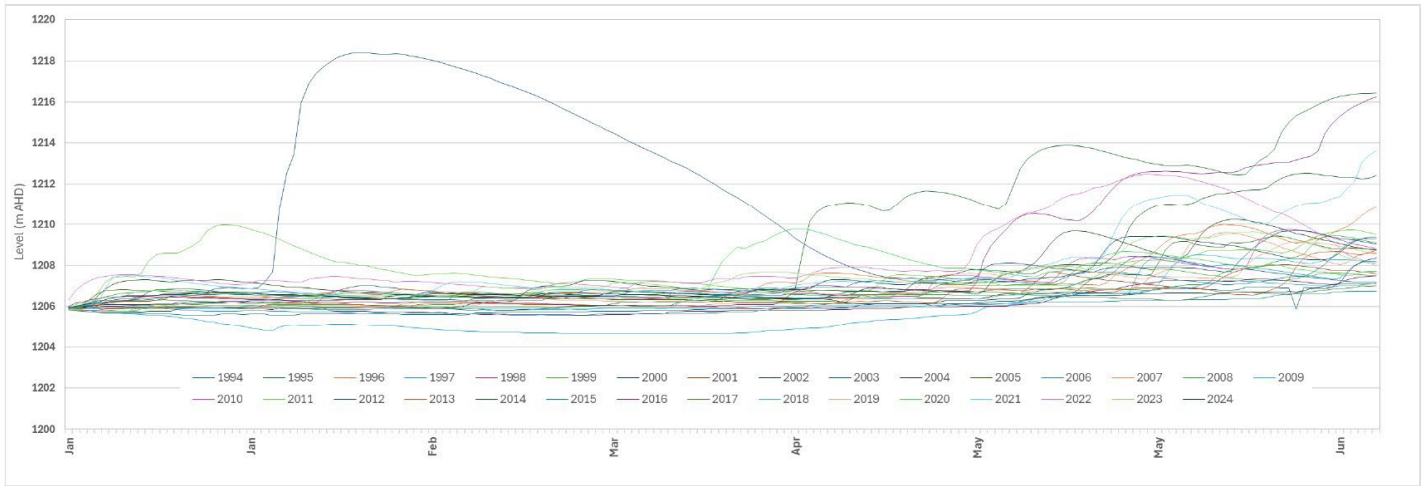


Figure 3-2 Six-month Sequence Chart of Water Levels – Low inflow season (For Information by SHL)

3.2. EIS baseline Water Quality

3.2.1. Tantangara Reservoir

Baseline water quality results for Tantangara Reservoir are included in the Surface Water Management Plan (S2-FGJV-ENV-PLN-0011), with median results detailed in Table 3-2.

Baseline water quality results were derived from the EMM Water quality assessment as presented in the project EIS (Appendices J.1 to J.4). Routine water quality monitoring within Tantangara Reservoir is undertaken in accordance with the Environment Protection Licence 21266 sampling requirements.

Table 3-2 Surface Water Median Baseline Values

Parameter	Tantangara Reservoir	
	Summer/ Autumn – Dry	Winter/ Spring - Wet
Field Parameters		
Temperature	17.7	10.1
Dissolved oxygen (%)	91	94
Electrical conductivity (µS/cm)	22	14
pH	6.7	7.8
Turbidity (NTU)	2.4	1.6
Analytical Results - General		
Suspended solids (mg/L)	4	<5*
Total hardness (as CaCO ₃) (mg/L)	5	2
Total alkalinity (as CaCO ₃) (mg/L)	<20	8
Analytical Results - Nutrients		
Ammonia (mg/L)	<0.01*	0.005
Oxidised nitrogen (mg/L)	<0.002*	0.004
Total kjeldahl nitrogen (mg/L)	<0.2	0.11
Total nitrogen (mg/L)	<0.2	0.11
Reactive phosphorus (mg/L)	<0.001*	0.001
Total phosphorus (mg/L)	0.024	0.008
Total organic carbon (mg/L)	<5	2
Dissolved organic carbon (mg/L)	<5	2
Analytical Results – Metals		
Aluminium (Al) (mg/L)	0.05	0.07
Arsenic (As) (mg/L)	<0.001	<0.001
Barium (Ba) (mg/L)	<0.02	0.007
Beryllium (Be) (mg/L)	<0.001	<0.001
Boron (B) (mg/L)	<0.05	<0.05

Parameter	Tantangara Reservoir	
	Summer/ Autumn – Dry	Winter/ Spring - Wet
Cadmium (Cd) (mg/L)	<0.0002*	<0.0001
Total chromium (Cr) (mg/L)	<0.001	<0.001
Cobalt (Co) (mg/L)	<0.001	<0.001
Copper (Cu) (mg/L)	0.015	<0.001
Iron (Fe) (mg/L)	0.57	0.19
Lead (Pb) (mg/L)	0.001	<0.001
Manganese (Mn) (mg/L)	0.001	0.003
Mercury (Hg) (mg/L)	<0.0001	<0.0001
Nickel (Ni) (mg/L)	0.002	<0.001
Selenium (Se) (mg/L)	<0.001*	<0.01
Silver (Ag) (mg/L)	<0.005*	<0.001
Vanadium (V) (mg/L)	<0.005	<0.01
Zinc (Zn) (mg/L)	0.018	<0.005

*Where more than one LOR has been used in the reporting of an analyte, the lowest and highest LOR are considered in calculating median values.

3.3. Aquatic Habitat

As outlined in the Aquatic Habitat Management Plan (S2-FGJV-ENV-PLN-0009), Reservoirs and many other streams within the project area are designated Key Fish Habitat (KFH) by NSW DPI (Fisheries).

Tantangara Reservoir is considered a Type 2 KFH because of the likelihood of the presence of the Riek's Crayfish. In June 2025 the Project conducted a likelihood of occurrence survey targeting identification of Riek's Crayfish (*Euastacus rieki*) within the Talbingo and Tantangara Reservoirs. The survey concluded that despite the appropriate elevation and geographic location, hydrological limitations make Tantangara Reservoir unlikely to support *E. rieki*. As a precautionary measure, the works will comply with the controls outlined in this Management Plan and the Aquatic Habitat Management Plan (S2-FGJV-ENV-PLN-0009), this plan details habitat features within each reservoir and catchment areas and occurrence of threatened aquatic species respectively.

4. ASPECTS, IMPACTS AND RISKS

4.1. Environmental Aspects and Impacts

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 environmental impacts from the works 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).

Table 4-1: Project Aspects and Impacts Relevant to the Tantangara Intake Excavations Phase 2

Environmental Aspects (Key construction activities)	Environmental Impacts	Environmental Factors (Conditions)
Spoil excavation	Dust generation from spoil handling and transport. Soil/spoil erosion and sedimentation risk nearby waterways. Nutrient risk to surface and groundwater from explosive utilisation.	Weather: Wind speed and direction, rainfall. Soil/Spoil type, composition erodibility. Spoil moisture content
Dewatering of excavation area	Evacuation of turbid water (suspended solids/sediment) into surrounding water bodies. Water quality impacts (localised and downstream). Changes in hydrodynamics (water movement) within the reservoir. Potential evacuation of contaminated water (e.g., fuel, hydrocarbons, chemical residues). Aquatic ecology impacts.	Water quality of any evacuated water. Flow velocity of evacuated water. Receiving water body flow Water quality of receiving water body Rainfall
Placement of excavated material to form the temporary access track	Changes in hydrodynamics (water movement) within the reservoir Water quality impacts (localised and downstream) Interaction of the excavated material with the water column and reservoir bed sediments. Aquatic ecology impacts	Excavated material (for placement) – type, amount and characterisation Weather – Rainfall, wind Reservoir – Water levels Sensitivity of aquatic environments
Aquatic habitat disturbance	Direct mortality or injury to aquatic organisms (e.g., fish, macroinvertebrates) Loss of habitat structure (e.g., removal of bed sediments, rock, or vegetation) Changes in water flow and sediment transport, affecting downstream habitats	Habitat – Type and sensitivity of habitat Hydrology – Normal flow rates, downstream water body characteristics

4.2. Environmental Risk Assessment

The environmental aspects and impacts for emplacement are addressed within the Environmental Aspects and Impacts Register located in Appendix A4 of the EMS. 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.

Environmental risks are also captured and documented throughout specific risk workshops conducted as part of the pre-construction phase of the works and are to be embedded in the construction area plan prior to works commencing and will be updated to reflect the second phase of the Tantangara Intake works.

4.3. Desktop Review – Tantangara Track Phase 2

The desktop review of documents associated with the installation of the Tantangara Track are presented in Section 4.3.1, Section 4.3.2 and Section 4.3.3.

4.3.1. EIS Review

The placement of spoil within the Tantangara Reservoir was investigated extensively by CSIRO during the planning and feasibility phase of Snowy 2.0. This investigation is available in Appendix L of the Environmental Impact Statement (EIS).

It was concluded that:

- Increases in water pH and conductivity are expected due to rapid release of ions that occur via ion solubility and exchange reactions.
- Dissolved aluminium was the only substance consistently identified as a Contaminant of Potential Concern (CoPC);
 - Dissolved aluminium release was negligible for rock materials >2 mm in size; and
- All other analytes assessed were not CoPC warranting further investigation.

The risk of adverse impacts from these CoPC will decrease as concentrations of fine excavated rock materials decrease and the duration the rock materials remaining suspended in the water column decreases.

The works proposed as part of this management plan are expected to have a diminished risk profile when compared to the scenario outlined in the EIS for the following reasons:

- When developing the EIS it was established that the Tantangara PSE would accommodate 2,800,667 m³ of spoil the majority of which would be placed below the FSL in the Tantangara Reservoir whereas this management plan proposes only 80,000 m³.
 - The EIS assessment was performed predominantly on Liquid to Solid (L/S) mixtures of 30:1 and 300:1.
 - The L/S ratio applicable to this management plan would be closer to 4200:1 based on the volume of spoil proposed but is variable based on the level of the Tantangara Reservoir.
- The proposed material for the temporary access track will be placed below the FSL, however above the current water level.

4.3.2. GHD Report – Reservoir Intake Spoil Emplacement (S2-GHD-TEC-MEM-0026)

The EIS examined nitrogen input into the Tantangara Reservoir from natural rock. To expand on the work undertaken in the EIS, FGJV contracted GHD to further assess D&B residue impact of the Tantangara Intake Stage 3 works on the Tantangara Reservoir relative to the background concentration of the Tantangara Reservoir.

GHD Report focused on the nitrogen impact and concluded the following:

- Any material placed in the reservoir will affect water quality
- The most likely pathway, rainfall impacting the reservoir via the Tantangara Track will produce a negligible impact (The Tantangara Track is unlikely to interact directly with the

Tantangara Reservoir as it will likely remain unsubmerged). This is represented by Scenario 3 in Figure 4-1.

- If the Tantangara Track is submerged, any impact will remain within background water quality levels. This is represented by Scenario 2 in Figure 4-1.

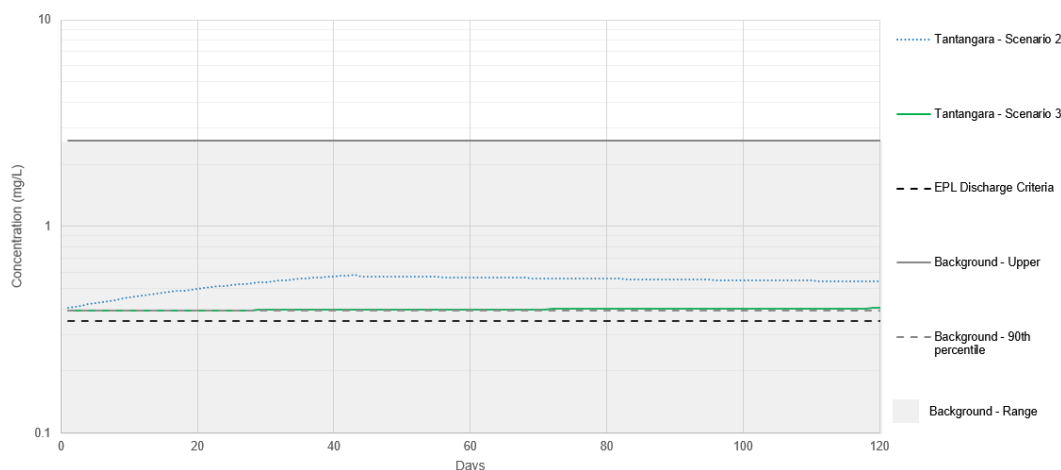


Figure 4-1 Predicted Total Nitrogen Impact of the Tantangara Track on the Tantangara Reservoir within the Mixing Zone

4.3.3. GHD Report – Nutrient Risks to Aquatic Ecosystems (S2-GHD-TEC-MEM-0036)

FGJV engaged GHD to assess the potential water quality impacts of introducing spoil into the Talbingo and Tantangara reservoirs. The primary concern was how nitrogen compounds (nitrate, nitrite, ammonia, and total nitrogen) from proposed spoil emplacement could affect the aquatic environment.

GHD's review of literature, data, and modelling led to the conclusion that Total Nitrogen (TN) impacts for the Tantangara Intake Stage 3 works are generally considered negligible.

4.4. Desktop Review – Floodwater Evacuation

The desktop review of documents associated with potential emergency floodwater evacuation is provided in Section 4.4.1.

4.4.1. GHD Report – Assessment of flooding water quality risks (S2-GHD-TEC-MEM-0038)

GHD was engaged to assess potential water quality impacts from potential floodwater evacuation at Tantangara Intake Stage 3 – Phase 2. The works are planned to be undertaken in dry conditions, however, based on the current understanding of the historical water levels in the reservoir there is low likelihood, under some climatic conditions for the excavation pit to become flooded.

The primary objective of the assessment was to further assess the potential for flood water quality in the excavations to be suitable for floodwater removal to Tantangara Reservoir. Three (3) flooding scenarios were considered based on the volume of the excavation pit at different stages of construction:

- Scenario 1 involving 305,000 m³ of flooding as per Figure 4-2 (not relevant for this Management Plan, used as reference only).
- Scenario 2 involving 160,000 m³ of flooding as per Figure 4-3
- Scenario 3 involving 490,000 m³ of flooding as per Figure 4-4

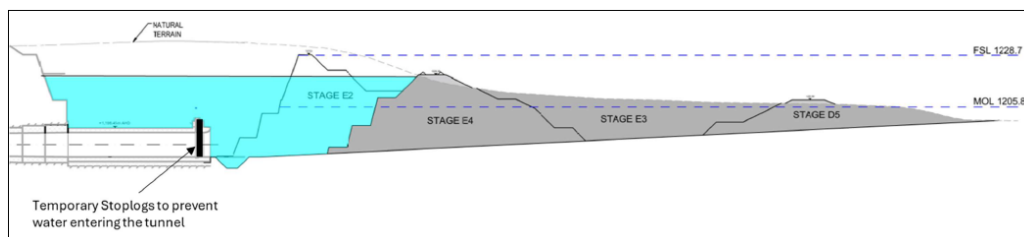


Figure 4-2 Scenario 1 Flooding (not relevant for this Management Plan, used as reference only).

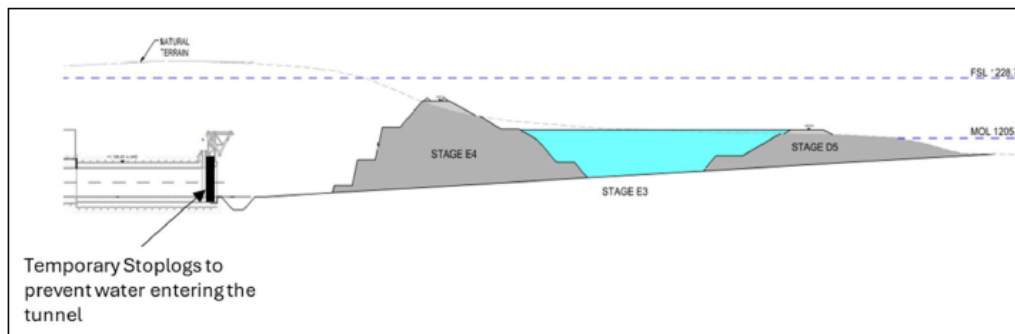


Figure 4-3 Scenario 2 Flooding

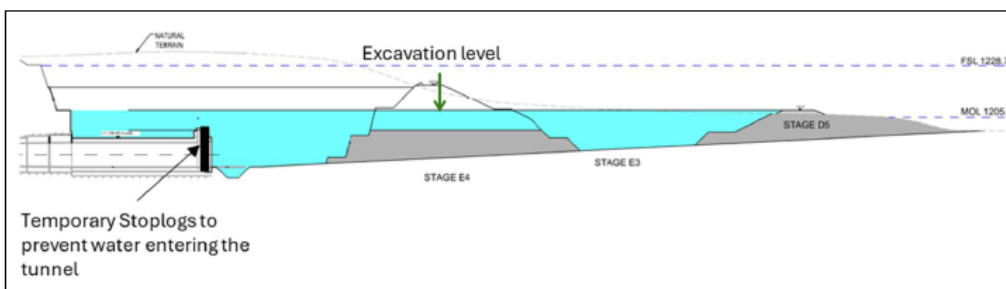


Figure 4-4 Scenario 3 Flooding

The three (3) scenarios were modelled using a mass balance assessment to estimate contaminant concentrations, focusing on key pollutants such as nitrogen compounds, oils and grease, and metals from machinery leaks and blasting residues.

Results show that, under the assumed conditions and with proper management (e.g. removal of machinery and blast spoil before flooding), the floodwater quality is generally within the range of background concentrations. However, Scenario 2 poses the highest risk due to lower dilution. The report recommends proactive monitoring, early warning systems, and floodwater removal only when water quality meets site-specific or regulatory criteria. The results of the modelling undertaken by GHD are presented in Table 4-2.

Table 4-2 Expected Floodwater Quality¹

	NOx	NH ₃	TN	TP	CN	Oils and grease	Urea	Ethylene Glycol
Scenario 1	0.021	0.02	0.28	0.019	0.002	0.69	0.002	0.021
Scenario 2	0.035	0.04	0.35	0.019	0.002	0.86	0.003	0.041
Scenario 3	0.015	0.02	0.25	0.019	0.022	0.62	0.001	0.013

Notes to Table

1 – The assessments undertaken as part of the above scenarios considered 10 contaminants of concern based on an understanding of the key risk drivers. These works did not include any potential risks associated with suspended sediments/ turbidity as these risks are will be managed using the controls outlined in Section 5.

5. METHODOLOGY AND CONTROLS

5.1. Introduction

The overall framework for the management of works as part of the Tantangara Intake – Stage 3 – Phase 2 includes the following:

- Implement Environmental Controls – Environmental controls will be set up prior to works commencing as per Section 5.2.
- Construction and Removal of Tracks – As part of the works the Tantangara Track (Phase 2) will be constructed in accordance with Section 5.3. A portion of the Tantangara Track (Phase 1) will also be removed.
- Excavation Methodology – Following the implementation of environmental controls spoil will be excavated as per Section 5.4.
- Dewatering and Floodwater Removal Methodology - Routine dewatering will be undertaken within the excavation pit. Should the excavation pit flood during works any floodwater will be removed as per Section 5.5.

5.2. Environmental Controls and Pre-placement Monitoring

Table 5-1 outlines environmental controls to be implemented prior to the commencement of works.

Table 5-1: Environmental Controls

Control	Description
Reservoir water levels	During works, Tantangara Reservoir will be maintained as close to Minimum Operating Level (MOL) as possible by controlling the opening of the Murrumbidgee-Eucumbene Tunnel (MET). Phase 2 dry excavation works are planned for periods in which the reservoir level is expected to be at a low point as per Section 3.1.
Progressive Erosion and Sediment Controls Plan	Where practicable, ERSED controls to be "beyond the blue book requirements / exceed industry standard to ensure protection commensurate with the receiving environment. Daily environmental inspections will be done to ensure the erosion and sediment controls are according to the plan (PESCP), and pre- and post-rainfall event inspections will be carried out to ensure the controls are still working as per the plan.
Installation of silt curtains	A double silt curtain will be installed around the proposed in-reservoir emplacement area to minimise the potential for sediment dispersion during in-water activities. Silt curtains will be suspended from booms on the surface. The double silt curtain will remain in place, and it will be maintained in satisfactory working order throughout the duration of the works undertaken as part of this plan.
Water quality	In-reservoir monitoring will be undertaken as per the Surface Water Management Plan (S2-FGJV-ENV-PLN-0011), Aquatic Habitat Management Plan (S2-FGJV-ENV-PLN-0009) and Section 7.2. of this Management Plan. Where impacts are observed, the appropriate Trigger Action Response Plan (included in the above plans) will be followed as per Appendix A of this Management Plan.
Monitoring Buoys	To ensure comprehensive and proactive environmental management, real-time water quality monitoring is being implemented through the deployment of specialised buoys. These buoys are equipped with advanced sensors that continuously collect data on key water quality parameters. The system is designed to automatically trigger alerts when measured parameters exceed the predefined thresholds detailed in Section 7.2.3 enabling immediate assessment and response to potential water quality issues. This continual data will be displayed on a centralised database dashboard.
Aquatic Disturbance Permit	To actively protect and minimise impacts on threatened aquatic species during construction activities, a comprehensive Aquatic Disturbance Permit System has

Control	Description
	been developed. This system integrates best practice mitigation measures and stringent environmental safeguards, ensuring that all works within or near aquatic environments are rigorously assessed and approved. Prior to the disturbance of aquatic habitats which have the potential to contain threatened aquatic species, a preclearance procedure, including Murray and Rieks Crayfish will be undertaken as per the Aquatic Habitat Management Plan (S2-FGJV-ENV-PLN-0009). A qualified ecologist will survey the construction envelope work area. Works can commence after the ecologist's report confirms the absence of Murray and Rieks Crayfish within the designated work area. The survey preclearance procedure involves the following steps: • Habitat assessment • Trapping if required • Translocation A desktop study to assess the prevalence of Rieks Crayfish was undertaken as per Section 3.3. It was concluded that there was generally a low probability of encountering the Rieks Crayfish in the Tantangara Reservoir.
Vegetation Clearing	Vegetation pre-clearing and clearing will be undertaken according to the Biodiversity Management Plan - Appendix C - Pre-clearing and clearing procedure (S2-FGJV-ENV-PRO-0008). All vegetation clearing will be monitored regularly to ensure that the clearing limits are not exceeded. The following is to occur prior to clearing: • Clearing limits/Exclusion Zones will be established prior to clearing commencing • GPS coordinates for all threatened flora will be recorded during the pre-clearing survey • A suitably qualified ecologist will undertake a pre-clearing survey along the proposed clearing areas prior to the commencement of clearing. Note: The proposed works involve a total disturbance area of approximately 12 hectares, located entirely within the operational footprint below the Full Supply Level (FSL). This zone is subject to ongoing impacts from project activities and water level fluctuations between the Full Supply Level and Minimum Operating Level. Despite these prior impacts, all clearing within this area is tracked and managed through the project Clearing and Grubbing permitting system in strict accordance with the Biodiversity Management Plan - Appendix C - Pre-clearing and clearing procedure (S2-FGJV-ENV-PRO-0008). All works will be conducted under a project-specific Aquatic Disturbance Permit, ensuring that controls are in place to mitigate environmental impacts.

5.3. Temporary Access Track Construction and Removal Methodology

The temporary access track will be constructed as per the methodology outlined in the Tantangara Intake Stage 3 – Phase 1 Management Plan (S2-FGJV-ENV-PLN-0429). As mentioned in Phase 1 Management Plan, a material permit is required before the processed material is transported to the temporary access track and placed. The review completed as part of the permit includes:

- Geochemical and geotechnical results
- Analytical results
- Visual Inspection
- Sampling density and methodology

Phase 2 of the Temporary Access Track comprises two distinct alignments, characterised by different embankment formation requirements shown in Figure 5-1.

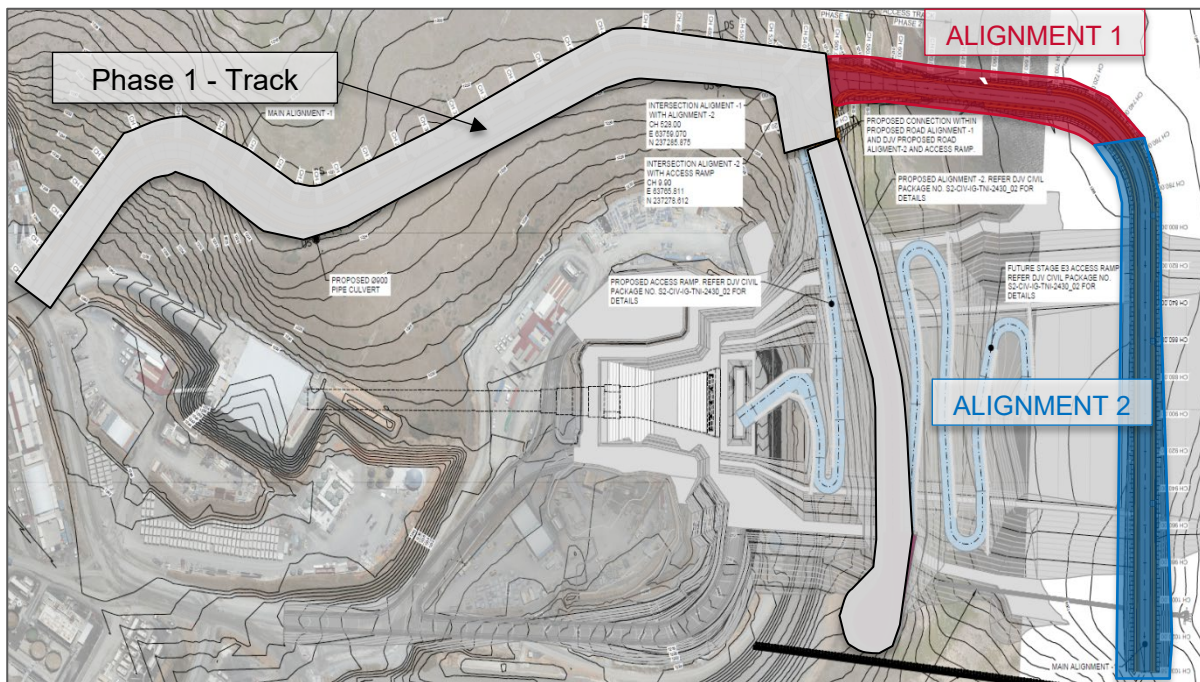


Figure 5-1 Phase 2 Temporary Access Track – Alignment 1 and 2 Plan

The material required for the temporary access tracks will be processed to achieve the recommended grainsize and geochemical criteria set out in Tantangara Intake Stage 3 – Phase 1 Management Plan (S2-FGJV-ENV-PLN-0429). After the material permit is provided, the material will be loaded onto trucks and delivered to the emplacement location. The main steps for placement methodology are summarised below:

- Step 1: Excavator and dozer place the rockfill material in layers of approximately 0.5m (also core material for Alignment 2)
- Step 2: Compaction with machine passes
- Step 3: Geotextile placed on both embankments, reservoir and intake sides
- Step 4: Repeat steps 1 to 3 until profile is met
- Step 5: Placement of top layers to form the road pavement, including safety berms
- Step 6 (if required): Install seepage protection (Alignment 2) using a Cutter Soil Mixing technique (mixing in place the soil with cement and bentonite mix) or alternative solution
- Step 7 (if required): Install grout curtain to extend the seepage protection into the rock mass

Production rates in the order of 500 m³ to 3000 m³ per day are to be expected. During material placement into the reservoir environmental monitoring will be undertaken in accordance with Section 7.

Part of the temporary access track built in the Tantangara Intake – Stage 3 - Phase 1, spanning across the intake channel from north to south, will be removed during works as per Figure 1-2 and Figure 1-3. The remaining part of the temporary access track built in Phase 1 or Phase 2 will be removed at the end during or at the end of Phase 3. The material from the track will likely be transported to the Tantangara PSE for final placement or used in other construction works.

Prior to onsite reuse, the track material will be assessed using the methodology outlined in the Spoil Management Plan (S2-FGJV-ENV-PLN-0019) to ensure the material is suitable for reuse.

The temporary access road (excluding the Seepage protection) is planned to start in May 2026. Seepage protection is planned to start in February 2027 or earlier should the water levels allow.

5.4. Excavation Methodology

Following the completion of the temporary access track to serve Phase 2 works, the excavation stages will comprise Stages E3, Stage E4 and possibly a small section of Stage D5 as shown in Figure 1-3.

The methodology of excavation works part of Phase 2 is similar to excavation already carried out in previous stages of the intake excavation works, with the exception that the permanent slopes are self-supported (natural ground with no requirements for rock bolts). The main construction sequence is as follows:

- Removal of soft material by dozer/excavator, load and haul operations to spoil area.
- Drilling, blasting, load and haul operations to spoil area will be carried out in benches to reach the bottom of the approach channel.
- Blasting operations will be undertaken by a specialist subcontractor, and all blasting works will be completed in accordance with the Blast Management Plan (S2-FGJV-ENV-PLN-0045) which considers noise and vibration impacts. Blasting controls to reduce nitrogen risk will be implemented as per the Nitrogen Management Plan (S2-FGJV-ENV-PLN-0367).
- According to the geology of each sector, punctual temporary or permanent rock anchors will be installed if and where required.

The material will be mucked out promptly to streamline works and reduce the contaminant load from spoil left in the excavation area. The excavated material will be hauled to one of the following locations depending on the nature of the material:

- Nominated spoil disposal areas such as the Tantangara PSE;
- Stockpile area for use in the final rehabilitation of the site including topsoil material; and/or
- Mobile crusher / screen for aggregate production.

Prior to final placement, the spoil will be sampled in accordance with the Spoil Management Plan (S2-FGJV-ENV-PLN-0019) to ensure compliance.

As the excavation progresses, a temporary channel will be installed within the 1209m AHD road towards the intake side. This channel will be protected with a geosynthetic or similar to control the potential waterflow overtopped from the reservoir side.

Ahead of a potential flood event, the excavation pit will be cleaned.

The excavation works are planned to start in 2027 or earlier should the water levels allow.

5.4.1. Excavation Water Level

Water level is expected to be maintained lower than 1209m AHD during excavation Stage E3, Stage E4 and possibly a small section of Stage D5.

At the end of the excavation of Stage E3, Stage E4 and possibly a small section of Stage D5, the drill and blast operations required for Stage D5 (Part of Phase 3) will be carried out in dry conditions prior to the commencement of dredging works. Prior to D&B operations, additional ground investigations will be conducted in the designated area to refine the depth of the rock layer and obtain a more accurate mapping across the channel. These investigations will help assess the necessity of employing drill and blast techniques within this zone. The extent of drill and blast operations required in Stage D5 is indicated in Figure 5-2 (yellow colour).

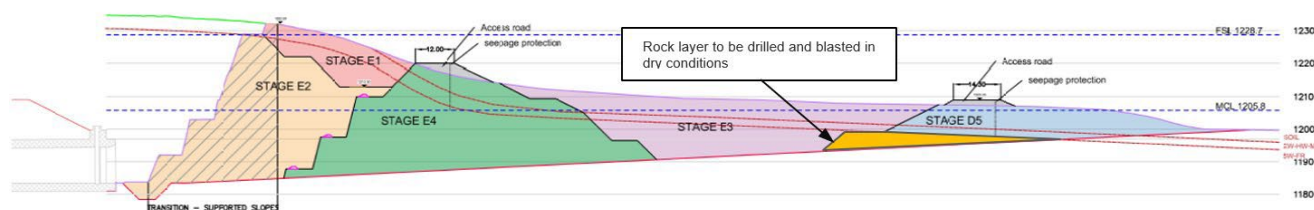


Figure 5-2 Stage D5 Drill and Blast Area

5.5. Dewatering and Removal of Floodwater Methodology

5.5.1. Introduction

As the excavation works in Section 5.4 progress, water ingress into the excavation pit is expected from the 3 main sources and detailed below:

- Natural rainfall – following events of rainfall, accumulated water during these events will be diverted to the temporary drainage system network into a dedicated sediment basin. Captured water will be subject to treatment within the sites water treatment infrastructure as outlined in the Progressive Erosion and Sediment Control Plan (PESCP).
- Groundwater ingress – As excavation works progress to full depth the possibility of groundwater ingress increases. Seepage protection has been designed based on groundwater modelling and will be constructed, if required, within the temporary access track to minimise the inflows from the surrounding ground. The current design, currently under construction along the Access Road 1220, consists of seepage protection with a cut-off wall constructed using the Cutter Soil Mixing (CSM) method. A specialist subcontractor has been selected for these activities, including the second access road if required. The need for a seepage protection system will be assessed on site, based on measured inflow rates that is expected to be in the low range of 17.3 m³/day, which could be the actual solution of CSM or a different engineering solution, such as sheet piles or equivalents.
- Potential inundation from rising reservoir water levels – As the position of the top of the temporary access track being located at 1209m AHD, which is approximately 3.2 m above the Minimum Operating Level (MOL) of Tantangara Reservoir, a risk of inundation exists. While control of the water level in the reservoir is not guaranteed it has been agreed with SHL Business as Usual Team to maintain the reservoir level as close to MOL as practicable. SHL will manage the reservoir levels by releasing licensed environmental flows through Tantangara Dam and enabling full unfettered capacity relative to reservoir levels via the existing Murrumbidgee-Eucumbene Tunnel (MET). Additionally, monitoring the inflows into the reservoir catchment area (snow forecast, measured snowfall data and rainfall forecasts) will be continuously carried out. Subsequently, the hydrological models will be updated with accurate data and will better forecast fluctuations of reservoir water levels for short and medium terms. The water levels in Tantangara reservoir will be constantly monitored to identify any water level increase. A water level threshold will be established, beyond which work must cease, and the pit must be evacuated. Please refer to Appendix A - Trigger Action Response Plan – Tantangara Phase 2 – Scenario 3. Additional details on threshold levels are provided within the Tantangara Intake Stage 3 Emergency Flood Response Procedure S2-CON-IG-TNI-PRO-FGJV0035.

To minimise the potential inundation risks, the works for Phase 2 are planned to take place during the dry season (usually between February and July) as presented in Section 3.1. Based on the hydrological modelling carried out by SHL (see Figure 3-2). Although extreme rainfall events may occur during the dry season and the excavation may be flooded. We

anticipate this event occurs one time during these works. The regulators (DPHI, EPA, NPWS, and DCCEEW) will be notified if we anticipate any flood event.

For works to continue in dry conditions the excavation pit will need to be dewatered according to the following methodology:

- Routine dewatering: Natural rainfall and groundwater inflows will be collected in sumps, pumped to the local WTP for treatment and reused at approved points, as per Section 5.5.2;
- Floodwater removal: Potential floodwater from the excavation pit should this become flooded due to rising water levels in the Tantangara Reservoir will be managed as per Section 5.5.3.

5.5.2. Routine Dewatering

Inflows into the excavation from natural rainfall and groundwater ingress will be directed to sumps and pumped to the local WTP for processing before being discharged at the approved discharge points.

It is anticipated that for the majority of the works the excavation pit will be dewatered from a sump or series of sumps at the base of the excavation pit. A pump or series of pumps will be located adjacent to each of the sumps with a pumping system used to transport the water to the basin located on the northern boundary of the intake excavation. From the basin, the water will be transported to the local WTP and treated prior to discharge via the licensed EPL location.

5.5.3. Floodwater Removal Options Assessment

The Tantangara Reservoir will be kept near MOL by regulating MET openings to reduce flood risk, though flooding of the excavation pit cannot be ruled out entirely.

To determine the most viable option of evacuating the floodwater an options assessment was undertaken. The following options were assessed:

- Option 1 – Application to land using sprinkler system
- Option 2 – Application to reservoir through Water Treatment Plant (WTP)
- Option 3 – Under water blasting and dredging
- Option 4 – Direct evacuation to reservoir

The options assessment considered the following:

- Environmental impact
- Compliance with legislative and approval requirements
- Dewatering Rate
 - Floodwater must be removed promptly to prevent Workplace Health and Safety (WHS) risks and allow for dry excavation
 - Leaving floodwater in the excavation may create a negative public perception
 - Slow dewatering rate increases reflooding risk before completion
 - Slow dewatering rate delays the program and increases the risk that Phase 2 excavation works will be unable to be undertaken during the dry period as per Figure 3-2. If works are unable to be undertaken during the dry period, then wet excavation using underwater blasting and dredging may be required.

These options have been assessed under the flooding worst-case scenario as per Figure 4-4. The option assessment does not include routine dewatering as per Section 5.5.2.

5.5.3.1. Option 1 – Sprinkler System

Tantangara currently has six (6) sprinklers which have a combined discharge capacity of 700 m³ per day. Using the current sprinkler system would take up to 700 days to evacuate the floodwater. Even significantly upscaling the current sprinkler system to twenty (20) sprinklers dispensing 2,333 m³ day would take 210 days to evacuate the floodwater.

This option has a low anticipated environmental impact and is in line with the project's approved water reuse criteria.

While offering controlled evacuation and wide coverage, the sprinkler system cannot achieve a safe floodwater evacuation rate without posing WHS risks. Further the slow evacuation rate would result in a delayed program which would:

- Result in the inability to undertake the excavation of Phase 2 in dry conditions; and
- Increase the reflooding risk before the completion of works.

Despite the limitations in evacuation rate a sprinkler system may be used to supplement a faster dewatering method but lacks capacity as a primary solution. To prevent erosion and sediment issues, the discharge rate will be controlled.

5.5.3.2. Option 2 – WTP

The onsite WTP has a capacity of 1,200 m³/day after considering the TBM dewatering use. At this capacity it would take 408 days to process the floodwater, making it an impractical solution.

Tripling the current surplus WTP capacity would reduce processing time to 136 days but would require significant capital investment and construction of large site pads, causing major ground disturbance and a level of environmental impact.

The slow evacuation rate would result in a delayed program which would:

- Result in the inability to undertake the excavation of Phase 2 in dry conditions; and
- Increase the reflooding risk before the completion of works.

Expansion of the WTP is not deemed commensurate with the level of risk posed by the floodwater given its expected composition as per Section 4.3. The WTP may be used to supplement a faster evacuation method but lacks capacity as a primary solution. Increasing the capacity of the WTP plant may not be in accordance with the currently allowed discharge volume.

5.5.3.3. Option 3 – Underwater Blasting and Dredging

If floodwater cannot be evacuated or if Phase 2 works are delayed beyond the dry season, the remaining spoil may need to be removed using underwater blasting and dredging. While this method is technically feasible, it is generally not preferred due to its potential to impact the surrounding environment, in comparison to dry excavation.

The preferred method is to minimise underwater blasting and dredging and use alternative approaches that allow for spoil removal under dry conditions to be prioritised to support environmental stewardship and reduce potential ecological disturbance. Underwater blasting and dredging has a high inherent environmental risk without appropriate controls.

5.5.3.4. Option 4 – Direct Evacuation to Reservoir

Direct evacuation to the reservoir enables removal of up to 50,000 m³ of floodwater per day, allowing dewatering in under 10 days. This method is recommended over sprinkler systems or WTPs due to its speed, which supports continued dry condition works minimising the potential for dredging and underwater blasting during Phase 2 works. We will simultaneously utilise both the sprinkler system and WTPs in conjunction with direct evacuation methods, as far as practicable.

Direct evacuation is considered the most viable option to evacuate the floodwater in a timely manner, however it may be supplemented by land application as per Section 5.5.3.1 and use of the WTP as per Section 5.5.3.2 where possible.

The proposed location of this evacuation is presented in Figure 5-3.

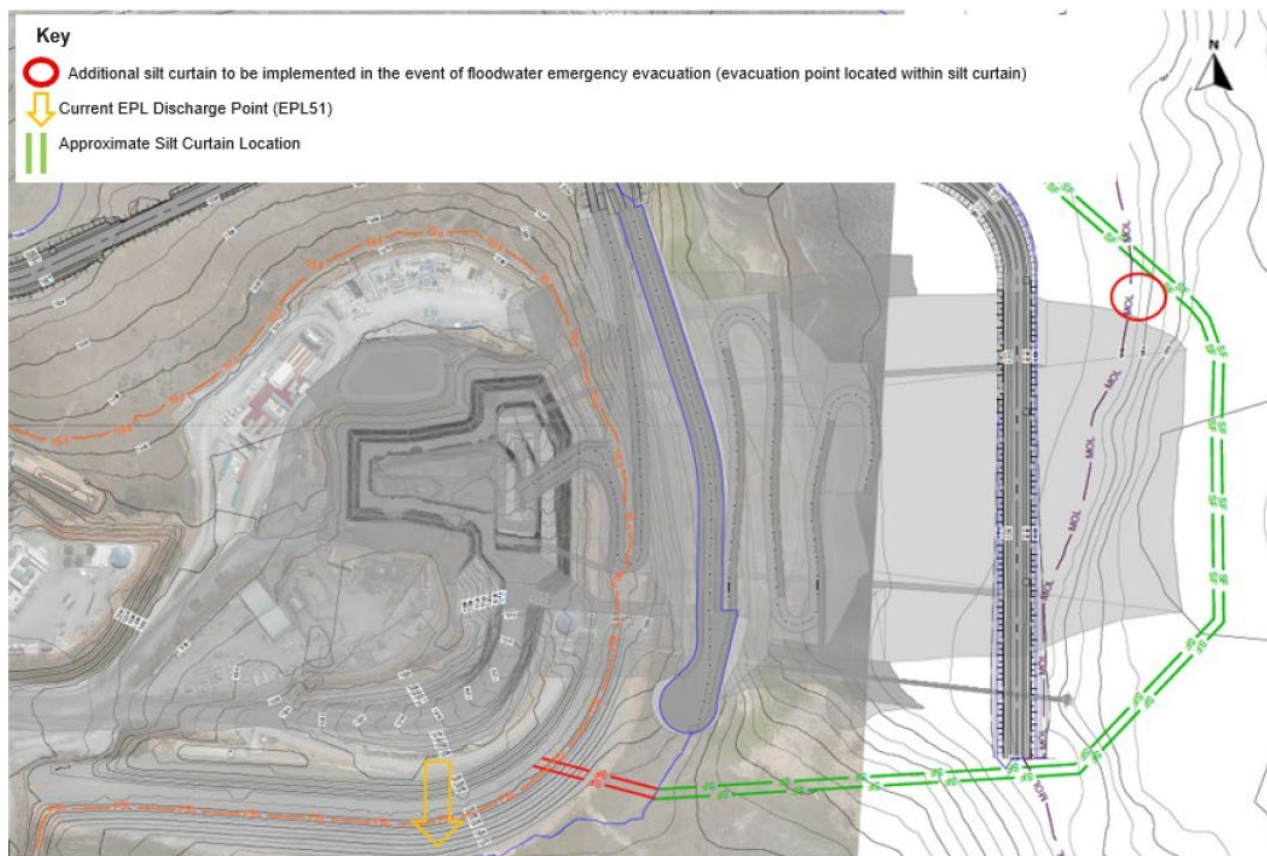


Figure 5-3 Proposed Floodwater Emergency Evacuation Point

Note: Once the evacuation point has been determined, taking into account the location of the portable pump and the final silt curtain configuration, FGJV will develop a dedicated monitoring program on the approach used for the floodwater dewatering. This Floodwater Dewatering Procedure (ENV-WA-GEN-PRO-FGJV0078) will be detailed in a separate proposal and submitted to the EPA for review and endorsement prior to any planned discharge. This commitment was made to the EPA on 11 June 2026 (correspondence provided to DPHI in the MP submission).

As per Section 4.3, floodwater quality is expected to match the Tantangara Reservoir, indicating low environmental risk according to GHD report [S2-GHD-TEC-MEM-0038]. Despite the low inherent risk, various controls will be implemented in accordance with Section 5.5.4.

5.5.3.5. Conclusion

An options assessment was undertaken for the emergency floodwater evacuation. It was concluded that the most viable method to evacuate the floodwater is the direct evacuation of floodwater to the reservoir, and will be supported by utilising the sprinkler system and WTPs so far as reasonably practicable. The direct evacuation of floodwater is the only method which will allow for works to be undertaken in dry conditions (during the dry season) if the excavation pit floods and prevent additional dredging and underwater blasting. Further, this option represents the best-case scenario in terms of OH&S and environmental outcomes.

The options assessment does not include routine dewatering as per Section 5.5.2, if this was considered in the options assessment this would further support the conclusion that the direct evacuation is the only viable method for emergency floodwater evacuation.

5.5.4. Emergency Floodwater Evacuation Controls

The inundation of work areas will be preceded by some degree of forewarning due to gradually rising reservoir levels, allowing time to remove any plant and equipment from the pit. As a result, the contaminant load within the excavation pit will be minimised to the extent practicable.

Despite this, construction controls will be implemented and include:

- Water levels controls including:
 - Maintaining reservoir water level as close to MOL as possible by SHL in accordance with Section 3.1
 - Planning of the Phase 2 works during low inflow season (February to July) to limit the potential for floodwater ingress.
- Appropriate energy dissipation during water evacuation in the event flooding does occur.
 - Use of outfall strainer
 - The outfall aimed in a slightly skyward direction.
- Construction of an elevated temporary access track and associated bund at an elevation of 1209 m AHD atop Stage D5 as per Figure 1-3. Although the primary purpose of this track is for access it will also help to limit to prevent flooding as far as practicable while balancing the amount of temporary works in the reservoir.
- Seepage protection designed and installed to minimise the water inflows / outflows from the surrounding area or the reservoir into the excavation pit

Water quality and environmental controls which include:

- Daily visual inspections for oil and grease sheens or visible signs of contamination to be undertaken by the site team prior to inundation. Any contamination identified within the excavation area will be contained, removed from the area and disposed of in accordance with the Spill Response Procedure (S2-FGJV-ENV-PRO-0039) and the Floodwater Dewatering Procedure (ENV-WA-GEN-PRO-FGJV0078).
- To reduce nutrient load, the explosive controls outlined in the Nitrogen Management Plan (S2-FGJV-ENV-PLN-0367) will be followed with some relevant items listed below:
 - Explosive sleep time in excavations will be minimised to reduce the risk of nutrients entering surface or groundwater.
 - Water resistant bulk emulsion explosives will be used for blasting. Less water-resistant explosives such as Ammonium Nitrate Fuel Oil (ANFO) will not be used.

Controls to mitigate turbidity related risk including:

- Dewatering will occur within the current silt curtains to minimise turbidity outside the containment area.
- A minimum of two silt curtains will be in place at all times, with a third silt curtain to be installed in the event of floodwater evacuation. The additional silt curtain will be deployed within the proposed floodwater evacuation area at a distance of approximately 10 m from the evacuation point (See Figure 5-3).
- Water will be allowed to settle prior to dewatering, and the pump will be installed at the surface of the excavation pit to collect less turbid water.

- Potentially turbid water at the base of the excavation pit will be redirected to the site temporary drainage system, with the water passed through the WTP as per Section 5.5.2.

Development of an appropriate Emergency Flood Response Procedure (S2-CON-IG-TNI-PRO-FGJV0035) which captures WHS-related risk mitigation measures and early warning system which includes:

- A stop work notice to be issued when the risk of flooding is significant due to rising water levels.
- The removal of non-essential plant and equipment from the excavation area prior to flooding to reduce hydrocarbon load.
- Cessation of blasts within the excavation area to ensure that no unexploded explosives are present, reducing nutrient load.

To evaluate the effectiveness of the controls:

- Reservoir water will be sampled during works as per Section 7.2
 - Including the installation of real time monitoring buoys
 - Adoption of site-specific TARPs in accordance with Appendix A
- Assessment criteria will be applied to the water prior to evacuation as per Section 5.5.5.

5.5.5. Emergency Floodwater Evacuation Sampling Methodology

The sampling methodology for the emergency floodwater evacuation and associated assessment criteria are provided in the following sections:

- Section 5.5.5.1 which establishes the baseline water quality using in-situ parameters prior to flooding
- Section 5.5.5.2 which establishes the baseline water quality using comprehensive sampling prior to flooding
- Section 5.5.5.4 which outlines the sampling locations, frequency and assessment criteria for emergency floodwater evacuation
- Section 5.5.5.3 which outlines reporting compliance

Prior to any emergency floodwater evacuation, a detailed water quality monitoring program will be developed in consultation with the EPA. This program will establish specific near-field and far-field monitoring locations relative to the final discharge point and will utilize in situ methods (such as profile monitoring at varying depths) to characterize potential water column stratification and localized mixing zones.

5.5.5.1. Daily Monitoring (Visual Inspections and In Situ Analysis)

Daily monitoring will be conducted to establish baseline conditions and promptly detect material changes in water quality.

- **Frequency:** Daily until pumping is complete.
- **Method:**
 - **Visual Inspection:** Note observations regarding colour, odour, sheens/slicks, floating debris, and suspended solids.
 - **In Situ Analysis:** Measure key parameters using the calibrated equipment
- **Parameters:**
 - **pH** (Acidity/Alkalinity)

- **EC** (Electrical Conductivity/Salinity)
- **REDOX** (Reduction-Oxidation Potential)
- **Turbidity** (Clarity)

5.5.5.2. Comprehensive Sampling (Laboratory Analysis)

Comprehensive samples and results will be collected (as per Table 7-1) to provide a detailed chemical profile of the water prior to pumping operations. During the planned approximate two-week pumping operation, additional sampling with a fast-tracked turnaround time will be implemented.

- **Frequency:** Twice per week for the duration of the pumping period which is expected to be approximately two weeks (a total of approximately 4 sampling events). The first sample will be collected and results received *prior* to commencing pumping.
- **Logistics:** Samples will be collected using established Standard Operating Procedures (SOPs) for environmental sampling, preserved appropriately, and transported under Chain of Custody protocols to a National Association of Testing Authorities (NATA) accredited laboratory.
- **Analytical Suite:** The specific analytical suite is listed in Table 7-1 of this Management Plan, but should typically include:
 - **Nutrients** (e.g., Nitrogen Species (including Nitrate), Phosphorus)
 - **Heavy Metals** (Dissolved and Total)
 - **Total Suspended Solids (TSS)**

Total Petroleum Hydrocarbons (TPH) and Benzene, Toluene, Ethylbenzene, Xylenes (BTEX) (if these are considered CoPC).

5.5.5.3. Emergency Evacuation Assessment Criteria

As outlined in Section 4.3, floodwater is expected to reflect Tantangara Reservoir water quality and be suitable for evacuation during an inundation event. However, prior to evacuation, floodwater and reservoir water will be tested for key analytes of primary concern prior to evacuation. This will be undertaken by collecting physiochemical and comprehensive samples from the locations displayed in Table 7-1 alongside one location inside the flooded area (to be determined by site teams after assessing safe sampling conditions). The analysis will include pollutants such as nitrogen compounds, oils and grease and heavy metals.

The comprehensive analytical results from the flooded area will be assessed against the analytical results from those locations in Table 7-1. Where the analytical results from the flooded area are outside the adopted WQO's (displayed in Table 7-2 and Table 7-3), the analytical results will be compared to the results reported from the locations displayed in Table 7-1. If the analytes of primary concern recorded in the flooded area are within 10% ambient, evacuation is permitted following notification to EPA as per TARP 3. The proposed emergency evacuation location is provided in Figure 5-3.

If the results do not meet the above conditions, SHL will contact the NSW EPA immediately to consider an emergency evacuation subject to the analytical results received. Rapid evacuation of floodwater is essential to protect worker safety onsite.

The Trigger Action Response Plans are presented in Appendix A. In addition to the TARPs, an emergency flood response procedure (S2-CON-IG-TNI-PRO-FGJV0035) is currently being developed as a construction document, which will ensure that there are no personnel or plant in the excavation area where there is a risk of flooding. The regulators (DPHI, EPA, NPWS, and DCCEE) will be notified prior to a flooding event when an evacuation is anticipated, and following any stop works issued based on environmental impacts following TARP implementation.

5.5.5.4. Reporting and Regulatory Compliance

In the event of emergency floodwater evacuation, validated laboratory results will be reported in line with the current EPL requirements, and daily monitoring logs will be reported to the EPA as captured in TARP Scenario 3 – Response.

All laboratory results will be reviewed as soon as practicable by a suitably qualified Site Team member.

6. ENVIRONMENTAL MANAGEMENT MEASURES

6.1. Management Measures

A range of environmental requirements and control measures are identified in the Main Works EIS, Submissions Report and the Infrastructure Approval. Safeguards and management measures will be implemented to avoid, minimise or manage impacts from in-reservoir emplacement.

Specific safeguards and management measures to address in-reservoir emplacement impacts of the project are identified in Table 6-1. These have been sourced from several other plans of relevance and retain the unique ID as detailed in the source document.

Table 6-1 Environmental Management Measures

ID	Measure / Requirement	When to implement	Responsibility	Source document
General				
SE01	Training will be provided to all project personnel, including relevant sub-contractors on emplacement management practices and the requirements of this plan through inductions, toolbox talks and targeted training.	Pre-construction	FGJV	Good practice
SM02	Management measures from this plan will be included in relevant site environmental documents including for example, Work Packs and/or Site Environmental Plans (SEPs).	Pre-construction	FGJV	Good Practice
Aquatic Habitat				
AqH02	In the event that threatened species, or endangered ecological communities are identified during construction the Threatened Aquatic Species Relocation Procedure included in Appendix A of the AqHMP will be followed.	Construction	FGJV	MW REMM AE01
AqH03	In the event of the discovery of any fish kills within or adjacent to the work area, DPI Fisheries are to be notified in accordance with Appendix D of the AqHMP. As required by Section 7.2 of the EMS, DPHI are to be notified in writing immediately after SHL becomes aware of an incident.	Construction	FGJV SHL	MW REMM AE01
AqH04	Prior to works commencing within shallow parts of the construction envelope such as Talbingo Reservoir, Yarrangobilly River and Wallace Creek, an ecologist will inspect the areas for Murray Crayfish as detailed in Section 5.1. If found, Murray crayfish will be translocated to adjacent habitats away from impacts in accordance with the translocation procedure included in Appendix A of the AqHMP. Semi-aquatic species, such as frogs, if found are to be managed in accordance with the Biodiversity Management Plan.	Pre-construction / Construction	FGJV SHL	MW REMM AE01
AqH05	Prior to works commencing, an ecologist will conduct a survey to document aquatic habitat condition and presence of threatened aquatic species in and surrounding the approved disturbance areas as detailed in Appendix B of the AqHMP.	Construction	FGJV SHL	MW REMM AE01 EW REMM ECO15
Spoil Characterisation				
SM03	The spoil characterisation program in Appendix A of the Spoil Management Plan (S2-FGJV-ENV-PLN-0019) will be implemented. The program will enable adequate assessment of contaminated materials, NOA, acid metalliferous drainage (AMD)/neutral metalliferous drainage (NMD)/saline drainage (SD) material and reduce the risk of material being misclassified as 'benign' and being managed inappropriately.	Construction	FGJV	Schedule 3 Condition 4 EW REMM CON02

SM05	Material which has been assessed as not suitable for reuse on land or for temporary subaqueous disposal or cannot be reused will be classified in accordance with the <i>Waste Classification Guidelines</i> (NSW EPA 2014).	Construction	FGJV	MW REMM CONTAM04 EW REMM CON03
Spoil Handling and Management				
SE2	Where exceedances of nitrogen levels in spoil material occur, spoil rinsing will be undertaken until the criteria is met as per the geochemical criteria set out in Tantangara Intake Stage 3 – Phase 1 Management Plan (S2-FGJV-ENV-PLN-0429).	Construction	FGJV	Tantangara Intake Stage 3 – Phase 1 Management Plan (S2-FGJV- ENV-PLN-0429)
SM08	Spoil is to be only re-used, placed or disposed of in accordance with its classification as set out in Section 6.1 of the Spoil Management Plan (S2-FGJV-ENV-PLN-0019).	Construction	FGJV	Schedule 3 Condition 4
SM09	Apart from the spoil that is provided to the NPWS for use in other parts of the Kosciuszko National Park, sent off-site, used to construct temporary or permanent infrastructure for the development or used to rehabilitate the site, the Proponent must ensure that all the spoil generated by the development is disposed of in the following emplacement areas: • Ravine Bay; • GFO1; • Lobs Hole; • Tantangara; or • Rock Forest.	Construction	FGJV SHL	Schedule 3 Condition 5
SM10	TBM spoil must not be placed in the active storages or below the full supply level of either the Talbingo Reservoir or Tantangara Reservoir without the approval of the Planning Secretary.	Construction	FGJV	Schedule 3 Condition 4
SM21	The Waste Management Plan (S2-FGJV-ENV-PLN-0048) will be implemented to ensure appropriate classification, use and disposal of waste from the project.	Construction	FGJV	MW REMM CONTAM04 EW REMM CON03
SM22	Material which is not suitable for reuse or placement or on onsite remediation, will be transported to a facility that is lawfully permitted to receive that material.	Construction	FGJV	EW REMM CON03
SM23	The Stockpile Procedure (Appendix C of the Spoil Management Plan) will be developed to ensure temporary stockpiling is appropriately managed and that any adverse impacts are controlled and rectified.	Construction	FGJV	Schedule 3 Condition 7 EW REMM CON02

SM24	The Surface Water Management Plan (S2-FGJV-ENV-PLN-0011) will be implemented to ensure impacts on surface waters as a result of spoil handling and placement are minimised.	Construction	FGJV SHL	Schedule 3 Condition 4
SM38	The monitoring in Section 9 of the Spoil Management Plan (S2-FGJV-ENV-PLN-0019) will be implemented to identify and track the performance of: - the management of spoil on site; - the implementation of each of the detailed plans, including the effectiveness of the proposed mitigation and contingency measures; and - progress against the detailed completion criteria and performance indicators of each permanent spoil emplacement area.	Construction	FGJV	Schedule 3 Condition 7
SM39	Monitoring measures to be included as part of the Surface and Groundwater Monitoring Program, to monitor potential impacts from the placement of spoil.	Construction	FGJV	EW REMM CON02
Stormwater Management				
SW03	Works will minimise erosion and the generation and dispersion of sediment using suitable controls in accordance with the relevant requirements in the <i>Managing Urban Stormwater: Soils and Construction guidance series</i>	Construction	FGJV	Schedule 3 Condition 30(f)
SW04	An Erosion and Sediment Control Plan (ESCP) will be prepared for each construction area. Each ESCP will: - apply the methods and principles provided in Managing Urban Stormwater: Soils and Construction: - Volume 1 – Soils and construction (Landcom 2004); and/or - Volume 2A – Installation of services (DECC 2008); and/or - Volume 2C – Unsealed roads (DECC 2008);	Construction	FGJV	Schedule 3 Condition 30(c)
SW11	Stockpiles will be managed in accordance with the Spoil Management Plan (S2-FGJV-ENV-PLN-0019)	Construction	FGJV	Schedule 3 Condition 7
SW19	Where possible, stockpiles will be located where they are not exposed to concentrated of flood flow. Flood flow is defined as the 20% Annual Exceedance Probability (AEP) flood event.	Construction	FGJV	Schedule 3 Condition 30(d)
Works on Waterfront Land and Instream Works				
SW51	Unless permitted by this approval, avoid carrying out of any development within 40 metres of any watercourse	Construction	FGJV	Schedule 3 Condition 30(h)
SW52	All instream works or development within 40 metres of any watercourse will be undertaken generally in accordance with the requirements in the Guidelines for Controlled Activities on Waterfront Land	Construction	FGJV	Schedule 3 Condition 30(i)

SW55	The disturbance area and extent to which soil and vegetation within the riparian zone are disturbed will be minimised where practicable.	Construction	FGJV	Project requirement
SW56	Direct access to the rivers and creeks by construction vehicles and mechanical plant will be minimised and permitted only within the limits of clearing and designated areas of disturbance	Construction	FGJV	Project requirement
Monitoring				
SW66	A Surface Water Monitoring Program has been developed and is included in this plan. The Surface Water Monitoring Program (Annexure A) establishes monitoring requirements to assess the quality of discharge and receiving waters	Construction	FGJV	MW REMM WM02 EW REMM ECO15
SW70	Rainfall forecasts will be monitored daily and the works planned, and the site works managed to minimise the potential impact of heavy rainfall and flood events. Prior to heavy rain events erosion and sediment controls will be reviewed and improved where necessary to minimise impacts.	Construction	FGJV	Blue Book Good Practice
SW72	A Trigger Action Response Plan provides detail of the response actions that will be implemented in the event of an exceedance. This plan will be implemented.	Construction	FGJV	Schedule 3 Condition 31(c)

7. COMPLIANCE MANAGEMENT

7.1. Inspections

The following inspections will be undertaken:

- **Erosion and sediment control inspection:** The Tantangara Construction Team will undergo training by a third-party specialist and the Environmental Team to identify and manage erosion and sediment controls. Trained personnel will conduct ERSED inspections to assess compliance and effectiveness against the PESCP. Any issues will be promptly reported to the site team in a timely manner. Key assessment items include:
 - The installation of rock, mulch, and earth bunds
 - The integrity and placement of sediment fencing
 - The proper designation of "no-go zones" to minimise ground disturbance
 - The establishment and stabilization of stockpile areas
 - The correct deployment of silt curtains and their functionality (Daily visual inspections)
- **Water quality:** Daily visual inspections will be undertaken and any visual change in water will be immediately notified. In this part of the inspection, colour and odour are the principal targets to be evaluated. If there is any significant change, such as a plume or visible sediment, oil or grease, the Environmental Coordinator will be notified, and a TARP will be activated. It is important to note that the reservoir has algae bloom activity during different seasons of the year, and consequently, watercolour is expected to change.

The results of these inspections will be documented in the weekly environmental report (e.g., pictures and/or comments).

7.2. Monitoring

7.2.1. Sampling Location

Water quality will continue to be monitored for the duration of construction in accordance with the requirements of the EPL and the Surface Water Management Plan (S2-FGJV-ENV-PLN-0011). Figure 7-1 outlines the surface water monitoring locations relevant to these works with the coordinates provided in Table 7-1.

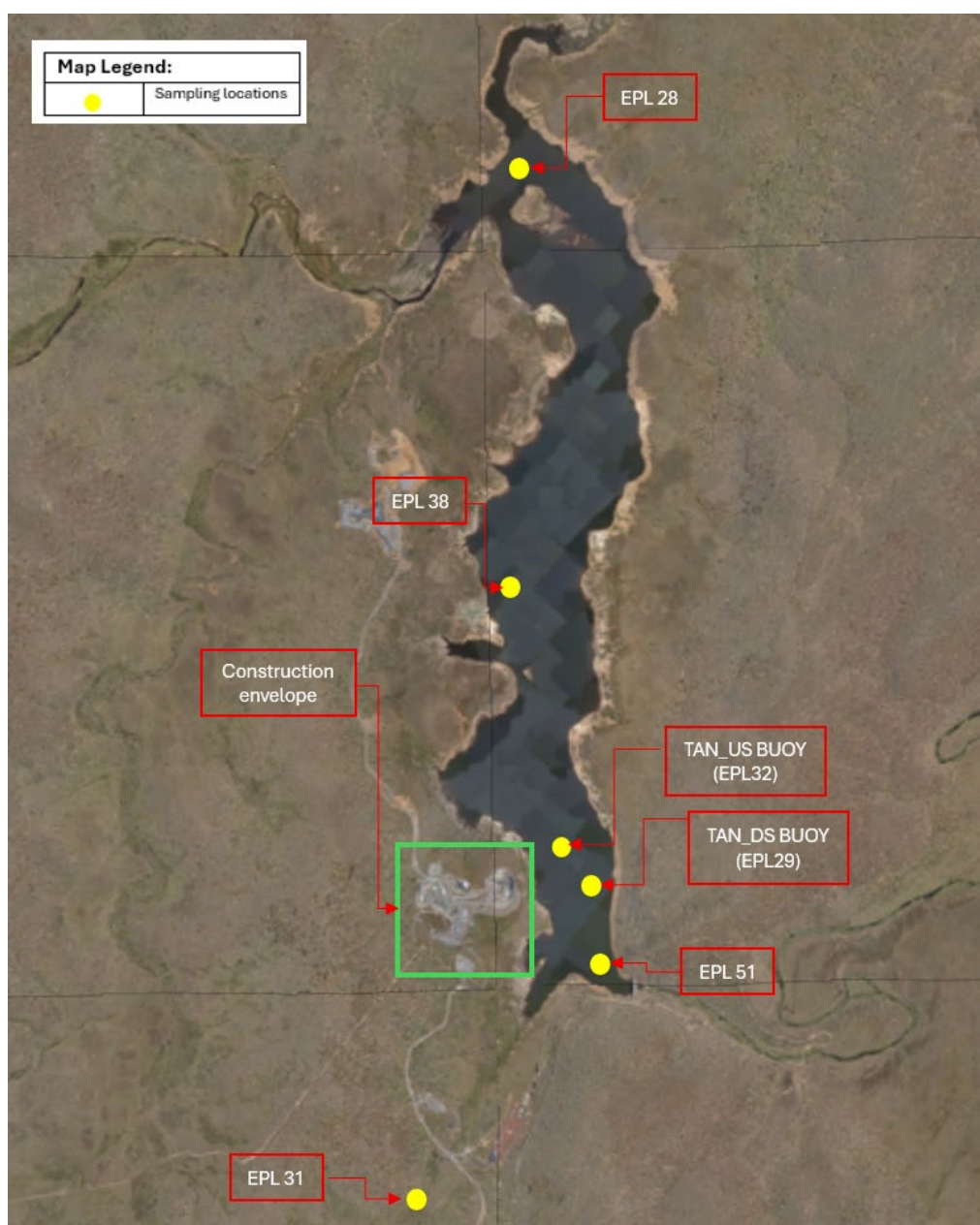


Figure 7-1 Water Sampling Locations

7.2.2. Frequency

The default sampling frequency is provided in Table 7-1. The following sampling is considered non default and will also be undertaken:

- Immediately prior to works commencing
- 24 hours after completion of works
- Upon triggering of a Trigger Action Response Plan (TARP) as per Appendix A
- Samples will be collected and results obtained prior to commencement of any pumping operations as per Section 5.5.5.

Table 7-1 Surface Water Sampling Locations

Sample Location	Sample ID	EPL	GPS Coordinates	Frequency	Analytes
Impact zone upstream	Upstream	EPL 28	-35.7902908 148.660018	Monthly	Physical Sampling:* • Metals (Total and Dissolved) • Nutrients (Nitrite, Nitrate, Nitrogen (total), Total Kjedahi Nitrogen) • BOD • Faecal Coliforms • EC, pH, ORP, T, DO and Turbidity • Chlorophyll A • Dissolved organic carbon • Ammonia • Magnesium • Calcium • Oil and grease
Impact zone upstream	Upstream	EPL 38	-35.7902908 148.660018	Monthly	
Impact zone downstream	Downstream	EPL 51	-35.7902908 148.660018	Monthly	
Impact zone upstream	Upstream	EPL 31	-35.7902908 148.660018	Monthly	
Impact zone upstream	TAN_US	N/A	-35.787077 148.65797	Real time (monitoring buoys) Monthly	Real Time: • pH, EC, REDOX, temperature, DO, turbidity, • Nitrate • Chlorophyll A Physical Sampling:* • Metals (Total and Dissolved) • Nutrients (Nitrite, Nitrate, Nitrogen (total), Total Kjeldahl Nitrogen) • BOD • Faecal Coliforms • EC, pH, ORP, T, DO and Turbidity • Chlorophyll A • Dissolved organic carbon • Ammonia • Magnesium • Calcium • Oil and grease
Impact zone downstream	TAN_DS	N/A	-35.7902908 148.660018	Real time (monitoring buoys) Monthly	

COMPREHENSIVE MONITORING LOCATIONS FOR FLOODING WATER*					
Upstream of works (Ambient)	EPL32	EPL32	-35.788703 148.65960	Monthly Comprehensive	• Hardness • Metals (Total and Dissolved) • Nutrients (Ammonia, Nitrite, Nitrate, Total Nitrogen, Phosphorous Total Kjeldahl Nitrogen) • BOD • TSS • DOC • Faecal Coliforms • Chlorophyll A • Magnesium • Calcium • Oil and grease • Chlorophyll A • pH (In-situ) • EC (In-situ) • REDOX (In-situ) • Temperature (In-situ) • DO %Sat (In-situ) • Turbidity (In-situ)
Work Zone downstream	EPL 51	EPL 51	-35.794459 148.65911	Monthly Comprehensive	
Work Zone downstream	EPL 29	EPL 29	-35.793034 148.661057	Monthly Comprehensive	
Intake Flood water	Intake	Intake	Not yet confirmed	Weekly Comprehensive (until dewatering commences)	
Upstream of works (Ambient)	TAN_US	TAN_US (Buoy)	-35.787077 148.65797	1 Hour (in-situ)	• pH • EC • REDOX • Temperature • DO %Sat • Turbidity • Nitrate • Chlorophyll A
Downstream of works	TAN_DS	TAN_DS (Buoy)	-35.7902908 148.660018	1 Hour (in-situ)	
Downstream of works	TAN VPS BUOY	TAN VPS BUOY	-35.79397 148.65827	1 Hour (in-situ)	

Notes to Table

* All water quality sampling, including in situ measurements and laboratory analysis, must comply with Condition M2 of EPL 21266_

* Comprehensive floodwater monitoring locations are currently under consultation and subject to change. Should updates occur, this Management Plan will be revised accordingly. Monitoring points will remain as consistent as possible across all sampling events, subject to safe access and site conditions.

7.2.3. Assessment Criteria

The Water Quality Objectives will be adopted as per Table 7-2 and Table 7-3. In-situ results that fall outside of the specified range will trigger relevant TARP activation.

Table 7-2 In-Situ Water Quality Objectives

Parameter	WQO	Water Quality Trigger
Turbidity (NTU)	<20	Current WQO value or + 10% of current mean ambient water quality if WQO is being exceeded in ambient water quality.
pH	6.5-8	Trigger is activated if downgradient (TAN_DS) water quality sits outside Objective Value Range, and above gradient (TAN_US) either remains within, or is outside the range but does not reflect the same directional trend. If ambient pH is reported outside WQO in a manner consistent with the TAN_DS (i.e. similar direction), the trigger is not activated.
Electrical conductivity (µS/cm)	20-30	Current WQO value or + 10% of current mean ambient water quality if WQO is being exceeded in ambient water quality
Dissolved oxygen (% saturation)	90-110	Trigger is activated if downgradient (TAN_DS) water quality sits outside Objective Value Range, and above gradient (TAN_US) either remains within, or is outside the range but does not reflect the same directional trend. If ambient DO is reported outside WQO in a manner consistent with the TAN_DS (i.e. similar direction), the trigger is not activated.
Temperature (°C)	No water quality objective	No water quality objective
Redox potential (mV)	No water quality objective	No water quality objective
Oil/grease (mg/L)	Not detected	No visible oil/grease
Nitrate (mg/L)	1	Current WQO value or + 10% of current mean ambient water quality if WQO is being exceeded in ambient water quality
Chlorophyll A	Observation only	No water quality objective

Note: Ambient water quality is represented by the real time monitoring results recorded from TAN_US

In addition to the in-situ objectives, the following analytical water quality objectives for the Tantangara Reservoir, as detailed in Table 7-3, will be used to monitor long-term control effectiveness.

Table 7-3 Surface Water Quality Objectives for Tantangara Reservoir

Category	Analyte	Unit	Water quality objective
Nutrients	Total ammonia (NH ₄ ⁺)	µg/l	10 ¹
	Oxidised Nitrogen (NO _x)	µg/l	10 ¹
	Total Nitrogen (TN)	µ/l	350 ¹
	Total Kjeldahl nitrogen	µg/l	No objective
	Filterable Reactive phosphorus (FRP)	µg/l	5 ¹
	Total Phosphorus (TP)	µg/l	10 ¹
Inorganics (dissolved)	Cyanide	mg/l	0.007
Metals and metalloids (dissolved) ²	Aluminium (Al)	µg/l	55
	Arsenic (As) ⁴	µg/l	13
	Total Chromium (Cr) ⁵	µg/l	0.01
	Copper (Cu)	µg/l	1.4
	Manganese (Mn)	µg/l	1900
	Nickel (Ni)	µg/l	11
	Lead (Pb)	µg/l	3.4
	Silver (Ag)	µg/l	0.05
	Zinc (Zn)	µg/l	8
	Iron (Fe) ³	µg/l	300

- Note
1. The WQOs for physico-chemical properties and nutrients refer to the trigger values for physical and chemical stressors in south-east Australia (for upland rivers or freshwater lakes and reservoirs), as reported in Tables 3.3.2 and 3.3.3 of ANZECC/ARMCANZ (2000).
 2. The WQOs for metals and metalloids are based on the trigger values for 99% or 95% species protection from ANZECC/ARMCANZ (2000), applied according to the approach outlined in Table 2-1
 3. WQO is based on a low reliability trigger value.
 4. For As (V).
 5. For Cr (VI).

The WQOs presented in Table 7-3 are reference benchmarks. Assessment of results must account for natural background fluctuations and prevailing ambient conditions at the time of sampling to confirm that any exceedance is the result of works undertaken as per Section 5.5. Further information can be found in the Water Management Plan (S2-FGJV-ENV-PLN-0010).

7.3. Trigger Action Response Plans

TARPs already established on the project such as those in the Surface Water Management Plan (S2-FGJV-ENV-PLN-0011) and Nitrogen Management Plan (S2-FGJV-ENV-PLN-0367) will be active during works. Additional TARPs which have been specifically designed for these works include:

- Scenario 1 – Where monitoring 50 m downstream of the outermost silt curtain returns result above the assessment criteria in Table 7-2 and Table 7-3 and this exceedance can be attributed to construction works
- Scenario 2 – Where a visible sediment plume is observed outside of the outermost silt curtain
- Scenario 3 – Where the management of floodwater within the excavation pit may be required.

7.4. Training

All site personnel will undergo site induction training relating to in-reservoir emplacement including surface water quality, erosion and sediment controls, threatened species and aquatic habitat protection management issues.

The induction training will address elements related to in-reservoir emplacement management including:

- Relevant legislation
- Roles and responsibilities for in-reservoir emplacement management
- In-reservoir emplacement mitigation and management measures
- Unexpected finds procedures
- Aquatic biodiversity and Habitat protection
- Erosion and sediment controls

Targeted training in the form of toolbox talks or pre-start briefs will also be provided to personnel with a key role in in-reservoir emplacement. Further details regarding the staff induction and training are outlined in Section 5 of the EMS.

7.5. Incidents

Unauthorised damage or interference to any threatened species, endangered ecological communities or critical habitat (not limited to Murray and Rieks Crayfish) are to be managed according to Section 7 of the EMS.

Incidents related to Murray and Rieks Crayfish will be managed per Section 6.3 of the Aquatic Habitat Management Plan (S2-FGJV-ENV-PLN-0009).

As required, DPHI and other relevant agencies will be notified of incidents as detailed within Section 7.2 of the EMS and Section 6.3 of the Aquatic Habitat Management Plan (S2-FGJV-ENV-PLN-0009).

Spills will be managed in accordance with the current environmental management framework including the incident notification, investigation and review procedure (S2-FGJV-HSA-PRO-0004).

Relevant regulators (DPHI, EPA, NPWS, and DCCEEW) will be notified of any potential flooding events in accordance with standard Snowy Hydro Limited (SHL) incident notification procedures. This does not include an official incident report.

7.6. Auditing

Audits will be undertaken to assess the effectiveness of the management measures and compliance with this Plan. Audit requirements are detailed in Section 8.3 of the EMS.

7.7. Reporting

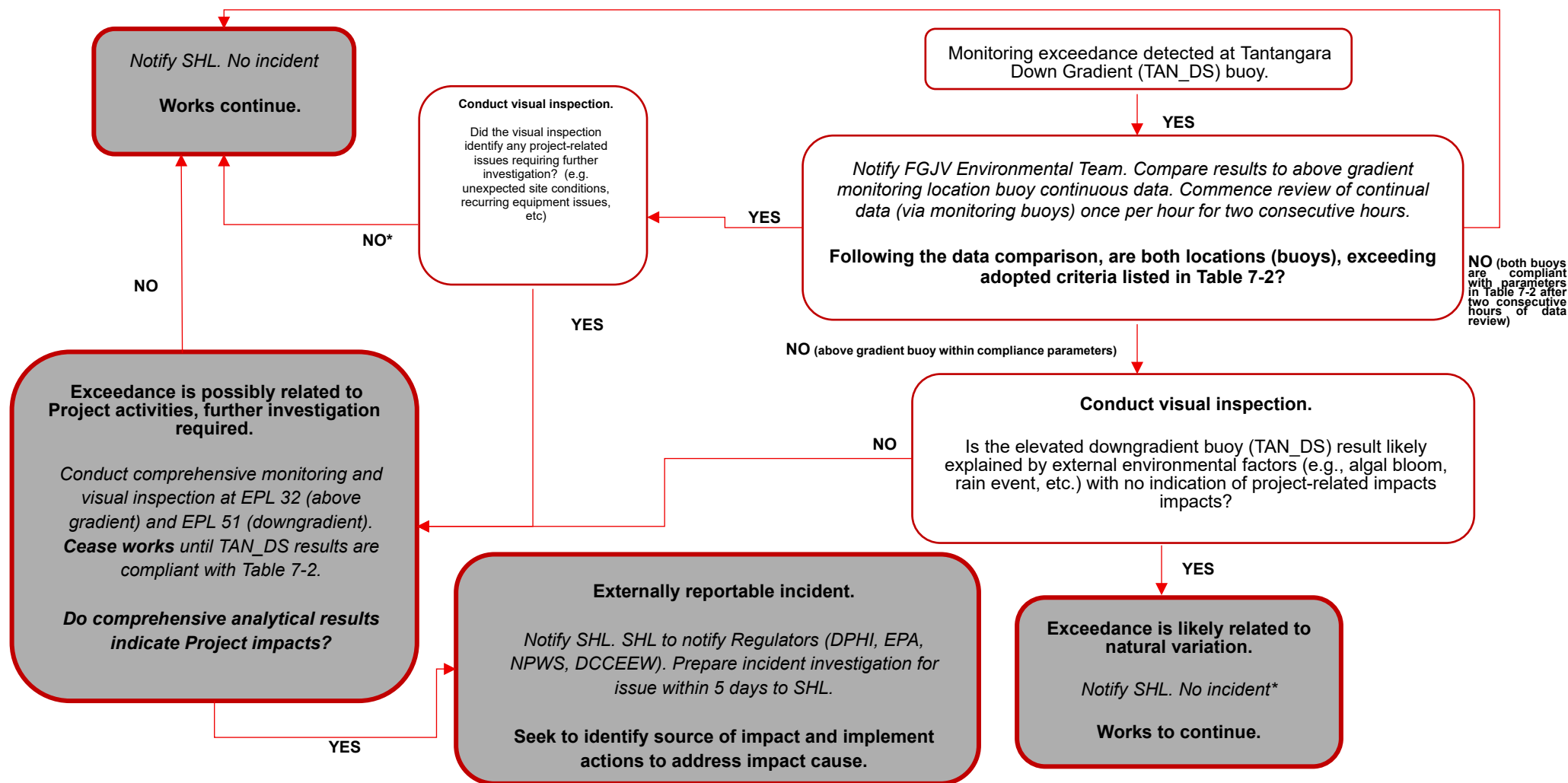
Reporting will include monthly internal project reports. Reporting and Monitoring requirements and responsibilities are documented in Section 8.2 and 8.4 of the EMS.

To ensure a rapid and effective response to environmental issues, a multi-faceted communication and awareness strategy will be implemented.

- **On-Site Signage:** An environmental team sign, clearly detailing contact information, will be posted in all work areas for immediate reference.
- **Toolbox Briefings:** All site personnel will receive a comprehensive briefing during toolbox talks. This training will focus on the identification of potential erosion and sediment control issues and the immediate response required for any visible plumes in the reservoir.
- **Tiered Communication Protocol:** All teams will be trained on the established communication protocol. Any environmental observation must be immediately escalated to the on-site supervisor. The supervisor is then responsible for promptly notifying the site environmental team to ensure a swift and coordinated response and the activation of the TARP if necessary.

APPENDIX A. TRIGGER ACTION RESPONSE PLANS

Trigger Action Response Plan – Tantangara Phase 2 – Scenario 1



Scenario 1: Where monitoring 50 m downstream (buoy) of the outermost silt curtain reports an exceedance outside the WQT's listed in table 7-2 of the Tantangara Phase 2 Management Plan

Note 1: *Routine comprehensive monitoring results to be evaluated to confirm determination of natural variability. If results suggest project-related impact, it is an externally reportable incident.

Trigger action response plan initiation

- In situ parameters 50 m downstream exceeds those presented in Table 7-2 and is inconsistent with above gradient ambient conditions.

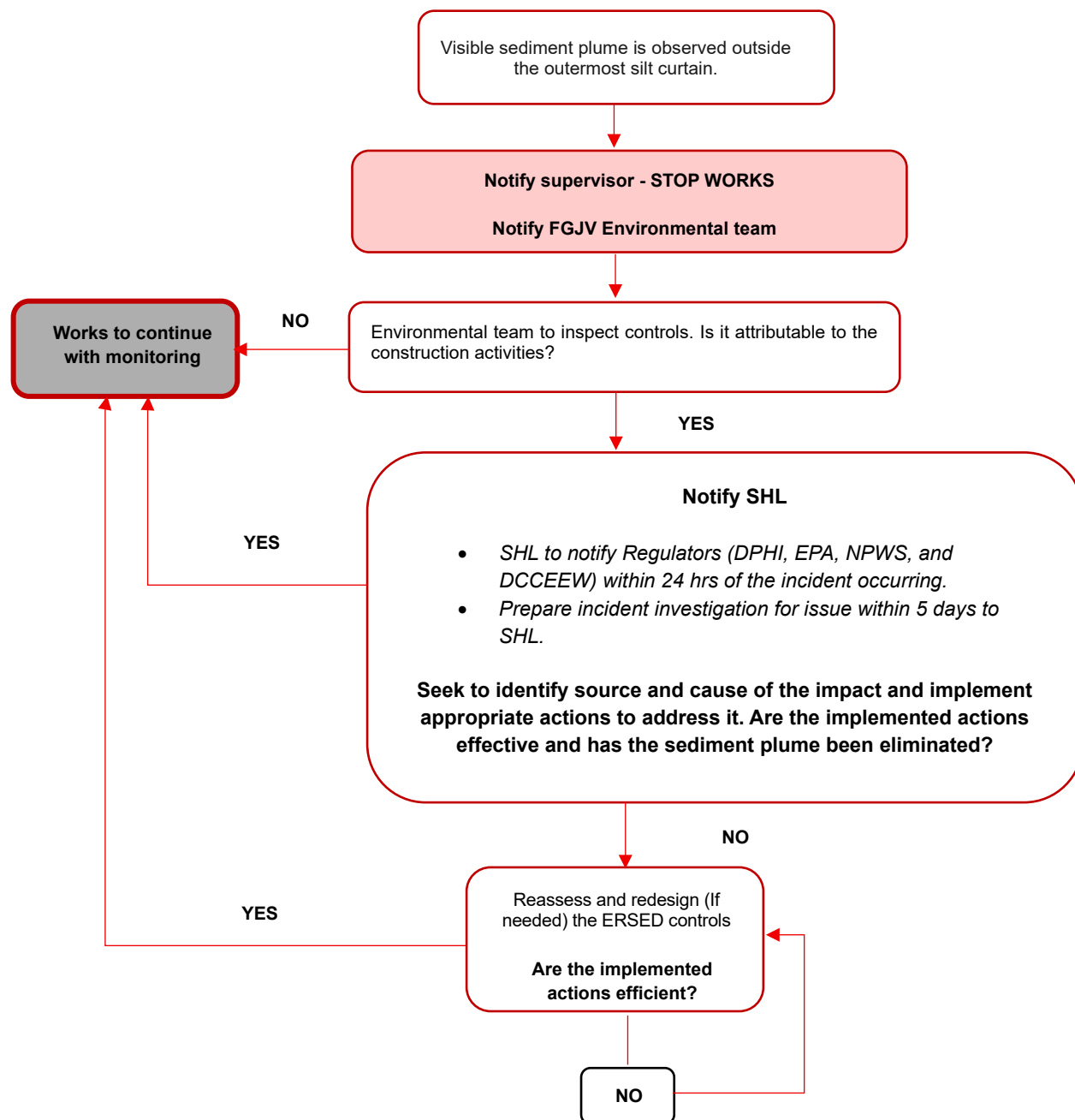
Monitoring details

- Monitoring includes visual inspection and measurement of in-situ parameters outside the outermost silt curtain, upstream and downstream locations.

Trigger action response plan objective

- To identify (where possible) if the exceedance is naturally occurring or due to placement activities.
- To establish actions to either improve water management or further investigate the exceedance mechanism (if required).

Trigger Action Response Plan – Tantangara Aquatic Disturbance – Scenario 2



Scenario 2: Where a visible sediment plume is observed outside of the outermost silt curtain.

Trigger action response plan initiation

- Silt curtains and land-based controls, inspections, and immediate corrective actions.
- This TARP process is to be followed until a grey box has been reached.

Monitoring details

- Monitoring to be carried out daily, this includes visual inspection and measurement of in-situ parameters using the upstream and downstream monitoring buoy, against Water Quality Objectives in Table 7-2. Where required, background locations will also be monitored.

Trigger action response plan objective

- To identify (where possible) if the sediment plume is due to construction activities.
- To establish actions to improve ERSED controls.

Trigger Action Response Plan – Tantangara Phase 2 – Scenario 3

This flood water level TARP applies to the Tantangara Intake Excavation Pit, according to the scenario described in Section 7.3 of the Tantangara Intake Stage 3 Phase 2 Management Plan (S2-ENV-GN-TNI-PLN-FGJV0463). Potential floodwater removal may be required from the excavation pit due to rising water levels in the Tantangara Reservoir.

Table 1: Emergency Floodwater Evacuation TARP

Trigger Level	Trigger	Action	Response
Level 1 (Indicator)	Reservoir level forecast, weather forecast, or reservoir level checks trends within normal operating range and well below inundation thresholds.	Continue routine monitoring in accordance with Tantangara Intake Stage 3 Phase 2 Management Plan.	No response required.
Level 2 (Early warning – Alert Status)	Reservoir level forecast and weather forecast are trending closer to inundation thresholds, or significant rainfall is forecast, but no water is expected to enter the excavation pit.	Continue routine monitoring in accordance with Tantangara Intake Stage 3 Phase 2 Management Plan. Increase Monitoring frequency for reservoir levels	No response required.
Level 3 (Early warning – Alarm Status)	Reservoir level forecast and weather forecast are trending toward inundation thresholds, or significant rainfall is forecast, but no water is expected to enter the excavation.	Cease all works. Continue routine monitoring in accordance with Section 5.5.4 of the Tantangara Intake Stage 3 Phase 2 Management Plan. Prepare for potential activation of flood response procedure (S2-CON-IG-TNI-PRO-FGJV0035).	Conduct preliminary review of activities occurring in vicinity of excavation pit (i.e., machinery usage, planned blasting activities, completion of all muck out activities to reduce contamination of potential floodwaters) and move all equipment non-essential for current tasks. Notify SHL and internal teams. SHL to provide early advisory notification to <i>Regulators (DPHI, EPA, NPWS, DCCEEW)</i> that flooding risk is increasing. (The EPA will be notified via info@epa.nsw.gov.au)
Level 4 (Action Status)	Reservoir level forecast and weather forecast are trending closer to inundation thresholds, or significant rainfall is forecast, and water is expected to enter the excavation pit.	Full evacuation initiated of the excavation pit as per flood response procedure (S2-CON-IG-TNI-PRO-FGJV0035)	Conduct a muster check (rollcall) and confirm when evacuation is complete. Close and secure the site Notify SHL and internal teams. SHL to provide notification to <i>Regulators (DPHI, EPA, NPWS, DCCEEW)</i> that flooding is expected.
Level 5 (Flooding status)	Reservoir levels exceed embankment elevation and floodwater enters the excavation pit.	Cease all works. Initiate floodwater quality sampling ¹ Continue routine monitoring in accordance with Section 5.5.4 of the Tantangara Intake Stage 3	SHL to provide EPA with water quality monitoring results and estimated water volume in pit.

Trigger Level	Trigger	Action	Response
		Phase 2 Management Plan. ¹	
Level 6 (Floodwater evacuation Status)	Reservoir levels drop below embankment elevations Reservoir level forecast, weather forecast, or reservoir level checks trends towards Trigger Levels 3 or 2. The site is deemed safe to open following inspections and checks. Floodwater evacuation is required to continue the works in dry conditions.	Initiate floodwater water quality sampling¹ in accordance with Section 5.5.4 of the Tantangara Intake Stage 3 Phase 2 Management Plan. When floodwater evacuation is agreed (as per Section 5.5.5.3), floodwater evacuation is to take place. Continue water monitoring conducted as per Section 5.5.4 during the water evacuation. Agree mitigation actions in conjunction with SHL and EPA. Control measures actively monitored and checked for their effectiveness.	FGJV and SHL will undertake the necessary water quality assessment to identify the potential for direct floodwater evacuation to the reservoir and will consult with the EPA on the assessment outcomes. Furthermore, SHL will obtain the EPA's agreement on the final floodwater evacuation point, associated controls, and the detailed TARP. SHL to provide EPA with post-evacuation water quality monitoring results within 30 days of the final sampling event.
Level 7 (Full Resumption)	Pumping complete; water quality validated; site inspections passed.	Continue works once the site is deemed safe following post-flood inspections	Water quality monitoring to keep the biweekly frequency for two weeks after commencing works to ensure everything is back to normal.

¹ Where it is safe to do so, SHL or FGJV staff with appropriate experience will conduct the sampling.