

S2-FGJV-TEC-SOW-417-A



## Future Generation JV – Snowy 2.0 Scope of Work – Cross Passages – Excavation Works

### Approval Record

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### Document Revision Table

Rev.	Date	Description of Modifications/Revisions
A	19/01/2021	ISSUED FOR PURCHASE

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## 1.0 Project Description

Salini Impregilo, Clough and Lane have formed Future Generation Joint Venture (the Contractor) to provide the EPC package for SHL on the Snowy 2.0 Project (the Project).

The Project is a pumped hydro project that will increase the generation capacity of the Snowy Mountains Scheme by up to 2,000MW and at full capacity will provide approximately 350,000MWh of energy storage. The project includes all activities associated with the requirements for the Snowy 2.0 Pumped Hydro-electric Scheme.

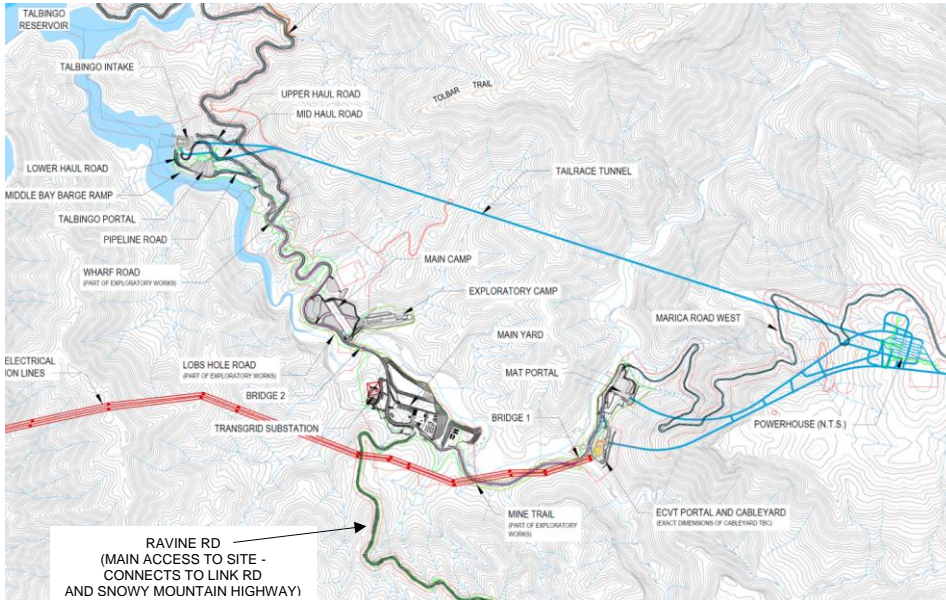
Intake and outlet structures will be built at both Tantangara and Talbingo Reservoirs, which are in the Kosciusko National Park (KNP) in southern NSW. Approximately 27 km of concrete lined tunnels will be constructed to link the two reservoirs and a further 20 km of tunnels will be required to support the facility. The power station complex will be located almost one-kilometre underground.

The Project will deliver one of the largest pumped hydro schemes in the world and underscores the importance of the Snowy Scheme's role in the National Electricity Market (NEM).

Future Generation was conceived to deliver an integrated engineering, procurement, and construction management service for the Project. The joint venture is backed by the combined experience of Salini Impregilo, Clough and Lane, through their experience in the infrastructure, mineral and oil and gas sectors throughout Australia and the world.



**Figure 1 – Map of Snowy 2.0 (the Project) in context to the wider Snowy Hydro system**

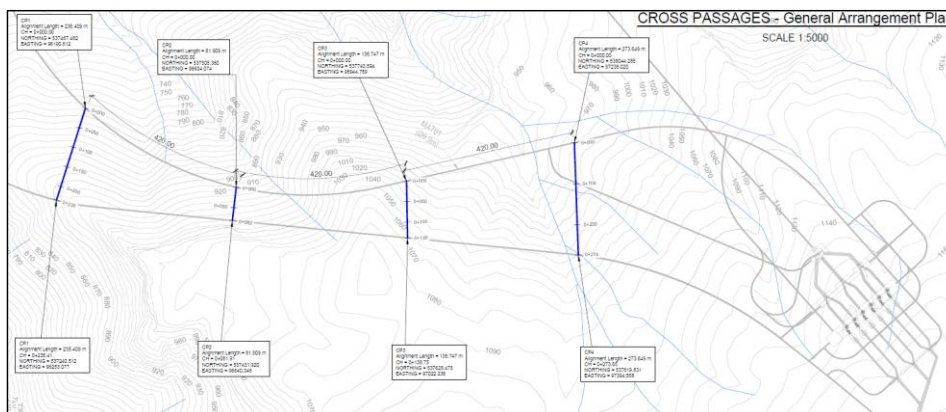


**Figure 2 - Map of the construction yards and camps in Lobs Hole (eastern end of project area - Talbingo Reservoir).**

## 2.0 Scope of Work

### 2.1 Overview

This scope of works covers the excavation of the four cross passage tunnels connecting the TBM bored Main Access Tunnel (MAT) and Emergency, Cable, Ventilation Tunnel (ECVT), and all associated works. Figure 3 below shows a general arrangement of the four tunnels.



**Figure 3 - General Arrangement Plan View**

The cross passages will be designed by the contractor. The scope for the subcontractor includes the following:

1. Breakthrough of existing precast segment tunnel lining, including support of in-situ segments as required by IFC. Depending on the quality of the rock, this is expected to be achieved by securing the segments to undisturbed segments with short steel members, or by a steel frame where required. This will be confirmed as part of detailed design.



**Figure 4 - Proposed support arrangements**

1. Excavation of each cross passage CT01 - it is anticipated that at least the first 20m of length will be excavated by road header, depending on the geological conditions. If use of road header significantly impacts performance, consider the use of drill and blast - if it can be assured that it will not damage the existing tunnel and services.
2. The excavation of cross passages will proceed one by one.
3. Extension of temporary services (ventilation duct, industrial water, air compressed, dewatering) into each cross passage to facilitate the works from nominated tie-in points in the MAT. The electrical cable will be extended by contractor.
4. Finishing of tunnel, including removal of any temporary supports and installation of permanent support infrastructure (shotcrete or concrete)

Excavation of each cross passage is to proceed from the ECVT to the MAT, leaving a rock plug at the intersection to the MATT. The removal of this plug and tie-in to the MAT will be completed from the MAT tunnel.

Subcontractor is to provide all works associated with the tunnel excavation, including mechanical/drill and blast excavation, rock support, scaling and mucking to the ECVT Portal (surface), and services extension from tie-in point, etc. In particular mucking will be spoiled from the front face of each cross passage to the ECVT portal yard.

Subcontractor to provide all necessary equipment (road header, trucks, excavator, jumbo, loader, grout pump, shotcrete pump, etc) and personnel, operators, miners, supervision, etc. to perform the works.

The main materials (shotcrete, concrete, bolts, mesh and explosive) will be provided by the contractor at the ECVT/MAT Portals or the Main Yard. Minor materials (cement bags, additive,

**Commented [DG1]:** Permanent works under contract SOW, or will be given to subcontract as contract annex once defined clearly when and what to do

resins, etc) and consumables are to be supplied by subcontractor, including supply of sufficient storage containers to be placed at the ECVT/MAT portal in a location agreed with the contractor.

The designs and quantities are preliminary and subject to change, the agreed rates will be applied to the actual quantities completed.

## 2.2 Works Breakdown

The subcontractor must provide a quote to provide materials, equipment, and personnel in sufficient quantity to perform the works according to the FGJV design. FGJV requires a unit rate off based on the rock class encountered, for the quantities provided in the **Request for Quotation BoQ spreadsheet provided (S2-FGJV-PK373-A Cross Passage Excavation Works)**. Other items not listed need to be considered and built into the rates. These will be confirmed/adjusted once the final design drawings are provided and an agreement has been reached.

As part of the works the subcontractor must:

- Provide methods statement(s) that describe the job to be performed for the approval of the contractor and client.
- Provide a programme of the excavation, based on the commencement date and end date given in this Scope of Work, as well as supporting program provided.
- Provide a staging plan of the excavation, based on the preliminary staging given in this Scope of Work and in accordance with the programme detailed above.
- Prepare and submit inspection and test plans for the activities and ensure the preparation and submissions of the relevant quality Lots, all for the approval of the contractor and client.
- Prepare and submit daily and weekly progress reports (the extent and the content shall be defined before the commencement).
- Provide all materials necessary for the execution of works, including all temporary materials needed and not mentioned in the designs. This could include but is not limited to temporary supports, fencing, signage, safety barriers, etc. The method statement(s) are to include details on how these materials are to be utilised and managed.
- Work with the Contractor to attain all permissions necessary to perform the job on site.
- Provide monthly work progress reports indicating quantity of the works performed to support the payment claim for the contractor to review, prior to issue of each payment certificate.
- Provide final work report including quantity, quality documents, pictures, etc.
- Provide noise and dust monitoring during construction to assure we respect the EIS limits constraints.
- Be responsible for managing blast exclusion zones and notification.
- Provide transfer to the Works site front allowing for both day and night shift.
- Provide all consumables for the jumbos, excavator, trucks, excavator, road header, that are needed
- Assure the maintenance and repair of the equipment used: for that purpose, the subcontractor can use the available space in our workshop located at MAT Portal or in the Main Yard.
- Where appropriate, adjust blast design to target contractors' requirements for rock-by product (e.g. fine material or large riprap).
- Complete blast design to minimize overbreak. Any overbreak attributed to inappropriate blast design is the subcontractors' risk.
- Blast to respect the vibration limits indicated by contractor: the subcontract must also to provide seismographer to measure the vibration generated by blast.

**Commented [DG2]:** Ettore/Daniel with North project we have to prepare a preliminary BOQ based on our preliminary desing, to be confirmed when the IFC is approved

**Commented [DG3]:** Daniel/Ettore, North project base on PD rock support can make a preliminary BOQ that will be adjusted once IFC is ready and approved

- Ensure supervisor/manager attends daily coordination meetings with the other subcontractors to detail and agree planned work areas for the following day and interface considerations.
- Ensure that the blast area is checked for unexploded charges and cleared for the safety of follow on contractors. That include also measure of gases in order to open the front face.
- Extend the industrial services and ventilation ducts (hydraulic pipes, dewatering pipes, air compressed pipes, ventilation ducts, illumination, LV-HV cable and supports supplied by Contractor). For dewatering of the front face, the subcontractor must also consider supply and installation of temporary pumps and flexible ducts to drain the water.

#### Exclusions:

- Contractor (FGJV) will provide IFC design of the works
- Contractor will provide tie-in points to the following tunnel services, mounted to the ECVT wall
  - HV Power (22kV, 50Hz)
  - Industrial/Fire Water (DN200 pipeline)
  - Dewatering Line (2x DN250 pipelines) - including treatment and disposal of waste water
  - Ventilation duct ( $\Phi$ 3m main duct to branch off into the four cross passages) or will be installed a secondary ventilator to supply air to cross passage (ventilation desing by contractor).
- Any relocation of service lines within the ECVT required to permit the excavation works will be performed by the Contractor.
- Accommodation and meals at the Contractor's camp facilities (approx. 3km from the tunnel portal) will be provided for Subcontractor personnel if enough space is available- however transfer to the workfront, including down the ECVT is to be provided by the Subcontractor. Subcontractor to offer also rates if accommodation is not available and Subcontractor must supply accommodation externally to the park (Providence Portal, Adaminaby, or any available other location near the park).
- Subcontractor personnel may utilise the MAT or ECVT Portal Site facilities, including first aid, toilet and crib facilities.
- Subcontractor is responsible for the mucking of spoil from the cross passages up to the ECVT Portal stockpile. Any required treatment and disposal of spoil from that location is excluded from this scope.
- Survey works will be provided by FGJV
- Diesel will be available at the Main Yard fuel store.

### 2.3 Method of measurement

As part of the deliverables described in 2.2 Works Breakdown the subcontractor must submit a monthly work progress activity indicating quantity of the elements performed with associated approved survey and quality records for the works claimed. This will be used to assess the subcontractor's monthly claims, for payment.

### 3.0 Description of Works

The four cross passages are designed to provide emergency evacuation routes between the MAT and ECVT tunnels. In accordance with the Employer's Requirements, volume 3.04, the cross passages shall not contain services or equipment that require maintenance and shall be secured to exclude personnel.

The following requirements are considered in the design provided by Contractor:

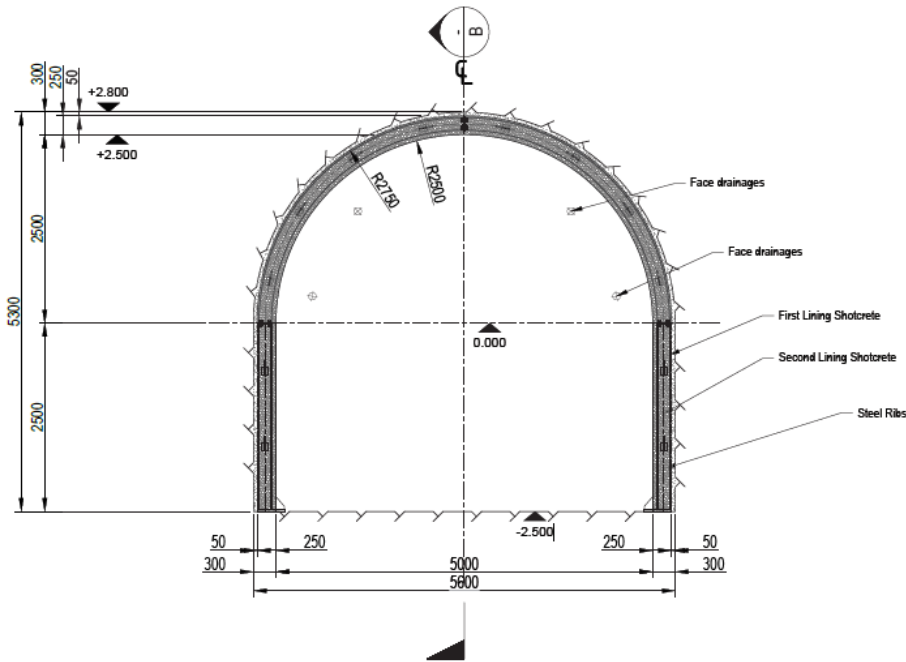
- i. The longitudinal gradient shall not exceed 10% to facilitate inspection and maintenance activities;
- ii. The longitudinal gradient shall be sufficient to facilitate drainage;
- iii. The distance between cross passages shall be based on the life safety study and ensure that the size of all fire zones are safe and manageable;
- iv. The length of cross passages shall not exceed 500 m;
- v. The geometry of the cross passages, following the installation of support, shall permit the passage of vehicles within an envelope of 2500 mm x 2500 mm without conflict;
- vi. The finished floor level of cross passages shall coincide with the finished floor level of the tunnels to which they connect so as not to create an area having limited or restricted access or cause water to pond;
- vii. The finished floor level of cross passages shall be drained via cross fall and free surface, open longitudinal channels. The cross fall shall not exceed 2.5%;
- viii. The installation of permanent services within the cross passages shall be avoided through considered placement of volume control dampers (if needed);
- ix. Dampers shall be arranged with an adjacent or integrated inspection door to facilitate the movement of personnel;
- x. The geometry of the cross passages shall be selected to maximise inherent stability to minimise the number of support elements that will require inspection and maintenance;
- xi. All permanent cross passage support components shall have a design life of 100 years;
- xii. Where provided, drainage of the rock mass shall be achieved by face drainage in accordance with the requirements specified in S2.6 Drainage and dewatering systems;
- xiii. A secondary lining is not mandatory unless other requirements (such as design life and structural sufficiency) will be compromised if it is not provided; and
- xiv. Seepage shall comply with the limits specified in S2.6 Drainage and dewatering systems.

The tunnels are to include a drainage system which shall drain from the fire barrier into the tunnel drainage system of the MAT and ECVT.

Tunnel	Profile Length	Elevation 1 (MAT)	Elevation 2 (ECVT)	Incline	MAT Chainage
CP1	235.5	595.35	589.89	-2.40%	0+420
CP2	81.9	568.44	567.32	-1.52%	0+840
CP3	139.0	538.77	530.35	-6.45%	1+260
CP4	274.5	515.42	494.31	-7.95%	1+680

Lengths, elevation, incline and chainage of each cross passage to be confirmed once IFC is approved.





**Figure 5 - Cross Passage Final Lining (typical section)**

The specific rock conditions along the tunnel alignment are known with a non-uniform degree of uncertainty (refer to S2-GEO-GN-GMM-1006); therefore the design approach is to define typical sections suitable to the geotechnical and geomechanical framework that may be passed through during the excavation.

The application of typical sections is shown in the geomechanical profile as a percentage of each homogeneous segment. The section application must be confirmed during the construction process by face inspections and analysis of the monitoring data.

Five typical sections have been developed as part of the preliminary design. Section type ESC1 and ESC2 refers to good quality rock excavation, where the excavation face is stable. Section ESC3 is designed for medium quality rock, systematic rock bolts and a lattice girder are used as provisional support. In sections ESC4 and ESC5 the excavation face shows short-term stability or instability; heavier steel ribs are included.

The following table shows a summary of the excavation support required for each class:

Element	ESC1	ESC2	ESC3	ESC4	ESC5
Face Drainage		N°4 L=15.0m, 5.0 minimum overlap, i = 4°	N°4 L=15.0m, 5.0 minimum overlap, i = 4°	N°4 L=15.0m, 5.0 minimum overlap, i = 4°	N°4 L=15.0m, 5.0 minimum overlap, i = 4°
Face Shotcrete - Type SFR40	Th. = 5.0 cm (every round)	Th. = 5.0 cm (every round)	Th. = 5.0 cm (every round)	Th. = 5.0 cm (every round)	Th. = 5.0 cm (every round)
Lining Shotcrete - Type SFR40	Th. = 10 cm	Th. = 10 cm	Th. = 20 cm	Th.= 5+20 cm	Th.= 5+25 cm
Rockbolts - Type R4	N°3+2, L= 2.5m, llong = 2.5m, staggered	N°5+4, L= 2.5m, llong = 2.5m, staggered	N°5+4, L= 2.5m, llong = 3.0m, staggered		
Lattice Girder			Type 95/20/25, llong = 1.5m		
Steel Ribs				2x150UB14.0 / 1.0m	2x180UB18.1 / 1.0m
Spiling Bars					
Forepoling					
Face Consolidation					

Refer to the drawings for further details.

#### 4.0 Project Reference Documents

Project Reference Documents:

- Design Program

Employers Requirements:

- Volume 3.01. Key Project Functional and Performance Requirements
- Volume 3.02 Project Key Elements: Division of responsibility
- Volume 3.04 Particular Functional and Performance Requirements Civil
- Volume 3.04 Particular Functional and Performance Requirements E&M
- Volume 3.05 R1 Standard Technical Requirements – General
- Volume 3.05 R2 Standard Technical Requirements – Electrical
- Volume 3.05 R3 Standard Technical Requirements – Mechanical
- Volume 3.05 R4 Standard Technical Requirements – Civil
- Volume 3.06 Construction Requirements
- Volume 4 Employer's Requirements – Project Execution

See APPENDIX A for complete list of documents.

## 5.0 Planning Activity

The Works are required to be performed against the following preliminary dates and duration, which will be confirmed once agreement is reached:

Milestone	Planned Date
IFC Design (No-Objection) Provided:	31-May-21
Work Commences:	15-Jul-21
Work Finalised:	30-Nov-21

Total Duration: 138 days

The MAT is expected to be sufficiently progressed to allow access to all four passages prior to works commencing. Cross passages are planned to be excavated sequentially.

Day and Night shifts to achieve above timeframes are expected. Coordination with the FGJV tunnelling works will be required.

## 6.0 Quality System and Inspection

Subcontractor shall be responsible for the performance of all quality control and acceptance testing as specified under the Contract, including the provision of suitably qualified personnel, testing equipment and facilities.

- Subcontractor is required to have a documented quality management system in place in compliance with ISO 9001 standard.
- 15 days prior to the Commencement Date, Subcontractor shall submit to FGJV QA/QC Department the following documents for review:
  - Project quality plan according ISO 9001:2018 and FGJV procedures
  - Design management plan for all temporary works according FGJV procedures
  - Method statement for all the activities,
  - Inspection and test plans according FGJV template for all the activities requiring tests and inspections,
  - Forms and templates,
  - List of all the measuring instruments or equipment's to use and the relevant updated calibration certificates.
- Activities cannot be commenced without FGJV QA/QC approval.
- The Subcontractor shall provide FGJV with all the documents and records related to the activities under their scope and directly linked with the construction/sub-construction packages certification.
- Subcontractor's PQP can be submitted to SHL for information.
- The Subcontractor shall ensure a minimum 'quality' staffing to cover all the activities provided by the contract
- The list of all the quality personnel and the relevant CV shall be submitted together with the quality deliverables.
- The subcontractor shall provide and maintain at all stages of the work a Quality Control Register to identify the status of inspections, sampling and testing of the work, and all certificates. This register shall always be permanently updated as current and submitted for review to QA/QC at least on bi-weekly basis, unless otherwise specified.
- Subcontractor shall attend a bi-weekly meeting with QA/QC to discuss the outcomes of the monthly quality report and all other issues raised within this period.
- Details shall be agreed in the PQP.

**Commented [DG4]:** Daniel Attached the gantt program for the cross passages: ask to Dhiraj to extract from the main program the related to the cross passages works

### 7.0 Bid Deliverables

Subcontractor is requested to provide at least the following documents, to support the offer:

- Company Profile, with similar project executed, particularly focusing on previous work carried out in Australia.
- Maximum capabilities.
- Baseline schedule, with any relevant area plans/staging to aid interpretation of this schedule.
- Proposed manning histogram
- Completed price schedule.
- Exclusions.

### 8.0 Deviations and Clarifications

If Subcontractor seeks any relaxation waiver or query of any requirement within this Scope of Work, they must complete a Technical Deviations List.

Subcontractor must clearly identify all elements of the proposed relaxation, waiver or query in accordance with any applicable part of this SoW and shall detail any resulting technical, commercial and / or schedule impact.

If not otherwise stated, by submitting a bid, the Subcontractor confirms it is compliant with the conditions of this document and the ones which reference is made.

### 9.0 Health, Safety and Environment

Subcontractor shall comply with all Safety and Environmental Management requirements for the Project. Site Specific Environmental Management Plans will be prepared by FGJV and approved by the NSW Department of Planning, Industry and Environment (DPIE). The subcontractor must comply with these plans once approved by DPIE.

The Subcontractor is also required to comply with the following:

- All vehicles need to be fitted with In Vehicle Monitoring System, as per FGJV requirements.
- Subcontractor is required to attend weekly coordination meeting in relation to Health, Safety and Environmental.
- Incident reporting within the FGJV timeline requirements to the FGJV Supervisor and HSE Advisor.
- Weekly reporting of HSE activities on the FGJV reporting template.
- Work under the FGJV HSSE plans, work instructions, procedures and PTW requirements for the project.
- Have trained, experienced and competent HSE personnel at the regulatory requirements for high risk construction works of 1:50 on site.
- Submit all SWMS / JHA to the FGJV Site HSE Manager for review and approval prior to the start of works.

## Appendix A: Reference Documents

Ref	Document Number	Document Title	Rev
1	S2-CIV-AT-ATU-1011	MT01D - NORTH ACCESS TO MACHINE HALL CAVERN (MAT01) - GENERAL ARRANGEMENT - PLAN AND PROFILE	D
2	S2-CIV-AT-ATU-1012	MT01D - SOUTH ACCESS TO MACHINE HALL CAVERN (MAT02) - GENERAL ARRANGEMENT - PLAN AND PROFILE	D
3	S2-CIV-AT-ATU-2500	MT01D - MAT - DRAWING INDEX	B
4	S2-CIV-AT-ATU-DRG-2500	MT01D - MAT - COMBINED DRAWINGS	B
5	S2-CIV-AT-CPA-1020	MT01D - CROSS PASSAGES (CP1, CP2, CP3, CP4) - GENERAL ARRANGEMENT - PLAN AND PROFILE	D
6	S2-CIV-AT-CTU-1021	MT01D - EMERGENCY, CABLE, VENTILATION TUNNEL (ECVT01) - GENERAL ARRANGEMENT - PLAN AND PROFILE	D
7	S2-CIV-AT-CTU-1022	MT01D - SOUTH ACCESS TO TRANSFORMER HALL (ECVT02) - GENERAL ARRANGEMENT - PLAN AND PROFILE	D
8	S2-CIV-AT-CTU-1023	MT01D - SOUTH ACCESS TO MACHINE HALL (ECVT03) - GENERAL ARRANGEMENT - PLAN AND PROFILE	D
9	S2-CIV-AT-DRT-1017	MT01D - DRAINAGE TUNNEL (CT13) - GENERAL ARRANGEMENT - PLAN AND PROFILE	D
10	S2-CIV-AT-TSA-1001	MT01D - TOP ACCESS TO DOWNSTREAM SURGE SHAFT (CT01) - GENERAL ARRANGEMENT - PLAN AND PROFILE	D
11	S2-CIV-CT-PST-1013	MT01D - TOP ACCESS TO DOWNSTREAM SURGE SHAFT (CT01) - GENERAL ARRANGEMENT - PLAN AND PROFILE	C
12	S2-CIV-CT-PST-1014	MT01D - SOUTH ACCESS TO COLLECTOR CHAMBER (CT02) - GENERAL ARRANGEMENT - PLAN AND PROFILE	D
13	S2-CIV-CT-PST-1015	MT01D - BOTTOM ACCESS TO DOWNSTREAM SURGE SHAFT (CT03) - GENERAL ARRANGEMENT - PLAN AND PROFILE	D
14	S2-CIV-CT-PST-1016	MT01D - NORTH ACCESS TO MACHINE HALL CAVERN (CT07) - GENERAL ARRANGEMENT - PLAN AND PROFILE	D
15	S2-CIV-CT-PST-1017	MT01D - NORTH BOTTOM ACCESS TO TRANSFORMER HALL (CT09) - GENERAL ARRANGEMENT - PLAN AND PROFILE	D
16	S2-CIV-CT-PST-1018	MT01D - NORTH TOP ACCESS TO MACHINE HALL (CT15) - GENERAL ARRANGEMENT - PLAN AND PROFILE	D
17	S2-CIV-CT-PST-1019	MT01D - NORTH TOP ACCESS TO TRANSFORMER HALL (CT16) - GENERAL ARRANGEMENT - PLAN AND PROFILE	D
18	S2-CIV-CT-PST-1024	MT01D - SOUTH ACCESS TO BIFURCATION CHAMBER (CT10) - GENERAL ARRANGEMENT - PLAN AND PROFILE	D
19	S2-CIV-CT-PST-1025	MT01D - NORTH ACCESS TO BIFURCATION CHAMBER (CT10BIS) - GENERAL ARRANGEMENT - PLAN AND PROFILE	D
20	S2-GEO-GN-GMM-1006	GE05: GEOMECHANICAL MODEL - MAIN ACCESS TUNNEL (MAT01) - MAP AND LONGITUDINAL PROFILE	D
21	S2-CIV-AT-ATU-2117	MT01D - MAT - TBM LINING OPENING FOR 5X5 SECTION - TRANSVERSAL SECTIONS	C
22	S2-CIV-AT-ATU-2118	MT01D - MAT - TBM LINING OPENING FOR 5X5 SECTION - PLAN AND SECTIONS	C
23	S2-CIV-AT-ATU-2119	MT01D - MAT/ECVT CROSS TUNNEL (5x5M) - EXCAVATION CLASS ESC1 - SECTION AND PROFILE	C
24	S2-CIV-AT-ATU-2120	MT01D - MAT/ECVT CROSS TUNNEL (5x5M) - EXCAVATION CLASS ESC2 - SECTION AND PROFILE	C
21	S2-CIV-AT-ATU-2121	MT01D - MAT/ECVT CROSS TUNNEL (5x5M) - EXCAVATION CLASS ESC3 - SECTION AND PROFILE	C
22	S2-CIV-AT-ATU-2122	MT01D - MAT/ECVT CROSS TUNNEL (5x5M) - EXCAVATION CLASS ESC4 - SECTION AND PROFILE	C

23	S2-CIV-AT-ATU-2169	MT01D - MAT/ECVT CROSS TUNNEL (5x5M) - EXCAVATION CLASS ESC5 - SECTION AND PROFILE	B
24	S2-CIV-AT-ATU-2133	MT01B - UNDERGROUND EXCAVATIONS - MATERIAL AND ELEMENT CHARACTERISTICS	1
25	S2-CIV-AT-ATU-2143	MT01 - MAIN ACCESS TUNNEL - D&B MONITORING - TYPICAL SECTIONS	C
26	S2-CIV-AT-ATU-REP-2101	MT01 - DRY TUNNELS - DRILL & BLAST PRELIMINARY DESIGN REPORT	C
<b>Programme</b>			

<b>GENERAL</b>	
<b>Document Number</b>	<b>Document Title</b>
S2-FGJV-ENV-PLN-0002	Emergency Response Plan
S2-FGJV-ENV-PLN-0005	Main Works - Weed, Pest & Pathogen Management Plan
S2-FGJV-ENV-PLN-0007	Main Works - Environmental Management Strategy
S2-FGJV-ENV-PLN-0010	Main Works - Water Management Plan
S2-FGJV-ENV-PLN-0012	Main Works - Groundwater Management Plan
S2-FGJV-ENV-PLN-0014	Main Works - Heritage Management Plan
S2-FGJV-ENV-PLN-0017	Main Works - Historic and Natural Heritage Management Plan
S2-FGJV-ENV-PLN-0019	Main Works - Spoil Management Plan
S2-FGJV-ENV-PLN-0020	Main Works - Acid Metalliferous Drainage Management Plan
S2-FGJV-ENV-PLN-0044	Main Works - Noise and Vibration Management Plan
S2-FGJV-ENV-PLN-0045	Main Works - Blast Management Plan
S2-FGJV-ENV-PLN-0047	Main Works - Air Quality Management Plan
S2-FGJV-ENV-PLN-0048	Main Works - Waste Management Plan
S2-FGJV-ENV-PLN-0052	Main Works - Pollution Incidence Response Management Plan
S2-FGJV-ENV-PLN-0062	Main Works - Asbestos Management Plan
S2-FGJV-QUA-PLN-0001	Health and Safety Management Plan
S2-FGJV-HSA-PLN-0005	Security Management Plan
S2-FGJV-QA-PLN-0001	Quality Management Plan
S2-SHL-SPC-000056	Volume 3.06 Construction Requirements
S2-SHL-SPC-000037	Volume 3.05 R1 Standard Technical Requirements (General)
S2-SHL-SPC-000111	Volume 3.05 R2 Standard Technical Requirements (Electrical)
S2-SHL-SPC-000112	Volume 3.05 R3 Standard Technical Requirements (Mechanical)
S2-SHL-SPC-000038	Volume 3.05 R4 Standard Technical Requirements (Civil)
S2-SHL-SPC-000036	Volume 3.04 Particular functional and performance requirements- Civil
S2-SHL-SPC-000058	Volume 4 Employer's Requirements

<b>Codes, Standards and Specifications</b>
ISO 9001: Quality Management System (2015)
RMS Q6 Quality Management System
RMS B80 Concrete for Bridges
RMS B82 Shotcrete Work
RMS R68 Shotcrete without Fibres
Work Health and Safety (Mines and Petroleum Sites) Act 2013 No. 54 (NSW)
Work Health and Safety (Mines and Petroleum sites) Regulation 2014 (NSW)
AS2187.1 – Explosives – Storage, transport, and use. Part 1 – Storage

AS2187.2 – Explosives – Storage, transport, and use. Part 2 – Use of Explosives
RMS D&C 3211 – Cements, Binders and Fillers
AS3972 -General Purpose and Blended Cement
BS EN 1542 – Products and systems for the protection and repair of concrete structures
ASTM C1609 – Standard Test Method for Flexural Performance of Fibre-Reinforced Concrete
BS EN 14651 – Concrete Tension Testing
AS1012 – Methods of Testing Concrete
AS 2758.1 – Aggregates and Rock for Engineering Purposes
AS 1379 – Specification and supply of concrete

## Appendix B: Responsibility Matrix

No.	Description	Provided by	
		Subcontractor	Contractor
<b>General</b>			
1	Accommodation (Site)		X
2	Personnel transport from accommodation to worksites	X	
3	Medical and first aid facilities on site		X
4	Site emergency response		X
5	Recruitment, training, and medicals	X	
6	Site inductions	X	X
7	Personal protective equipment (PPE)	X	
<b>Site Establishment</b>			
8	Laydown area		X
9	Site offices (single office workstation)		X
10	Cribs and ablutions (shared crib facility to seat 30)		X
11	Power supply		X
12	Water Supply		X
13	Temporary power and lighting	X	
14	Communications e.g. two-way UHF handheld radios, telephones etc.	X	
15	Bulk fuel supply at central fuelling station		X
16	Fuel trucks / dispensing systems at work sites		X
17	Skip bins and waste management	X	
<b>Services</b>			
18	Work methods and safety documentation	X	
19	Project Quality Plan	X	
20	Testing of suitability & post-production ground support including soil nails, rock dowels, grout, shotcrete and thickness inspections	X	
21	Geotechnical investigations e.g. drilling, mapping etc.		X
22	Surveyor		X
<b>Materials</b>			
23	Ground support supply - rock bolts, mesh etc.		X
24	Steel wire mesh system		X
25	Shotcrete & concrete supply		X
26	Shotcrete Reinforcement		X
27	Grout supply		X
28	Temporary Supports	X	
29	Oils and lubricants	X	
30	Small tools	X	
31	Explosives	X	