

UTILITIES MANAGEMENT STRATEGY

Construction of Errant and Hostile Vehicle Mitigation Treatments

SMC-22-0722

MRL-1NL-UT-PLN-000563

AMENDMENTS

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AUTHORISATION

Name	Position	Signature	Date
Justin Skinner	Project Manager		

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1. INTRODUCTION

1.1 Context of this Sub-plan

This Utilities Management Strategy (UMS) provides a robust management system to carefully manage and control works on and around the utilities and provide ongoing consultation with the relevant utility owners during the Construction of Errant and Hostile Vehicle Mitigation Treatments for the Southwest Metro Project (hereafter known as the 'Project').

The UMS is based on and in accordance with Sydney Metro Utilities Management Framework (UMF) and is an integral part of the Martinus Management System (MMS) and activities that are anticipated to occur during the construction phase of the Project.

The Utilities Management Strategy adopts a risk-based approach in managing the utilities to prevent damage throughout the project and has been developed to ensure a consistent approach across all project activities.

The UMS details how major construction works can be carried out safely around the utilities and how the project team will interface with stakeholders during the entire period of the Project.

The Strategy also provides detail around:

- Framework of contacts of the relevant utility owners,
- Responsibilities
- Processes to be followed to identify utilities, undertake work around utilities and record completed work
- Communication across the team to identify located utilities and new services installed during construction

1.2 Scope of this sub-plan

The Errant and Hostile Vehicle Mitigation Treatments for the Southwest Metro Project Works Utilities Management Strategy covers the scope of activities by Martinus that could affect existing utilities. The construction entails installing barriers over 15 bridges, bollards at 8 stations, and additional barriers at non-bridge locations within the rail corridor. If barriers or their foundations directly impact utilities, relocation is necessary. For works near utilities without direct impact, approval from relevant Authorities is required.

The project's hierarchy for treatments prioritizes avoiding the relocation or permanent protection of utility assets by adjusting civil designs to prevent direct impacts. If avoidance is not feasible, the goal is to permanently protect the utility assets, such as by concrete encasing them within the footings. Relocation of utilities is considered the last resort.

This review effectively highlights the project's strategic approach to utility management, emphasizing the preference for design adjustments and protection over relocation. All utilities adjustments will be undertaken in accordance with this Plan.

1.3 Project Requirements

This Strategy specifically addresses the requirements detailed in the Construction Environmental Management Framework (CEMF), the Scope of Works and Technical Criteria (SWTC), Planning &

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Environment conditions of approvals (CoA) and Revised Environmental Mitigation Measures (REMMs). The requirements relevant to this Strategy are listed in Table 1 below.

Table 1: UMS Compliance Matrix

No.	Requirement	Document Reference
Conditions of Approval		
E26	Work undertaken for the delivery of the CSSI, including those undertaken by third parties (such as utility relocations), must be coordinated to ensure respite periods are provided. The Proponent must: (a) reschedule any works to provide respite to impacted noise sensitive receivers so that the respite is achieved in accordance with Condition E23; or (b) consider the provision of alternative respite or mitigation to impacted noise sensitive receivers; and (c) provide documentary evidence to the ER in support of any decision made by the Proponent in relation to respite or mitigation.	Section 11.2
E69	The Proponent must co-ordinate utility providers and relevant council(s) to identify opportunities for maintenance, replacement or augmentation of utilities that cross the rail corridor and facilitate and co-ordinate requests by the utility providers and relevant council(s) to undertake the Work during rail shutdowns, with particular reference to the final three (3) to six (6) month shutdown before metro services commence.	Sydney Metro Scope
E70	Nothing in this approval allows for the undertaking of any third-party utility Work identified through the implementation of Condition E69 and not required for the purposes of the CSSI. Note: Third-party utility Work, including but not limited to drainage, water or energy supply etc. identified not required for the project is not the responsibility of the Proponent and is subject to separate approvals process.	Noted
E71	A Utilities Management Strategy must be prepared and implemented in line with the Utilities Management Framework, described in Appendix H of the SPIR for all utility Work. The Strategy must identify how utility Work will be defined and managed. The Utilities Management Strategy must include: (a) the functions of the Utility Coordination Manager as required by Condition E72; (b) a description of all utility Work to be undertaken; and (c) management measures to be implemented to manage dust, noise, traffic, access and lighting impacts associated with utility Work. The Utilities Management Strategy must be submitted to the Planning Secretary for approval at least one (1) month before the commencement of utility Work.	This Document.
E72	A Utility Coordination Manager must be appointed for the duration of the CSSI Work. The role of the Utility Coordination Manager must include, but not be limited to: (a) the management and coordination of all utility Work associated with the delivery of the CSSI, to ensure respite is provided to the community, as required under Condition E22; (b) investigating complaints received from the Community Complaints Mediator relating to utility Work and providing a response to the Community Complaints Mediator.	Section 8.2
Revised Environmental Management Measures (REMMs)		
SC6	Hazardous materials surveys would be undertaken during detailed design for all proposed demolition activities, and for utility adjustments as required.	Section 11 Appendix 4
HRS3	All utilities adjustments or relocation would be undertaken in accordance with the Utilities Management Framework.	Section 1.2

2. References

2.1 General

This Procedure is governed by the following Standards.

- ISO9001:2015 Quality Management
- ISO45001:2018 Safety Management Systems
- ISO14001:2015 Environmental Management
- ISO 31000:2018 Risk Management
- ONRSR Guideline Safety Management System
- FSC Audit Criteria Guidelines H7 Excavation
- WorkSafe Guidelines for excavation safety
- Telarc OHSMS Audit Guidelines (NZ)

2.2 Approval

This Strategy will be reviewed and endorsed by the Independent Environmental Representative (ER) in accordance with CoA-A26.

In accordance with CoA-E71 the Strategy must be submitted to the Secretary one month prior to the commencement of utility work. Construction must not commence until the Secretary has approved the Strategy.

2.3 Legislation and Guidelines

Legislation relevant to utilities construction includes:

- MR-IR-010 Company HSEQ Legal Compliance Register for Australian and New Zealand legislative requirements.
- MR-IP-021 Identifying Legal Compliance Procedure
- Work Health Safety Act 2011
- Work Health and Safety Regulations 2017
- Health and Safety at Work Act 2015 (NZ)
- Health and Safety at Work (General Risk and Workplace Management) Regulations 2016 (NZ)
- Health and Safety in Employment Regulations 1995 (NZ)
- Telecommunications Act 2001 (NZ)
- Gas Act 1992 (NZ)
- Electricity Act 1992 (NZ)
- Resource Management Act 1991 (NZ)
- Local Transport Act 2003 (NZ)
- Building Act 2004 (NZ)

Additional legislation relevant to environmental management is detailed in the Project CEMP.

Utility authority applicable standards, specifications, guidelines and policy documents are to be considered in conjunction with this Strategy.

2.4 Related Martinus Document

Table 2 - Related Project-specific Documents

DESCRIPTION	DOCUMENT NUMBER
Quality Manual	MR-QM-001
Environmental Manual	MR-EM-001
WHS Manual (ISO45001)	MR-WM-003
Document Register	MR-IR-001
WHS Policy	MR-WS-001
Environmental Policy	MR-ES-001
Rail Safety Management Plan	MR-PM-001
Coronavirus Management Plan	MR-WM-004
Incident and Investigation Procedure	MR-WP-002
Authority to Work Permit	MR-WF-022
Excavation Permit	MR-WF-029
Excavation - Desktop Search Check sheet	MR-WF-067
Excavation - Site Investigation Check sheet	MR-WF-068
Authority to Work Procedure	MR-WP-010
Management of Asbestos & Asbestos Containing Materials	MR-WP-029
Critical Risk Management	MR-WP-001
Excavation Daily Inspection Check sheet	MR-WF-006

3. Work Access Procedure

An Excavation Permit for Sydney Metro part of the Utilities Management Strategy to maintain control of ground disturbing excavations and to eliminate underground utility damage. The completion and authorisation of an Excavation Permit document will act as a Hold Point prior to commencement of any ground disturbing excavation / construction work. The Excavation Permit will require the following:

- A copy of relevant BYDA utility plans – supplied by the relevant Site or Project Engineer
- An approved AFC Combined Utilities Drawing (CUD) – supplied from the live utility model kept by Martinus surveyors
- As-built CUDs as services are being installed – supplied by the Martinus Site Surveyor

All the above information will be checked against the requested Excavation Permit by the Utility Coordination Manager/Senior Project Engineer or Project Manager prior to authorisation.

The Excavation Permit process starts with a request for an Excavation Permit by the relevant Martinus Project/Site Engineer. The Engineer supplies the necessary marked up services plans (BYDA, latest Combined Utility Drawings and As-built CUD's) complete with work descriptions and methodologies including defining the area of works and the maximum depth of excavation. Once compiled, the document will be reviewed and approved by the Utility Coordination Manager/Senior Project Engineer or Project Manager after completing the necessary checks and desktop studies and detailing the required controls for working around impacted utilities. Prior to issuing the permit, the Martinus Permit issuer highlights all the risks and hazards associated with the proposed ground disturbing excavation work in the permit and requests the person in charge and the work to acknowledge receipt.

The Site Supervisor / Superintendent will be responsible for maintenance of the Excavation Permit for the full duration of the works. During construction excavation, further potholes may be required to verify any unidentified underground services and if required a service locator will be employed to check or verify service locations on site.

The Utility Coordination Manager will maintain a record of all the permits issued and will be responsible for issuing updated DSS, BYDA plans and CUD drawings when required. The Utility Coordination Manager also will be responsible for Field Audits of the Excavation Permit process.

4. Verification of Existing Services

The Site Supervisor/ Superintendent and the responsible engineer will initiate and coordinate the Surveying of the existing services via service locating and potholing and survey the new proposed service works. The survey will be based on the BYDA and the AFC CUD drawings. All the existing services will be marked up on the AFC CUD drawings and will be in a controlled Master As-Built set located at the site office. All services in the BYDA and AFC CUD drawings for each area must be located before any commencement of construction works. If new services are located onsite that are not on the BYDA or AFC CUD drawings, Martinus will liaise with SYDNEY METRO and initiate the necessary actions and instructions on how to proceed before any commencement of works.

The controlled Master As-Built CUD drawings will form the basis of communication for utilities for:

- Identification of existing services
- Survey of the new services
- Co-ordination with concurrent works
- Initiation of Excavation Permit
- Pre-starts with the site team for awareness of the hazards and safety controls required
- Identification of Temporary designs and controls required for protection of the existing and new (when installed) services
- Status of the installation of the new services installed

Existing and New Services installed as well as proposed alignment for services will be communicated to the team through controlled Master As-built CUD drawings, Prestarts, Toolboxes, service marks on the ground, survey pegs and Excavation and Trenching Permits. Refer to Appendix 1 for the Excavation Permit Flowchart.

5. Management of Utilities Information and As-Built Process

As part of the project works, Martinus will manage all information provided regarding utility identification and relocation. As part of the relocation process, as-built drawings will be developed and provided to the Service provider(s) and/or Sydney Metro as required under the relevant specifications and accreditation requirements. This process includes:

- Carrying out desktop studies and organising potholing for the identification and verification of service information using the Controlled Master AFC CUD drawings and Before You Dig Australia (BYDA) plans.
- Surveying all the potholing information and located services details and entering these into the Controlled Master AFC Drawings and Detail Site Survey (DSS) drawings.
- This information is held by the Utility Coordination Manager/SPE or Superintendent for the As-Built requirements and as a part of the Excavation Permit process

- Updated CUD drawings are marked up in the Controlled Master AFC CUD drawings. It is the responsibility of the SPE or Superintendent to ensure that the information on the Controlled Master AFC CUD are incorporated into all relevant Activity Method Statements and Construction Methodologies.
- The SPE or Utility Coordination Manager will identify the additional potholes required to prove the viability of the proposed design
- The Utility Coordination Manager and SPE identifies all utility impacts before the commencement of the construction works.
- All unavoidable utility service relocations will be organised and carried out by the relevant utility authorities or their accredited sub-contractors in accordance with their requirements and guidelines.
- As an additional precautionary measure, every location that requires ground disturbance / mechanical excavation will be surveyed during electronic radar equipment. If any potential services are identified, these will be potholed to further investigate. Any unidentified services identified will be communicated back to Sydney Metro. The controlled Master AFC CUD drawings will also be updated to reflect all information found on site
- In the event of any accidental damage or unexpected disruption to utilities and services, the location will be made safe and the relevant authorities informed of necessary repairs. In addition, an incident report will be created as per Martinus Safety Management Plan
- The Utility Coordination Manager, SPE or Superintendent will review and authorise all Safe Work Method Statements (SWMS) and/or Construction Method Plan where the requirement for an Excavation Permit has been identified. The Utility Coordination Manager or the SPE will sign acceptance of the Works Access Checklist prior to works commencing
- As-Built information will be surveyed and recorded by the Project Surveyors for Martinus
- The Controlled Master AFC CUDs will be updated with all As-Built information and this will be passed back to the Utility Coordination Manager for incorporation into the As-Built CUD drawings.

6. Utility Work

Martinus will engage Accredited Service Providers Level 1 (ASP1) and accredited Sydney Water contractors to complete the contestable works. The non-contestable works will be completed mainly by the relevant Authorities. The civil design is not fully complete and there might be small adjustments on the scope of utilities works, which are listed below:

Table 3 - EHVMT Utilities Scope of Works

LOCATION	AUTHORITY	DESIGN PACKAGE	SCOPE
Illawarra Rd	Telstra	SR569999-1	Relocate to work near comms.
Illawarra Rd	TfNSW	RMS 01	Relocate TCS traffic signal, Pits and conduits.
Illawarra Rd	Ausgrid	AN-26272	Remove / Relocate remove Ausgrid pole
Illawarra Rd	SWC	CN214113	Relocate Water DN150
Albermarle St	Sydney Trains	Sydney Trains 05	Relocate GST (Comms and OF)
Wardell Rd	SWC	Water 12	Relocate Water steel concrete encased
Duntroon St	Qenos	Qenos 1	Remove
Duntroon St	Telstra	Comms 5	Relocate pits and conduits
Duntroon St	Sydney Trains	Sydney Trains 02	Relocate box and conduits

Canterbury Rd	Telstra	SS568797-1.	Protect to work near comms
Canterbury Rd	TfNSW	RMS2	Protect concrete encasement
Broughton St	Sydney Trains	Sydney Trains 06	Relocate, electrical connection to sign
Loch St	Jemena	Gas 2	Relocation LP and provide casing
Burwood Rd	Sydney Trains	Sydney Trains 01	Relocate, of private pole and metering box
Burwood Rd	Telstra	Comms 9	Relocate pits and conduits
Haldon St	Sydney Trains	Sydney Trains 05	Relocation of Comms
King Georges Rd	Telstra	Comms 3	Relocate
King Georges Rd	TfNSW	RMS 06	Relocate. TCS pits at pram ramps.
King Georges Rd	Ausgrid	Electrical 06	Relocation HV
Punchbowl Rd	Jemena	Gas 3	Relocate (LP)
Punchbowl Rd	TfNSW	RMS3	Relocate
Punchbowl Rd	Ausgrid	Electrical 8	Relocate to work near HV
Stacey St	Telstra	Comms 14	Protect
Stacey St	Ausgrid	AN-26272	Relocate Ausgrid lighting.

7. Procedures for procurement of accredited constructors

A list of tenderers will be compiled in a procurement schedule to identify the accredited contractors across the Contestable Utility Works for Sydney Water and Ausgrid Networks. A list of prequalified accredited contractors is available for each Service Provider. Tenderers will be selected based upon their previous work history carrying out projects of similar size within brown field project environments as well as considering any past experience working with Martinus.

It is desirable to seek tenders from accredited contractors who have worked with Martinus in past projects and have experience with our systems and procedures to ensure compliance to the WHS and Environmental requirements. It is noted that while this requirement is desirable, tenders will also be sought from tenderers who can demonstrate an ability to undertake the required works to the required Martinus standard with respect to (but not limited to) technical competence, safety, environmental and quality management.

Martinus will assist both the Non-Contestable and Contestable Contractors to comply with the project WHS procedures and the Construction Environmental Management Plan (CEMP).

8. Site Management Structure and Responsibilities

The Site Management structure for Utility Management involves the following key personnel from Martinus are:

- Project Director
- Construction Manager
- Utility Works Coordinator
Senior Project/Project Engineer
- Superintendent / Supervisor
- Subcontractors

- Site Safety Representatives, and
- All employees.

Specific responsibilities relating to the Utilities Management Strategy are detailed below although it is the responsibility of everyone to ensure investigations are carried out in accordance with the specifications.

8.1 Project Manager

- Ensure that 'Safety around Utilities' is implemented.
- Ensure that a Utilities Management Strategy is developed and implemented
- Ensure competent people are employed for the management of utilities, and
- Ensure adequate planning in consultation with all stakeholders involved when undertaking excavation and trenching work;
- Ensure the communication protocols are in place between the team and relevant Authorities and Utility owners.

8.2 Utilities Coordination Manager

- Alejandro Nino will be the appointed Utility Coordination Manager for the duration of works
- Ensure that 'Safety around Utilities' is implemented
- Prepare, obtain approval and implement the Utilities Management Strategy (UMS)
- Ensure that all future revisions and updates of the UMS are implemented in a timely manner
- Ensure that respite periods take place
- Pursue out-of-hours approvals and ensure their conditions are implemented.
- Investigating complaints received from the Community Complaints Mediator relating to utility Work and providing a response to the Community Complaints Mediator.
- Ensure that all investigations including desk study and on-site investigations are carried out in accordance with the Utilities Management Strategy (UMS)
- Ensure that a well-structured and accurate Excavation Permit document is developed and implemented for all project works
- Ensure that all construction activities within close proximity to services are being carried out as per the Utility Authority standards and requirements and in accordance with the UMS and Utility Owners Specifications
- Ensure compliance with the WHS Act 2011, regulations, standards and codes
- Ensure that independent surveillance audits are carried out during all phases of work
- Ensure that all the controls in the Excavation Permit and the Utilities Management Strategy are being implemented correctly
- Ensure that all requirements of the Utilities Management Strategy (including processes, controls and responsibilities) are adhered to
- Monitor works on the ground to ensure that all permits and processes are being followed
- Understand the program of works to pre-empt the requirement for permits and excavation plans
- Drive a culture of utilities awareness through the use of facilitated workshops, training, toolbox talks and briefings
- Assist Project Engineers with their execution of the works around the utilities or authorities assets
- Complete Incident Reports and carry out investigation including the engagement of external facilitators where necessary following incidents involving services, utilities and infrastructure, and
- Monitor the completion of the Excavation Permit and Excavation Plan processes from start to finish.

8.3 Senior Project Engineers / Project Engineers / Site Engineers

- Ensure that 'Safety around Utilities' is implemented
- Communicate safety policies, plans and procedures relating to Utilities Management to employees and contractors
- Ensure that the safety aspects of Utilities Management Strategy (UMS) are followed
- Approvals and sign-offs of Excavation Permit
- Brief work crews prior to commencement of works
- Monitor works on the ground to ensure that all permits and processes are being followed
- Understand the program of works to pre-empt the requirement for permits and excavation plans
- Fill out the Excavation Permit document well in advance and ensure approval is obtained prior to commencement of the work
- Produce safety-planning documentation in and around utilities for project works
- Monitor the placement of warning and caution signage relating to utilities
- Conduct risk assessments and implement controls relating to utilities
- Produce SWMS and/or Construction Method Plan in consultation with the relevant workforce / authorities for all utilities work activities within the works
- Produce Inspection and Test Plans (ITP's) for all work activities in and around utilities, where appropriate
- Monitor implementation of hazardous works permits
- Ensure that the project works relating to utilities are managed in accordance with regulatory requirements, including Electrical Safety Instructions and WorkCover Codes of Practice
- Conduct Safe Act Observations and undertake site safety inspections
- Ensure that the procedure for management of occurrences relating to Utilities is applied
- Conduct and contribute to occurrence investigation
- Suspend relevant operations where it is identified that operations relating to utilities are failing to meet the minimum rail safety criteria creating an unacceptable risk, and
- Notify the Project and Utility Works Coordinator of any safety issues relating to Utilities management.

8.4 Superintendent/Supervisor

- Ensure that 'Safety around Utilities' is implemented
- Monitor works on the ground to ensure that all permits and processes are being followed
- Understand the program of works to pre-empt the requirement for permits and excavation plans
- Approvals and sign-offs of Excavation Permit
- Communicate safety policies, plans and procedures relating to Utilities Management to employees and contractors
- Provide adequate supervision and guidance to employees relating to utilities activities
- Present and implement SWMS and/or Construction Method Plan to employees and contractors undertaking project works on site relating to utilities
- Conduct Pre-work Briefings to employees and contractors discussing hazards and controls for work to be undertaken relating to utilities
- Implement identified risk controls relating to utilities and report any omissions to Senior Project/Project Engineer
- Implement Inspection and Test Plans (ITP) for work in and around utilities
- Ensure that investigation works will be covered by an Inspection Checklist
- Implement appropriate improvement actions for all unsafe work conditions and implement hazardous works permits, where required

- Ensure the correct use of Personal Protective Equipment (PPE) as specified when working in and around utilities
- Undertake site safety inspections for utilities work
- Ensure the correct placement of warning and caution signage when working in and around utilities.

8.5 WHS Representative

- Ensure that 'Safety around Utilities' is implemented
- Development of the Safety Management Plan
- Monitor the effectiveness of WHS policies and procedures relating to working in and around utilities
- Monitor compliance with WHS legislation, standards and guidelines for utilities work
- Ensure the adequacy of all closed-out non-conformance and safety action requests relating to utilities
- Report on and participate in occurrence investigations relating to utilities
- Participate in workplace inspections
- Participate in workplace hazard identification, risk assessment and control for working in and around utilities, and
- Participate in specific utilities training
- Ensure SWMS are developed and implemented for all works that interface with new and existing utilities for the project

8.6 Subcontractors

- Ensure that 'Safety around Utilities' is implemented
- Comply with the safety requirements for working in and around utilities
- Incorporate utilities into SLAM cards (MR-WE-005) which are completed daily prior to commencement of works
- Prepare, submit and implement SWMS, Construction Method Plan and / or other safety documentation for working in and around utilities
- Notify relevant Engineer of any changes to the SWMS, Construction Method Plan or other safety documentation
- Brief all employees on the SWMS and/or Construction Method Plan and ensure that they comply with the process controls contained within those documents
- Comply with all statutory WHS Regulations for working in and around utilities, and
- Ensure that all employees are competent, adequately trained and possess the required qualifications to safely perform the tasks expected of them, including the use of plant and equipment in and around utilities.

8.7 All Employees

- Ensure that 'Safety around Utilities' is the first priority in the performance of all work activities.
- Comply with the project specific "Minimum Site Safety Rules" and the "Network Rules and Procedures" when working in and around utilities
- Strictly follow the projects safety policies and procedures, especially those relating to utilities
- Obey all warning and safety signs relating to utilities, and
- Immediately report any unsafe condition, activity or injury relating to utilities to their immediate Supervisor.

9. Interfaces with Utility Owners

All works near or around utilities will require close co-ordination with the Utility Owner.

Martinus will organise start-up meetings with each utility owner to confirm their requirements and obtain their concurrence to the utility adjustment works and to co-ordinate the utility adjustment works, including those carried out directly by the utility owner. Martinus will also convene regular meetings with each of the utility owner to co-ordinate and assess the progress of the work. Sydney Metro will be invited to all utility owner meetings and minutes will be taken accordingly and issued after the meeting is held.

Upon commencement of any construction of works, the planning stage must be completed, which involves the input required from the relevant utility owner and relevant Authority. The planning stage involves:

- Approval of the UMS by Sydney Metro
- Service locations completed and marked up on the Combined Utilities Drawings.
- Determination of likely impact of services
- Construction Method Plans developed in accordance with the UMS, incorporating standards and procedures as per utility owner's relevant specifications
- Co-ordination meetings conducted with the relevant Utility owners, capturing key points such as:
 - Schedule of works on the utility relocation, protection or removal
 - Identification of Concurrent works likely to be conducted by the utility owner and development of any specific measures required to minimize the impacts
 - Identification of potential temporary works on the relevant utility and temporary design approved in writing by the utility owner
 - Identification of location, priorities of service works
 - Required bonds to be paid prior to construction commencement
 - Subcontractor nomination and identification agreed with the utility owner
 - Potential shutdowns, cutovers or works conducted under certain required curfews.
 - Discussions of any issues/resolutions required
 - Notifications sent for approval by the utility owner as per required specified review times indicated by each relevant utility owner and authority.

9.1 Access for Utility Providers to their Assets

Prior to commencing any construction works for the project, it is vital that all utility providers are aware of the works sequence of the project and will be able to maintain access to their assets at all times to allow their contractors repair if there are any issues. It is essential that adequate planning is undertaken to ensure that access to both new and existing assets is maintained at all times. As part of the overall management of utilities for the project, Martinus will implement the following controls for ensuring that the overall staging of the works will not impact the access to the various Assets during the construction staging:

- Review of Construction Staging in start-up meetings with each utility providers
- Review split between works that will be within temporary site compound areas and review the areas specifically with each provider to ensure they have adequate controls in place to provide constant access
- Provide 24-hour contacts for project team during project duration. This will consist of a combination of the Utility Coordination Manager and community hotline
- Erect signage at each compound providing all contractors with relevant numbers to call if access is required
- Maintain regular communications with each utility providers to ensure access is being maintained

10. Utility Authorities Contacts

Continues engagement with the Utility Authorities takes place. The Utility Authorities have nominated a person to coordinate with the project. Details of those contact details are in the table below.

Table 4 - Utilities contacts

Utility Owner	Contact Name	Contact Number	Email
Ausgrid	James Hunkin	0419 488 275	jhunkin@ausgrid.com.au
Sydney Water	Ryan Tudor	0437 357 092	ryan.tudor@sydneywater.com.au
Jemena	Andrew Keogh	0436 413 463	andrew.keogh@zinfra.com.au
Telstra	Mark Schneider	1800 810 443	Mark.P.Schneider@team.telstra.com
Optus	Christos Tzibas	0413 596 317	christos.tzibas@optus.com.au
Uecomm	Russell Browne	0434 164 103	Russell.browne@optus.com.au

11. Risk Management

11.1 Safety Requirements

The Project Utilities Management Strategy requires structured and proven safe work methods, practices and processes to control and maintain safety of utilities and Authority assets in the project works. Indicative environmental risks associated with the works are included in Appendix C.

The following are some of the methods, practices and processes implemented in the management of utilities on the project.

11.2 Noise

The noise produced by the utility works must be monitored to ensure compliance with regulations. Respite periods will be implemented to meet environmental obligations, and the community will be informed of the planned works.

This review emphasizes the project's commitment to environmental compliance and community communication, highlighting the importance of noise monitoring and respite periods, in respect to our Construction Noise and Vibration Impact Statement (CNVIS) for the Project.

Where utilities work is scheduled to occur outside standard construction hours (between 7:00am to 6:00pm Monday to Friday and 8:00am to 6:00pm Saturday), the work will be undertaken in accordance with the Sydney Metro City & Southwest Out-of-Hours Work Strategy/Protocol (as per CoA-E25) and the Project's Noise and Vibration Management Plan (NVMP). The Project works will be undertaken in accordance with the out-of-hours work provisions within the Project's Noise and Vibration Management Plan (NVMP).

Of note, high noise impact works (e.g. saw cutting, jack hammering, impact drilling) must be in continuous blocks not exceeding 3 hours, with a respite period of not less than 1 hour between blocks.

11.3 Dust Control

All reasonably practicable measures must be implemented to minimise the emission of dust and other air pollutants during the utilities works. Dust generation would be monitored visually, and where required, dust control measures such as water spraying would be implemented to control the generation of dust.

11.4 Excavation Permit (EP)

The Excavation Permit procedure provides tight controls at various stages of the Project utilising Hold Points. This ensures that every known possible risk associated with utilities has been analysed logically, incorporates systematic control mechanisms and assigns responsibilities to relevant personnel.

The Excavation Permit procedure is also a mandatory process in the Utilities Management Strategy and so must be strictly followed. No groundwork in the Project can start without an approved Excavation Permit document.

11.5 Road Opening Licence (ROL)

In the Traffic Management Plan, a process is required to obtain the necessary Road Opening Licences (ROLs) from the TfNSW and/or Councils as appropriate where work is required to be undertaken in roads and footpaths. This is a mandatory process requirement by the roads authority and will be strictly adhered to by the project team.

11.6 Traffic Control Plan (TCP) & Traffic Management Plan (TMP)

The Project requires all necessary Traffic Control Plans (TCP) and Traffic Management Plans (TMP) to be approved and in place well in advance of any utility asset investigation (potholing), relocation and protection works in the RMS, Council or public area/s.

11.7 Personal Protective Equipment

Personnel working on the Project must have the mandatory Personnel Protective Equipment (PPE) at all times. No person is allowed to enter the project sites without the required PPE. Mandatory PPE includes:

- Safety Boots – lace-up with steel toe cap
- Hard Hat with the option of a sun brim
- High Visibility Clothing, long sleeved, collared shirts or high visibility vests
- Safety Glasses fitted with side protection, and
- Gloves

Other PPE such as ear plugs, earmuffs or dust masks must be worn in accordance with the relevant CMP and SWMS.

12. Contingency Procedures

Within each of our utility adjustment works, our contingency plans and emergency protocols are to ensure that connections are prioritised and completed on time. This requires the following protocols to be followed:

- A Construction Method Plan (CMP) is completed, highlighting the importance of the shutdown and re-connection and ensuring all disciplines and key personnel are involved in the planning stage

- CMP and SWMS are prepared by ensuring methodologies always allow for emergency re-connections, to allow to abandon works and proceed with re-connection and avoiding any delays to the end users.
- Ensuring tasks are minimised during shutdowns, determining the optimal number of tasks to be undertaken during each shut down
- Pre-isolation meeting to be held for all Sydney Water outages with the Water Servicing Coordinator is undertaken to confirm the Point of No Return is determined and the hour-by-hour program is agreed by all parties to ensure no issues during the cutover works
- Ensuring most of the offline work is maximised and completed before conducting the shutdown
- Temporary measures are available for emergency connection if required, i.e. generators or fittings.
- All works are planned to be completed in a minimum of 2 hours (Each shutdown will be re-assessed on criticality) before the shutdown period has occurred to ensure no delays to the customers and enough time to pack up and hand the area back to the Utility Owner.
- Roadwork restorations are planned and conducted in such a way of ensuring the works can be abandoned and restored at least 2 hours prior to re-opening and ensuring roads are re-opened on time.
- Traffic Management Plans have allowed for delayed traffic management implementation (i.e. greater traffic volumes than envisaged) as part of their Contingency plan to ensure traffic can be managed during road restoration and re-opening delays.

13. Emergency Response

An emergency plan that deals with unexpected incidents, such as ground slip, flooding, contact with underground services and the rescue of workers from an excavation must be developed in consultation with relevant stakeholders as appropriate prior to commencing work. The emergency plan must:

- SFAIRP help the engulfed person be rescued and provided with first aid; and be enacted immediately after a person becomes, or is likely to become engulfed.
- When developing an emergency plan for excavation and trenching the following factors should be considered:
 - The nature of the work activity;
 - The location of the work activity;
 - Communications from within the excavation and trench to other workers;
 - Communication from the location of the work to emergency services;
 - Rescue and resuscitation equipment and the availability of trained workers;
 - The physical capabilities of rescuers;
 - Environmental conditions;
 - Appropriate first aid equipment and the availability of trained workers; and
 - The ability for local emergency services to respond and provide assistance in emergency situations.

All workers will be trained in emergency response emergency scenarios, so they are competent in an emergency. Drills will be carried out as nominated as in the project KPIS.

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Appendix 1: MR-WA-033- Excavation Permit Training Toolbox- V1.0

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Appendix 2: MR-WF-029- Excavation Permit- V4.5

Appendix 3: MR-WF-216 - Focused Safety Inspection - Excavation and Penetration- V2.0

Appendix 4: UMS Risk Assessment

This appendix includes an indicative risk assessment for the Project. Martinus will be responsible for revising this risk assessment to adequately reflect any changes to the scope of works and/or methodologies, and to conform to the E&SMS.

All indicative environmental issues have been assessed in accordance with the table below:

Risk Assessment Rankings:

- >31 Very High;
- 22 to 30 High;
- 11 to 21 Medium; and
- 1 to 10 Low.

Risks will be reassessed following the consideration of control measures. Martinus will be responsible for nominating an owner for the implementation of management measures.

Issues or activities that represent a Very High risk after the application of control measures are not to be undertaken.

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Aspect	Potential Environmental Impact	Initial Rating		Risk	Control Measures	Residual Rating		Risk	Management of Residual Risk
		L x	C			L x	C		
Approvals and Licensing									
Not identifying appropriate approvals, licenses or permits required and proceeding without them	Works delayed, infringements, prosecution, poor community relations and reputational loss.	L4	C3	17	Review the project planning approval and statutory documentation for requirements relevant to the Project. Identify and implement approval requirements within the CEMP, sub-plans. Check contract documentation. Identify and implement requirements from the Contract. Establish a register of approvals, licenses and permits.	L5	C3	13	Maintain Compliance Risk Matrix Undertake environmental audits as per CEMP
Noise									
Noise from general construction activities resulting in impact to residents	Disturbance to residents or neighbouring businesses. Potential for complaints.	L2	C5	18	Mitigation measures as per NVMP are to be implemented. Respond to community enquiries and complaints in accordance with Sydney Metro requirements and implement the OCCS. Consult with the community in relation to upcoming activities that may result in concern. Monitor noise for compliance as the works progress at receiver locations. Provide periods of respite for high noise generating activities. Apply noise mitigation measures during entire project. Noise efficient equipment to be used on site.	L3	C5	12	Noise performance will be continually monitored as per the requirements of the NVMP. The Sydney Metro Construction Noise and Vibration Strategy is to be implemented

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		L x	C			L x	C		
Noise during works required to be undertaken out of standard construction hours	Disturbance to residents or neighbouring businesses with potential for complaints.	L2	C5	18	Implement noise mitigation strategies for OOHW. Monitor noise for compliance to project goals. Control Measures as per the NVMP are to be implemented.	L3	C4	11	Noise performance will be continually monitored as per the requirements of the NVMP. The Sydney Metro Construction Noise and Vibration Strategy (CNVS) is to be implemented
Vibration									
Vibration intensive activities undertaken on the site such as hammering, vibratory rolling, etc	Disruption, annoyance and nuisance to residents. Potential damage to adjacent residential and commercial residences and structures. Disruption to businesses as a result of vibration nuisance	L3	C5	12	Mitigation measures as per the NVMP are to be implemented. Determine vibration limits and structure/receiver offset distances. Consult with potentially affected parties prior to commencement of works on their upcoming activities that may be impacted by construction vibration. Ongoing vibration monitoring during vibration intensive works, where required.	L4	C5	7	Standard and additional mitigation measures for sensitive receptors around the Project works will be applied as per the CNVS, NVMP and the CNVIS.
Water Quality, Erosion and Sedimentation									
Sediment laden runoff from construction works leaving site	Degradation of local watercourses. Increased turbidity in local water ways resulting in impact on aquatic life. Fines for sediment escaping site.	L4	C4	11	Mitigation Measures as per any ECM to be implemented. Install erosion and sediment controls within the project area. Ensure measures are inspected and maintained as the works progress and also prior to and post rainfall events. Provide training and awareness on the need to prevent pollution.	L5	C4	8	Undertake regular inspections of work areas pre, during and after works to ensure controls are in good condition.

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		L x	C			L x	C		
					Relevant people to undertake Erosion and Sediment Control training.				
Stockpiling of vegetation and topsoil	Wind and water erosion causing weed/seed dispersion offsite. Location of stockpiling next to waterways causing weeds/seeds to disperse from construction site.	L4	C3	17	Develop Environmental Control Maps to show stockpile areas. Use temporary stockpiling.	L5	C4	8	Undertake regular inspections of work areas pre, during and after works to ensure controls are in good condition.
Non-compliant water from construction works discharged from site	Non-compliant water entering stormwater system waterways (i.e. polluting - not compliant with discharge criteria).	L4	C4	11	Induction and toolbox talks Toolbox training on site procedures for dewatering procedure and consequences if not implemented. Educate site staff on requirements and consequences of prosecution.	L5	C4	8	Undertake regular inspections of work areas pre, during and after works to ensure controls are in good condition.
Works with the potential to intercept groundwater table	Ground water entering excavations Without appropriate safeguards onsite could lead to ground water contamination Spreading contamination via groundwater management	L3	C4	16	Implement the controls within CEMP Appendix E - Procedure 2: Groundwater Induction and toolbox talks Toolbox training on site procedures for water discharge Educate site staff on requirements and consequences of prosecution	L4	C4	11	Undertake regular inspections of work areas pre, during and after works to ensure controls are in good condition.

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		L x	C			L x	C		
Waste									
Waste disposal during construction	Incorrect disposal of waste, further costs incurred for classifications and disposal, fines may be issued.	L3	C5	12	Implement the controls within CEMP Appendix E - Procedure 4: Waste and Spoil Identify opportunities to incorporate recovered materials into the permanent works. Provide facilities on site for source separation and recycling. Ensure accurate waste records are retained. Removal of wastes from the site would only be undertaken by a licensed contractor as required by the POEO Act and with appropriate approvals, if required, for contaminated materials, etc. All material to be recovered off-site to be appropriately classified in accordance with the Resource Recovery Exemptions. All material that requires off-site disposal to be appropriately tested and classified against the Waste Classification Guidelines (NSW EPA, 2014)	L4	C5	7	Undertake regular inspections of work areas pre, during and after works to ensure controls are in good condition. Monitor and ensure reporting of all movements of waste form the worksite.
Earthworks spoil disposal	Incorrect classification of waste (spoil) resulting in	L3	C5	12	Inductions, toolbox talks and training on recycling facilities and waste segregation practices. Separation of waste on site. Tracking of disposal processes.	L4	C5	7	Regular inspections of work areas Monitor and ensure reporting of all movements of waste from the worksite

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		L x	C			L x	C		
	incorrect / illegal disposal/reuse.				All contamination hotspots would be clearly marked in the field (where possible). Hotspots will be shown within contamination mapping and will be included in the Permit to Disturb process.				
Washout of concrete in undesignated areas.	Sediment laden/alkaline water polluting surrounding stormwater system /watercourses.	L3	C4	16	Concrete washout areas clearly marked on Environmental Control Maps and delineated. Inductions on designated concrete washout areas. Subcontractor's agreements to include project compliant waste management principles.	L5	C4	8	Regular inspections of concrete washout areas and controls
Contamination									
Management of contaminated or untreated materials	Non-compliant material and contaminated water entering surrounding waterways. Decrease in health of nearby ecosystems.	L3	C4	16	Implement contamination management procedures Identify any contamination hotspots and incorporate procedures for these locations into construction documentation. Apply the unexpected finds procedure Induct personnel on unexpected finds procedure.	L4	C4	11	Undertake regular inspections of work areas pre, during and after works to ensure controls are in good condition. Monitor and ensure reporting of all movements of waste from the worksite.
Potential for discovery of unexpected contaminated spoil during construction.	Health effects resulting from airborne contamination, e.g. asbestos. Complaints received from	L4	C4	11	If contaminated soil is encountered, all works are to stop in the vicinity of the find and investigations commence. Unexpected finds procedure to be implemented.	L5	C4	8	Undertake regular inspections of work areas pre, during and after works to ensure controls are in good condition. Complete regular toolbox talks on how to manage unexpected finds.

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		L x	C			L x	C		
	odours released during excavations. Classification of spoil is changed and disposal options altered, costs incurred associated with disposal of higher classification of waste.				Induct personnel on location, type, nature, concentration of contaminants on site if found.				
Encountering asbestos / contaminated material on site	Transfer of material into previously uncontaminated area (outside work site) causing new contamination.	L3	C4	16	Inspections of excavated and filled surfaces would be made during Construction to determine the presence of visible asbestos. Conduct further site investigations to determine the presence and extent of contamination prior to Construction works commencing. Contaminated soils would not be stockpiled on the structural fill layer or formation layers to avoid cross contamination.	L4	C4	11	Undertake regular inspections of work areas pre, during and after works to ensure controls are in good condition. Complete regular toolbox talks on how to manage unexpected finds.
Hazardous Materials									
Storage of hazardous substances, leaking plant and equipment and spillage from refuelling.	Localised ground contamination / pollution of stormwater and requiring clean-up and/or receiving fines. Risk of igniting volatile substances.	L3	C4	16	Induction, toolbox talks and training on appropriate handling and storage of liquids. All storm water drains should be identified prior to works and protection installed.	L5	C4	8	Regular inspections of storage areas

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		L x	C			L x	C		
	Unauthorised access to site / potential vandalism/damage leading to pollution.				Storage areas to be away from sensitive areas and appropriately bunded. SDS approved prior to bringing hazardous substances on site including risk assessment. Environmental Control Maps show storage locations and associated controls e.g. spill kits, etc. Training in use of spill kits. Contingency plans would be developed to deal with any spills which might occur during Construction. Clearly label containers. Regular auditing and inspection of storage areas and materials. Make storage areas restricted access areas. Reduce/eliminate need for hazardous substances. Ensure all work sites are secure before leaving the site. All liquids i.e. paint etc. are to be securely locked away at the end of each day				
Fuel contaminated runoff from construction works leaving site	Fuel contaminated runoff entering stormwater or waterways (i.e. polluting – not	L3	C4	16	All storm water drains should be identified prior to works and controls implemented. Appropriate bunding/storage of substances.	L4	C4	11	Regular inspections of works site to ensure all controls are in good condition and working.

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		L x	C			L x	C		
	compliant with discharge criteria).				Toolbox on site procedures for sediment controls and chemical storage. Educate site staff on requirements and consequences of prosecution.				
Acid Sulfate Soils									
Disturbance of Potential Acid Sulphate soils (PASS) and Actual Acid Sulphate Soils (ASS) during excavations.	Mobilisation of metals within runoff to levels toxic to natural systems. Release of acidic runoff.	L4	C5	7	Assess risk for acid sulphate soils, and if the risk is determined to be high then implement the Acid Sulphate Soils Procedure Awareness training in the identification and management of ASS. Provide containment and treatment facility on site. Ensure ASS material is left under the water table, disposed off-site or appropriately treated in a bunded area with sump.	L5	C5	4	Undertake regular inspections of work areas pre, during and after works to ensure controls are in good condition.
Heritage									
Unexpected heritage items encountered.	Work delays, additional studies, approvals required, damage to heritage item.	L3	C4	16	Implement the mitigation measures within the HMP. General inductions toolbox training on heritage management protocols. Label any known heritage items on Environmental Control Maps. If suspected heritage item encountered. Works to stop immediately and implement the Sydney Metro Unexpected Heritage Finds Procedure (refer to HMP).	L4	C4	11	Undertake regular inspections of work areas pre, during and after works to ensure controls are in good condition. Provide frequent toolbox talks on Unexpected Heritage Finds Procedure

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		L x	C			L x	C		
					Clearly highlight no-go zones on the ECM and communicate requirements to construction personnel during pre-start briefs, inductions and tool-box talks.				
Impact to Heritage Items	Damage to heritage fabric of heritage items by Project works	L3	C3	24	Implement the mitigation measures within the HMP. General inductions toolbox training on heritage management protocols. Label any known heritage items on Environmental Control Maps. Work within the safe working distances nominated in the NVMP. Undertake vibration compliance monitoring as per the NVMP. Clearly highlight no-go zones on the ECM and communicate requirements to construction personnel during pre-start briefs, inductions and tool-box talks. Demarcation of worksites and communicate it clearly with all construction personnel. The method for the demolition of existing elements at the Project sites would be developed to minimise direct and indirect impacts to adjacent and / or adjoining heritage items.	L4	C3	17	Undertake regular inspections of work areas pre, during and after works to ensure controls are in good condition. Provide frequent toolbox talks on managing change.
Biodiversity									
Vegetation trimming / clearing required	Unauthorised works / removal of	L4	C4	11	Implement the controls within CEMP Appendix E – Procedure 1: Biodiversity	L5	C4	8	Implement Vegetation Removal Permit System.

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		L x	C			L x	C		
outside approved work area	vegetation outside defined work area, possibility of removing threatened species, fines incurred.				Induction and tool box training on clearance zones and required protection measures If vegetation, other than grass and weeds, needs to be trimmed or removed, further assessment would be undertaken in accordance with the CEMF and CoA. If trees require trimming or removal, the requirements of CoA E5 would be implemented. Inspections during clearing activities. Fencing in place/ clear marking of trees to be retained and cleared / demarcation areas / plans showing clearing areas. Pre clearing checklist to be completed before any clearing of vegetation.				Undertake regular inspections of work areas pre, during and after works to ensure controls are in good condition.
Clearing and grubbing of vegetation within work site.	Erosion of soils, uncontrolled runoff, sediment deposited into surrounding vegetated areas and water courses, and invasion of weeds. Wrong vegetation removed. Potential for injury to native fauna.	L3	C4	16	Implement the controls within CEMP Appendix E – Procedure 1: Biodiversity Inductions and toolbox training on erosion and sediment controls. Where possible works to be staged so environmental controls can be implemented after clearance works. If vegetation, other than grass and weeds, needs to be trimmed or removed, further assessment would be undertaken in accordance with the CEMF and CoA.	L4	C4	11	Undertake regular inspections of work areas pre, during and after works to ensure controls are in good condition.

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		L x	C			L x	C		
					If trees require trimming or removal, the requirements of CoA E5 would be implemented. A Tree Report is to be prepared for trees to be removed or pruned. Approved Erosion and Sediment Control Plans in place prior to starting works. Where applicable, mature trees and other native vegetation to be retained would be clearly delineated, with all Construction activities excluded from these areas. Pre clearing checklist to be completed before any clearing of vegetation.				
Loss, damage or injury to endangered or threatened species.	Removal, death, damage or injury to endangered or threatened species by plant and equipment	L4	C3	17	Implement the controls within CEMP Appendix E – Procedure 1: Biodiversity All personnel attending site will be advised of controls and management during the onsite induction. Toolbox talks will be carried out prior to ground disturbance /site clearing works to ensure onsite personnel are made aware of potential loss of endangered species. If vegetation, other than grass and weeds, needs to be trimmed or removed, further assessment would be undertaken in accordance with the CEMP and CoA.	L5	C3	13	Implement Vegetation Removal Permit System. Undertake regular inspections of work areas pre, during and after works to ensure controls are in good condition.

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		L x	C			L x	C		
					If trees require trimming or removal, the requirements of CoA E5 would be implemented. If threatened flora or fauna species are identified on site, work in the vicinity of these species would stop immediately. spotter/catcher/botanist would be engaged to survey the				
Air Quality									
General Construction works; site establishment, excavations, piling	Dust activity in close proximity to residential and commercial premises, complaints received.	L3	C5	12	Implement the controls within CEMP Appendix E – Procedure 3: Air Quality Toolbox training on dust and air quality Management. Provide dust mitigation measures through water sprays/misting as required. Cover stockpiles that are not to be worked on for a period of greater than 10 days. Erosion and Sediment Control Plans approved before works commence.	L4	C5	7	Undertake regular inspections of work areas pre, during and after works to ensure controls are in good condition.
Exhaust from plant and equipment.	Emissions resulting in air pollution.	L3	C5	12	Inductions and toolbox training on dust and air quality management. Well maintained plant/ equipment and prestart checks and servicing. Non-compliant vehicles removed from site / repaired.	L4	C5	7	Review plant check list prior to operating on site. Undertake verification checks as required.
Traffic									

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		L x	C			L x	C		
Loss of on-street car parking in adjacent residential streets and commercial areas during construction.	Loss of parking availability to adjacent residential and commercial properties could result in community complaints.	L3	C5	12	Community notifications in accordance with the OCCS. Site vehicles shall be parked within the rail corridor and not affect public parking area where possible. Develop TRAFFIC MANAGEMENT PLAN / Traffic control procedures. Limited street parking available around the Project sites.	L4	C5	7	Complete regular toolbox talks on how to minimise impacts in relation to traffic. Undertake regular inspections of worksite and adjacent streets. Supervisor and traffic controller to enforce traffic management requirements
General construction traffic disturbing public access between local roads.	Disturbance to local residents resulting in complaints being made, limited access, potential for delays at local road access points resulting in complaints.	L3	C5	12	Deliveries of plant and materials shall be undertaken outside of peak periods where possible. Site vehicles shall be parked within the rail corridor and not affect public parking areas. Scheduled road movements shall be minimised where possible. Oversized deliveries would be undertaken in accordance with the requirements of NSW Police or Roads and Maritime Services. Approved Traffic Management Plans in consultation with relevant authorities. Detour routes to be advertised/ notified. Approved access routes, detailed Traffic Control Plans. Clear notifications / signage	L4	C5	7	Complete regular toolbox talks on how to minimise impacts in relation to traffic. Undertake regular inspections of worksite and adjacent streets.

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		L x	C			L x	C		
Management of heavy vehicles / access routes.	Complaints from sensitive receivers due to increased level and frequency of noise.	L3	C5	12	Deliveries of plant and materials shall be undertaken outside of peak periods where possible. Site vehicles shall be parked within the rail corridor and not affect public parking areas. Scheduled road movements shall be minimised where possible. Oversized deliveries would be undertaken in accordance with the requirements of NSW Police or Roads and Maritime Services. Designated access routes. Approved TRAFFIC MANAGEMENT PLAN. Community Notifications. Pedestrian management with traffic controller in place where required.	L4	C5	7	Complete regular toolbox talks on how to minimise impacts in relation to traffic. Permits from local council and/or RMS
Truck deliveries out of normal working hours	Un-approved deliveries resulting in non-conformance with project requirements. Noise impact to community / potential complaints.	L3	C5	12	Personnel training of noise awareness to community included in induction and toolboxes. Induction on Construction Hours for deliveries. Communication of delivery times to suppliers. Community Notifications on project activities occurring locally. Code of conduct / selection criteria in place for subcontractors.	L4	C5	7	Delivery drivers provided with haulage routes prior to travelling to site and delivery times. Complete regular toolbox talks on how to minimise impacts in relation to traffic.

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		L x	C			L x	C		
					Out of hours works approval where required. Approved traffic/access routes. Planning and staging of works in approved hours as much as practical.				
Visual Amenity									
Building Materials Stockpiles Temporary construction sheds and storage containers Plant and equipment movement Lighting	Surrounding aesthetic temporary altered during construction Lighting towers used during out of hours works may spill on nearby residents	L3	C5	12	The work area shall be maintained in an orderly manner Lighting required during night works shall be directed towards the work area and away from adjacent sensitive receivers	L4	C5	7	Undertake regular inspections of work areas pre, during and after works to ensure controls are in good condition.
Ancillary facilities									
Appropriate selection and management of the ancillary facilities	Inadequate assessment of impacts to surrounding business and residential receivers and environmental receptors. Potential for complaints.	L4	C4	11	Any ancillary facility not identified in the project Planning Approval, must comply with the relevant CoA (A16-A18). Use of site compounds would comply with the requirements of the CEMP and Sub-plans, CoA, REMM and CEMF to ensure environmental impacts are adequately managed.	L5	C4	8	Undertake regular inspections of work areas pre, during and after works to ensure controls are in good condition.
Utilities									
Utility Management	Service strike leading to	L3	C4	16	Develop and implement the Utilities Management Strategy in accordance	L5	C4	8	Permit to Disturb Service searching

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	environmental degradation				with the Utilities Management Framework Engage a Utilities Coordination Manager (UCM) to oversee the coordination of utility works across the project and with third part service providers. The UCM will collaborate with the Community and Stakeholder Manager, the Place Manager and, where required, the Community Complaint Mediator to mitigate impacts to the local community during utility works and to resolve any community complaints relating to utility works. Implement a Permit to Disturb Induction and toolbox talks Detailed Site Survey to be managed by an appropriately qualified surveyor.				Detailed Site Survey management

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Sydney Metro Consequence Criteria

	ENTERPRISE RISK CONSEQUENCES					
	C6 Insignificant	C5 Minor	C4 Moderate	C3 Major	C2 Severe	C1 Catastrophic
Environment	No appreciable changes to environment and/or highly localised event.	Change from normal conditions within environmental regulatory limits & environmental effects are within site boundaries.	Short-term and/or well-contained environmental effects. Minor remedial actions probably required.	Impacts external ecosystem & considerable remediation is required.	Long-term environmental impairment in neighbouring or valued ecosystems. Extensive remediation required.	Irreversible large-scale environmental impact with loss of valued ecosystems.

Sydney Metro Likelihood Criteria and Risk Matrix

Probability	One off event How likely?	Frequency	Repeated How often?	Likelihood		Consequences					
						C6	C5	C4	C3	C2	C1
						Insignificant	Minor	Moderate	Major	Severe	Catastrophic Transformational for opportunities
	Expected to occur frequently during time of activity or project. Greater than a 90% chance of occurring.	Frequency	10 times or more every year	Almost certain	L1	20	22	29	32	34	36
	1-10 times every year		Very Likely	L2	14	18	23	28	31	35	
	Once each year		Likely	L3	9	12	16	24	27	33	
	Once every 1 to 10 years		Unlikely	L4	6	7	11	17	25	30	
	Once every 10 to 100 years		Very Unlikely	L5	3	4	8	13	19	26	
	Less than once every 100 years		Almost Unprecedented	L6	1	2	5	10	15	21	

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Appendix 5: Combined Utilities Drawings