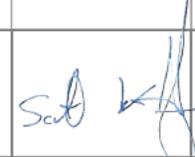


Construction Environmental Management Plan (CEMP)

Pitt Street Integrated Station Development

Project number:	N01070
Document number:	SWCSWSPS-CPB-ALL-EM-PLN-000001
TeamBinder Ref:	SMCSWSPU-CPB-SPS-EM-PLN-007250
Revision date:	22/04/2024
Revision:	5

Document Approval

Rev.	Date	Prepared by	Reviewed by	Approved by	Remarks
00	24/12/2020	A. Zvirzdinas	E. Eveleigh	C. Kerpiniotis	For Construction
01	21/02/2022	E. Eveleigh	A. Zvirzdinas	K. Evans	Resubmission following review comments
02.04	01/12/2022	A Brajliah	E. Eveleigh	C. Kerpiniotis	Review and update
03.00	30/01/2023	A Brajliah	E. Eveleigh	C. Kerpiniotis	Review and update
04.00	18/04/2023	A Brajliah	E. Eveleigh	S. Knight	Review and update
5	22/04/2024	E. Eveleigh		S. Knight	Review and update
Signature:					

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 Date Published: 25/09/2019

Management System - Uncontrolled Document when Printed

Details of Revision Amendments

Document Control

The Project Director is responsible for ensuring that this plan is reviewed and approved. The Environmental Manager is responsible for updating this plan to reflect changes to environmental, legal and other requirements, as required.

Amendments

Any revisions or amendments must be approved by the Project Director and/or client before being distributed / implemented.

Revision Details

Revision	Details
A	FIRST SUBMISSION
B	UPDATED ISSUE – Sydney Metro, Environmental Representative, Independent Certifier & Acoustic Advisor Comments
C	UPDATED ISSUE – Sydney Metro, Environmental Representative, Independent Certifier & Acoustic Advisor additional comments and issued to DPIE for review / approval
00	FOR CONSTRUCTION – Following DPIE Approval on 24/12/2020.
01	1st review by CPB – updates include <ul style="list-style-type: none">• Updated Contact List• Minor updates to Soil, Water and Groundwater management Sub-Plan• Minor updates to Noise and Vibration Sub-Plan• Appendix E MIRRA Schedule• Appendix F Site Environmental Plans• Appendix H Aspect Specific Procedures• Section 5.3 update to Covid Order• CNVMP minor updates relating to reporting• Minor formatting updates• Updated AA in Section 4.4• Update Appendix E MIRRA Schedule
02	Updated for extended construction hours to 6pm Saturdays including update to CNVMP. Updated CHMP to include for Excavation Director Updated CPB Environment Policy
03	Part A Section 4.3 and Table 2.3 updated to include Brett McLennan as ER Appendix A updated with new ISO 14001 accreditation Update to Appendix E MIRRA Schedule - frequency of reporting and audits
04	Update contact list
5	Update to Appendix H

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 **Date Published:** 25/09/2019

Management System - Uncontrolled Document when Printed

Carolyn Riley
Director Environment
Environment Sustainability and Planning
Sydney Metro
Transport for NSW
PO Box K659
HAYMARKET NSW 1240

2 May 2024

Ref: CSWPSISD_CEMP_Rev 5

Dear Carolyn

**RE: Approval of Minor Amendments to Sydney Metro City & Southwest –
Construction Environmental Management Plan - Pitt Street Integrated
Station Development**

Thank you for providing the following document for the Environment Representative (ER) review and approval in accordance with CoA A24(d & j) of the Sydney Metro City & Southwest Chatswood to Sydenham project (SSI – 15_7400 February 2019 -Mod 9 granted 30 June 2022).

- *Construction Environmental Management Plan - Pitt Street Integrated Station Development, Revision 5.0 dated 22 April 2024 (CEMP Rev 5).*

As an approved ER for the project, I have reviewed this document and the minor changes proposed.

This CEMP Rev 5 update was a minor update to remove unattended noise monitoring and permit attended noise monitoring.

In my opinion, the proposed changes constitute a minor amendment pursuant to CoA A24(j). On this basis, I approve the minor amendments in CEMP Rev 5.

Yours sincerely



Brett McLennan
Environmental Representative - City and Southwest Sydney Metro

Contents

Contents	3
Contact List	6
Glossary / Abbreviations	12
Part A: Overview	15
1. Structure of this Plan	15
1.1 Revision and update of this CEMP	17
1.2 CEMP Context	17
1.3 Consultation	18
2. Project Overview	19
2.1 Pitt Street Station Scope and Delivery	19
2.2 Environmental Contract Requirements	23
2.3 Environmental Policy and Culture	23
2.4 Legislative Requirements	25
2.5 Objectives and Targets	25
2.6 Key Environmental Stakeholders	27
3. Environmental Management System	32
3.1 System Overview	32
3.2 Hold Points.....	35
3.3 Aspect Specific Procedures	37
3.4 Environmental Management tools.....	38
3.5 Improvement	39
3.6 Interactions with Other Management Plans	40
4. Roles and Responsibilities	42
4.1 Collaboration and consultation with Sydney Metro	42
4.2 PS Environment and Sustainability teams	42
4.3 Environmental Representative	49
4.4 Acoustic Advisor.....	50
4.5 Independent Certifier.....	51
4.6 Department of Planning & Environment (DPE)	52
4.7 Stakeholder and Community Consultation	52
5. Environmental Aspect and Impact Management	53
5.1 Key Environmental Aspects and Impacts.....	53
5.2 Significant Environmental Hazards and Environmental Sub-plans	53
5.3 Standard Construction Hours.....	55
5.4 Impacts on Property	55
5.5 Damage or Disruption to Utilities and Services	56
Part B: Implementation	57
6. Elements and Expectations	57
Element 1: Leadership, Accountability and Culture	59
Element 2: Planning.....	61
Element 3: Legal and Other Requirements.....	63
Element 4: Risk and Opportunity Management	69

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 **Date Published:** 25/09/2019

Management System - Uncontrolled Document when Printed

Element 5:	Change Management	73
Element 6:	Communication and Consultation	75
Element 7:	Training and Competency	79
Element 8:	Subcontractor Relationships	83
Element 9:	Incident Management	87
Element 10:	Emergency Planning and Response	92
Element 11:	Document and Record Management	95
Element 12:	Auditing, Review and Improvement	98
Part C: Environmental Sub-plans		104
1.	Soil, Water and Groundwater Management Sub-Plan	105
1.1	Scope	105
1.2	Existing Environment	106
1.3	Project Compliance Requirements	124
1.4	Project Objectives	147
1.5	Controls Used to Manage Soil, Water and Groundwater	148
1.6	Monitoring Program	153
1.7	Compliance Record Generation and Management	158
1.8	Roles and Responsibilities	158
2.	Spoil Management Sub-Plan	159
2.1	Purpose	159
2.2	Scope	159
2.3	Project Compliance Requirements	160
2.4	Objectives and Targets	167
2.5	Spoil Reuse Opportunities	167
2.6	Identification of Spoil	168
2.7	Spoil Material Treatment	169
2.8	Management of Contaminated Material	169
2.9	Stockpiling and Transportation of Spoil	169
2.10	Monitoring	170
2.11	Compliance Record Generation and Management	170
2.12	Roles and Responsibilities	170
2.13	Consultation	170
3.	Heritage Management Sub-Plan	171
4.	Flora and Fauna Management Sub-Plan	172
4.1	Scope	172
4.2	Existing Environment	172
4.3	Project Compliance Requirements	173
4.4	Project Objectives	178
4.5	Controls Used to Manage Flora and Fauna	179
4.6	Monitoring	181
4.7	Compliance Record Generation and Management	181
4.8	Roles and Responsibilities	181
5.	Visual Amenity Management Sub-Plan	182
5.1	Scope	182
5.2	Existing Environment	183

5.3	Project Compliance Requirements.....	185
5.4	Project Objectives	192
5.5	Crime Prevention Through Environmental Design	193
5.6	Visual Amenity Management Strategy	194
5.7	Monitoring	197
5.8	Compliance Record Generation and Management	197
5.9	Roles and Responsibilities	197
6.	Waste and Recycling Management Sub-Plan	198
6.1	Scope.....	198
6.2	Project Compliance Requirements.....	198
6.3	Waste Streams	205
6.4	Project Objectives	206
6.5	Controls Used to Manage Waste	208
6.6	Monitoring	209
6.7	Compliance Record Generation and Management	209
6.8	Roles and Responsibilities	209
7.	Air Quality Management Sub-Plan	210
7.2	Scope.....	210
7.3	Project Compliance Requirements.....	211
7.4	Project Objectives	219
7.5	Controls Used to Manage Air Quality	220
7.6	Monitoring	222
7.7	Compliance Record Generation and Management	222
7.8	Roles and Responsibilities	222
8.	Noise and Vibration Management Sub-Plan.....	223
9.	References	224
	Part D: Appendices	225
	Appendix A – Environmental ISO14001 Certification	225
	Appendix B1: CPB Contractors Environment Policy	228
	Appendix B2: Pitt Street ISD Environment and Sustainability Policy.....	229
	Appendix C: Environmental Roles and Responsibilities	230
	Appendix D1: Legal Requirements	232
	Appendix D2 Compliance Matrix.....	235
	Appendix D2.1: Conditions of Approval.....	236
	Appendix D2.2: REMM Conditions.....	278
	Appendix D2.3: CEMF Conditions and Contract Clauses	288
	Appendix E: MIRRA Schedule	321
	Appendix F: Site Environmental Plans.....	324
	Appendix G: Environmental Risk Register.....	325
	Appendix H Aspect Specific Procedures	335
	Appendix I Consultation Records	336
	Appendix J DPE Approval and ER/AA Endorsements	337

Contact List

Name	Role	Phone
Emma Eveleigh	Environmental Manager	
Scott Knight	Delivery Director - PSISD	
Brad Sugar	Senior Project Manager – South Over Station	
Vass Anastasiou	Project Director – North Over Station	
Mark Mittiga	Project Manager - Station North	
Kal Attar	Senior Project Engineer - Station South	
Andrew Zvirzdinas	Environmental Manager – NSW / ACT Building	

CEMP Compliance Matrix

SSI 7400		
Condition	Requirement	Reference
C1	A Construction Environmental Management Plan (CEMP) must be prepared in accordance with the Construction Environmental Management Framework (CEMF) included in the PIR and the Department's Guideline for the Preparation of Environmental Management Plans to detail how the performance outcomes, commitments and mitigation measures specified in Chapter 11 of the PIR, as amended by the documents listed in A1, will be implemented and achieved during construction.	This Plan Parts A, B, C and D
C2	The CEMP must provide:	
(a)	a description of activities to be undertaken during construction (including the scheduling of construction);	Section 2.1
(b)	details of environmental policies, guidelines and principles to be followed in the construction of the CSSI;	Section 2.2, 2.3 and Element 3:
(c)	a schedule for compliance auditing;	Element 12:
(d)	a program for ongoing analysis of the key environmental risks arising from the activities described in subsection (a) of this condition, including an initial risk assessment undertaken before the commencement of construction of the CSSI;	Element 4:
(e)	details of how the activities described in subsection (a) of this condition will be carried out to:	
i	meet the performance outcomes stated in the EIS as amended by the documents listed in A1; and	Section 2.5.1 and Part C
ii	manage the risks identified in the risk analysis undertaken in subsection (d) of this condition;	Section 5 and Element 4
(f)	an inspection program detailing the activities to be inspected and frequency of inspections;	Appendix E
(g)	a protocol for managing and reporting any:	
i.	Incidents	Element 9:
ii.	non-compliances with this approval and with statutory requirements	Element 3
(h)	procedures for rectifying any non-compliance with this approval identified during compliance auditing, incident management or at any time during construction;	Element 3
(i)	a list of all the CEMP sub-plans required in respect of construction, as set out in Condition C3. Where staged construction of the CSSI is proposed, the CEMP must also identify which CEMP sub-plan applies to each of the proposed stages of construction;	Section 1
(j)	a description of the roles and environmental responsibilities for relevant employees and their relationship with the ER;	Section 4 Appendix C
(k)	for training and induction for employees, including contractors and sub-contractors, in relation to environmental and compliance obligations under the terms of this approval;	Element 7:
(l)	for periodic review and update of the CEMP and all associated plans and programs.	Element 12
C3	The following CEMP sub-plans must be prepared in consultation with the relevant government agencies identified for each CEMP sub-plan and be consistent with the CEMF and CEMP referred to in Condition C1. (a) Noise and vibration - Relevant Council(s) (b) Biodiversity - OEH and Relevant Council(s) (c) Air quality - N/A (d) Soil and Water - DPI Water, Relevant Council(s), OEH, SES, NSW Fire and Rescue	Part C

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 Date Published: 25/09/2019

Management System - Uncontrolled Document when Printed

SSI 7400		
Condition	Requirement	Reference
	(e) Groundwater - DPI Water (g) Heritage - Heritage Council (or its delegate) and Relevant Council(s)	
C4	The CEMP sub-plans must state how: (a) the environmental performance outcomes identified in the EIS as amended by the documents listed in A1 will be achieved; (b) the mitigation measures identified in the EIS as amended by documents listed in A1 will be implemented; (c) the relevant terms of this approval will be complied with; and (d) issues requiring management during construction, as identified through ongoing environmental risk analysis, will be managed.	Part C
C5	The CEMP sub-plans must be developed in consultation with relevant government agencies. Where an agency(ies) request(s) is not included, the Proponent must provide the Secretary justification as to why. Details of all information requested by an agency to be included in a CEMP sub-plan as a result of consultation and copies of all correspondence from those agencies, must be provided with the relevant CEMP sub-plan.	Part C
C6	Any of the CEMP sub-plans may be submitted to the Secretary along with, or subsequent to, the submission of the CEMP but in any event, no later than one (1) month before commencement of construction.	This Plan
C7	The CEMP must be endorsed by the ER and then submitted to the Secretary for approval no later than one (1) month before the commencement of construction or within another timeframe agreed with the Secretary.	Section 1
C8	Construction must not commence until the CEMP and all CEMP sub-plans have been approved by the Secretary. The CEMP and CEMP sub-plans, as approved by the Secretary, including any minor amendments approved by the ER (or AA in regards to the Noise and Vibration sub-plan), must be implemented for the duration of construction. Where the CSSI is being staged, construction of that stage is not to commence until the relevant CEMP and sub-plans have been approved by the Secretary.	Section 3.2
C9	The following Construction Monitoring Programs must be prepared in consultation with the relevant government agencies identified for each Construction Monitoring Program to compare actual performance of construction of the CSSI against predicted performance. (a) Noise and Vibration – EPA and Relevant Council(s) (b) Blasting – EPA and Relevant Council(s) (c) Water Quality - EPA and Relevant Council(s) (d) Groundwater – DPI Water	Part C Sections 1.6 and 8
C10	Each Construction Monitoring Program must provide: (a) details of baseline data available; (b) details of baseline data to be obtained and when; (c) details of all monitoring of the project to be undertaken; (d) the parameters of the project to be monitored; (e) the frequency of monitoring to be undertaken; (f) the location of monitoring; (g) the reporting of monitoring results; (h) procedures to identify and implement additional mitigation measures where results of monitoring are unsatisfactory; and (i) any consultation to be undertaken in relation to the monitoring programs.	Part C Sections 1.6 and 8
C11	The Noise and Vibration Construction Monitoring Program and Blast Construction Monitoring Program must include provision of real time noise and vibration monitoring data. The real time data must be available to the construction team, Proponent, ER and AA in real time. The Department and EPA must be provided with access to the real time monitoring data in real time.	Part C Section 8
C12	The Construction Monitoring Programs must be developed in consultation with relevant government agencies as identified in Condition C9 of this	Part C Sections 1.6 and 8

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 **Date Published:** 25/09/2019

Management System - Uncontrolled Document when Printed

SSI 7400		
Condition	Requirement	Reference
	approval and must include, to the written satisfaction of the Secretary, information requested by an agency to be included in a Construction Monitoring Programs during such consultation. Details of all information requested by an agency including copies of all correspondence from those agencies, must be provided with the relevant Construction Monitoring Program.	
C13	The Construction Monitoring Programs must be endorsed by the ER (or AA in regards to the Noise and Vibration Construction Monitoring Program) and then submitted to the Secretary for approval at least one (1) month before commencement of construction or within another timeframe agreed with the Secretary.	Part C Sections 1.6 and 8
C14	Construction must not commence until the Secretary has approved all of the required Construction Monitoring Programs, and all relevant baseline data for the specific construction activity has been collected.	
C15	The Construction Monitoring Programs, as approved by the Secretary including any minor amendments approved by the ER (or AA in regards to the Noise and Vibration Construction Monitoring Program), must be implemented for the duration of construction and for any longer period set out in the monitoring program or specified by the Secretary, whichever is the greater.	
C16	The results of the Construction Monitoring Programs must be submitted to the Secretary for information, and relevant regulatory agencies, for information in the form of a Construction Monitoring Report at the frequency identified in the relevant Construction Monitoring Program.	Part C Sections 1.6 and 8
C17	Where a relevant CEMP sub-plan exists, the relevant Construction Monitoring Program may be incorporated into that CEMP sub-plan.	Part C Sections 1.6 and 8 Element 2

Sydney Metro City & Southwest Construction Environmental Management Framework		
Condition	Requirement	Reference
3.3 d	As a minimum the CEMP will:	
3.3 d. i.	Include a contract specific environmental policy;	Appendix D1
3.3 d. ii.	Include a description of activities to be undertaken during construction;	Section 2.1
3.3 d. iii.	For each plan under the CEMP include a matrix of the relevant Conditions of Approval or Consent referencing where each requirement is addressed;	Appendix D2
3.3 d. iv.	For each plan under the CEMP, set objectives and targets, and identify measurable key performance indicators in relation to these;	Section 2.5 Part C
3.3 d. v.	For each role that has environmental accountabilities or responsibilities, including key personnel, provide a tabulated description of the authority and roles of key personnel, lines of responsibility and communication, minimum skill level requirements and their interface with the overall project organisation structure;	Section 4 Appendix C
3.3 d. vi.	Assign the responsibility for the implementation of the CEMP to the Environment and Sustainability Manager, who will have appropriate experience. The Principal Contractor's Project Director will be accountable for the implementation of the CEMP;	Section 4 Appendix C
3.3 d. vii.	Identify communication requirements, including liaison with stakeholders and the community;	Section 2.6
3.3 d. viii.	Include induction and training requirements and a summary of the Training Needs Analysis required in Section 3.9(b);	Element 7:
3.3 d. ix.	Management strategies for environmental compliance and review of the performance of environmental controls;	Element 12:
3.3 d. x.	Processes and methodologies for surveillance and monitoring, auditing and review, and reporting on environmental performance including environmental compliance tracking;	Element 12:
3.3 d. xi.	Include procedures for emergency and incident management, non-compliance management, and corrective and preventative action; and	Element 9: and Element 10:
3.3 d. xii.	Include procedures for the control of environmental records.	Element 11:
3.3 e	The CEMP and associated sub-plans will be reviewed by TfNSW and/or an independent environmental representative (see Section 3.11) prior to any construction works commencing. Depending on the Conditions of Approval, the CEMP and certain sub-plans may also require the approval of the Department of Planning and Environment (DP&E).	Section 1

Note: Additional relevant Project Planning Approval, Revised Environmental Mitigation Measures (REMM), Construction Environmental Management Framework (CEMF), Pitt Street Works Design and Construction Deed, and Scope of Work and Technical Criteria (SWTC) are referenced in Appendix D2.

Department of Infrastructure, Planning and Natural Resources (DIPNR, 2004) Guideline for the Preparation of Environmental Management Plans EMP Content Checklist

Does your EMP Contain	YES	Reference
Background (EMP Guideline Section 4.3.1)		
Introduction	✓	PART A – Section 1
Project Description	✓	PART A – Section 2 and 2.1
EMP context	✓	PART A – Section 1
EMP objectives	✓	PART A – Section 2.5
Environmental Policy	✓	Appendix B
Environmental Management (EMP Guideline Section 4.3.2)		
Environmental management structure and responsibility	✓	PART A – Section 4
Approval and licensing requirements	✓	PART A – Section 2.2, 2.3; 2.4
Reporting	✓	PART B - Elements 3,11 and 12
Environmental training	✓	PART B - Element 7 and 10
Emergency contacts and response	✓	PART B - Element 9 and Element 10
Implementation (EMP Guideline Section 4.3.3)		
Risk Assessment	✓	Section 5
Environmental management activities and controls	✓	PART B, Appendix E and Appendix G
Environmental control plans or Maps	✓	PART A - Section 3.4 and Appendix F
Environmental schedule	✓	Part B
Monitoring and Review (EMP Guideline Section 4.3.4)		
Environmental monitoring	✓	PART B - Elements 2 and 3
Environmental Auditing	✓	PART B - Element 12
Corrective Action	✓	PART B - Element 3
EMP review	✓	PART B - Element 12

Glossary / Abbreviations

Abbreviations/ Term	Definition
AA	Acoustic Advisor
ASS	Acid Sulfate Soils
Ancillary facility	Temporary facility for construction, including for example an office and amenities compound, construction compound, batch plant (concrete or bitumen), materials storage compound, maintenance workshop, testing laboratory or material stockpile area.
CAP	Construction Area Plan - The document prepared during the construction planning for each major work area to inform the broader project team, including the relevant functional support teams, of the scope and work overview. It outlines the execution and delivery stages and includes general construction method, risk assessment, constructability reviews, logistics and discipline interfaces.
CEMF	Construction Environmental Management Framework
CEMP	Construction Environmental Management Plan
CPB	CPB Contractors Pty Ltd
CoA	Condition of Approval
Compliance Audit	Verification of how implementation is proceeding with respect to a CEMP (which incorporates the relevant Approval conditions).
CSSI	Critical State Significant Infrastructure
HSE	Health Safety and Environment
DPE	NSW Department of Planning & Environment (formerly Department of Planning, Industries and Environment)
ECM	Environmental Control Map
Environmental aspect or hazard	Defined by AS/NZS ISO 14001 as an element of an organisation's activities, products or services that can interact with the environment. The term 'hazard' is used throughout this CEMP and has the same meaning as aspect for the purpose of compliance with ISO 14001 requirement.
Environmental impact	Defined by AS/NZS ISO 14001 as any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organisation's environmental aspects.
Environmental incident	An unexpected event that has, or has the potential to, cause harm to the environment and requires some action to minimise the impact or restore the environment
Environmental objective	Defined by AS/NZS ISO 14001 as an overall environmental goal, consistent with the environmental policy, that an organisation sets itself to achieve.
Environmental policy	Statement by an organisation of its intention and principles for environmental performance.

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 **Date Published:** 25/09/2019

Management System - Uncontrolled Document when Printed

Abbreviations/ Term	Definition
Environmental risk register	Lists relevant environmental aspects and impacts associated with the project.
Environmental target	Defined by AS/NZS ISO 14001 as a detailed performance requirement, applicable to the organisation or parts thereof, that arises from the environmental objectives and that needs to be set and met in order to achieve those objectives.
EIS	Environmental Impact Statement
EMS	Environmental Management System
EPA	Environmental Protection Authority
EPL	Environmental Protection Licence
EP&A Act	Environmental Planning and Assessment Act 1979
ER	Environmental Representative
Hold point	Activities which are not to proceed without objective review and approval by the nominated authority.
IC	Independent Certifier
KPI	Key Performance Indicators
Non-compliance	Failure to comply with the requirements of the Project approval or any applicable licence, permit or legal requirements
Non-conformance	Failure to conform to the requirements of Project system documentation including this CEMP or supporting documentation
NSW	New South Wales
NTU	Nephelometric Turbidity Unity
OOHW	Out of Hours Works
OSD	Over Station Development
PASS	Potential Acid Sulfate Soils
Project / PSISD	Pitt Street Integrated Station Development
PS	Pitt Street
REMM's	Revised Environmental Mitigation Measures
SDS	Safety Data Sheet
SEH	Significant Environmental Hazards
SEP	Site Environmental Plan
SM	Sydney Metro

Abbreviations/ Term	Definition
SMC&S	Sydney Metro City & Southwest. The SMC&S project will extend Sydney Metro Northwest to the CBD and beyond to Bankstown. The project is being delivered through a suite of contracts for the tunnels, stations, line-wide infrastructure and systems.
SSI 7400	Approval of application SSI 7400 provides for construction and operation of a metro line approximately 16.5 kilometers long (of which approximately 15.5 is in underground rail tunnels) between Chatswood and Sydenham (C2S) including construction of a tunnel under Sydney Harbour, links with the existing rail network, seven metro stations and associated ancillary infrastructure. The proposal is declared as Critical State Significant Infrastructure (CSSI)
TSS	Total Suspended Solids
WHS	Work Health and Safety
Work Pack (WP)	A Work Pack is a collective set of documents that provides an integrated and planned method of delivering elements of the work with consideration to all necessary factors including safety, environmental, quality, community, legislative, production and cost.

Part A: Overview

1. Structure of this Plan

This Construction Environmental Management Plan (CEMP) outlines how we will achieve acceptable environmental outcomes on the Pitt Street Integrated Station Development (PSISD).

PSISD, also referred to herein as the 'project', will be delivered by CPB Contractors (CPB) and environmental compliance will be achieved via the application of the CPB Environmental Management System (EMS).

The elements of the EMS, including this plan, have been developed in accordance with;

- Framework of AS/NZS ISO 14001:2016 EMS;
- Transport for NSW (TfNSW) Environmental and Sustainability Policy;
- CPB Contractors EMS which is accredited under ISO 14001:2015;
- New South Wales Environmental Management Systems Guidelines (Edition 3);
- Sydney Metro (SM) Construction Environmental Management Framework (Version 1.2 2012); and
- The Department of Infrastructure, Planning and Natural Resources (DIPNR, 2004) Guideline for the Preparation of Environmental Management Plans.

The CEMP is an overarching project specific document that incorporates or references relevant components of the EMS, aspects and area specific management documents. It is applicable to all staff and sub-contractors associated with the construction of PS and sets out how PSISD will specifically address compliance obligations as defined in the Sydney Metro Staging Reports for Critical State Significant Infrastructure (CSSI) Planning Approval 7400. The CEMP and sub plans are to be endorsed by the project Environmental Representative (ER) prior to submission to the Secretary of the Department of Environment and Planning (DP&E) along with the submission of the sub-plans, no later than one month before the commencement of Construction. It is noted that condition C6 of the planning approval allows for the sub-plans to be submitted along with or subsequent to the submission of the CEMP. Table 3-2 below provides a summary of the reviews, endorsements and approvals of the various plans and sub-plans. Construction will not commence until the CEMP and sub-plans that are listed in Condition C3 of the Project Planning Approval have been approved by the Secretary of DP&E.

The CEMP and associated Sub-Plans and Procedures are available to all PSISD personnel and contractors via the PSISD document control management system, Aconex.

This plan has the following structure:

Title: N1070 Environmental Management Plan
ID: MSID-4-295 Version: 12.0 **Date Published:** 25/09/2019
Management System - Uncontrolled Document when Printed

Table 1-1 – Plan Structure

<p>Part A: Overview</p>	<p>This section clearly defines:</p> <ul style="list-style-type: none"> ▪ Purpose and Scope of the CEMP ▪ Environmental Contract Requirements ▪ Objectives and Targets ▪ Structure the Environmental Management System ▪ Summary of the Significant Environmental Hazards, specific client requirements, compliance requirements and project environmental performance targets
<p>Part B: Implementation Plan</p>	<p>This section outlines in detail the key aspects for environmental management on the project including:</p> <ul style="list-style-type: none"> ▪ Expectations ▪ How they will be met ▪ Responsibilities ▪ Associated deliverables
<p>Part C: Environmental Sub-Plans</p>	<p>This section contains the Environmental Sub-Plans developed by the project to manage Significant Environmental Hazards and other potential major impacts upon the environment and community that include:</p> <ul style="list-style-type: none"> ▪ Air Quality Management Sub-plan ▪ Flora and Fauna Management Sub-plan ▪ Soil, Water and Groundwater Management Sub-plan ▪ Waste and Recycling Management Sub-plan ▪ Spoil Management Sub-plan ▪ Noise and Vibration Management Sub-plan ▪ Visual and Amenity Management Sub-plan
<p>Part D: Appendices</p>	<p>This section provides information supporting the EMP including:</p> <ul style="list-style-type: none"> ▪ Environmental Policy ▪ Environmental Roles and Responsibilities ▪ Environmental Risk Register ▪ Obligations Registers – CoA, REMMS, Legal, CEMF, Contract clauses ▪ Site Environment Plans ▪ Monitoring, Inspections, Reporting, Review and Audit Schedule (MIRRA) Schedule ▪ Aspect Specific Procedures

1.1 Revision and update of this CEMP

The review process ensures that EMS documents, including this CEMP, are updated as required to manage specific works that are occurring on site. The management review process described in Element 12 forms part of the EMS document review process.

Amendments would typically include those that:

- Are required to address compliance requirements prior to commencement of an activity;
- Are editorial in nature e.g. staff and agency/authority name changes;
- Do not increase the magnitude of impacts on the environment when considered individually or cumulatively;
- Do not compromise the ability of PS to meet approval or legislative requirements; and
- Do not result in new environmental impacts.

Minor amendments to the CEMP will be submitted to the ER and Sydney Metro for review and approval. Minor amendments to the CEMP and associated environmental management system are those that;

- Are editorial in nature (e.g. staff and agency/authority name changes);
- Are in response to audit findings or periodic reviews;
- Are not considered to contradict the project planning approval and associated conditions;
- Do not significantly alter the outcomes of the project such that a planning modification would be required by the Department; and
- Are not considered to carry significant environmental risk, in excess of those outlined in the project EIS; and will not impact surrounding communities.

Where the change will have the potential to result in an additional environmental or community impacts that the ER cannot approve, then the plan would be submitted to DP&E for review and approval.

Where necessary, amendments to this CEMP will be provided to relevant stakeholders for review and comment and/or forwarded for approval. Communication with the project team will occur for any relevant CEMP updates relevant to their scope of works.

1.2 CEMP Context

The CEMP forms a part of the Integrated Management Plan framework as described in the Contract Management Plan (SMC&SSPS-CPB-ALL-PM-PLN-000001). The relationship between the statutory requirements, this CEMP and the Environmental and Sustainability Management System is illustrated in Figure 1-1.

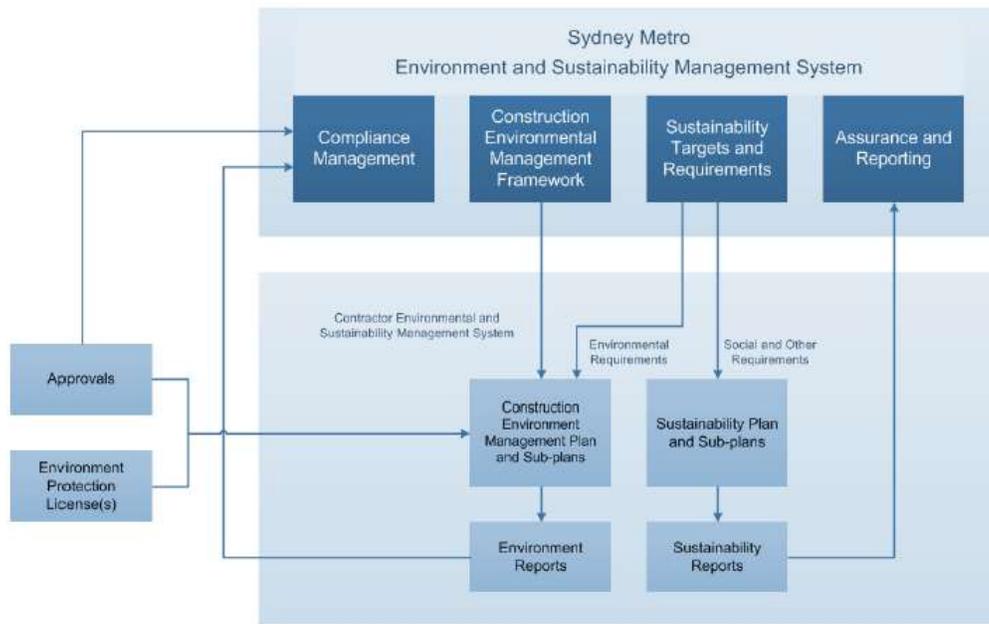


Figure 1-1 – CEMP Context

1.3 Consultation

The *Guideline for the Preparation of Environmental Management Plans* (DIPNR, 2004), states that: “agency consultation undertaken during the preparation of the CEMP should be limited to that required by specific conditions”

To address this requirement the CPB has undertaken consultation in accordance with the requirements of SSI 7400 and the relevant Sydney Metro Staging Report.

Consultation requirements for each document or aspect are defined within the *Chatswood to Sydenham Staging Report* (July 2019) developed by Sydney Metro and applicable to delivery of PSISD under SSI 7400. Where the Staging Report prescribes a procedure in place of a Sub-Plan, consultation with external stakeholders will occur at the discretion of Sydney Metro.

Consultation with the prescribed stakeholders is addressed in Table 2-3 (Section 2.6).

2. Project Overview

This Plan is established in accordance with 'The Way We Operate' framework and is the key document that integrates environmental requirements and the client's environmental requirements during project delivery.

Implementation of the CEMP will:

- Identify the environmental obligations and the hazards and risks associated with PS integrated station development (ISD) works;
- Assist in the prevention of unauthorised environmental harm;
- Fulfil the client's environmental requirements as defined in the Contract, including complying with relevant permits and approvals;
- Comply with all relevant environmental legislation;
- Minimise negative impacts on the community that relate to PS's environmental impacts;
- Identify and implement feasible opportunities to reduce the environmental impact of PS that are beyond contractual and compliance requirements; and
- Fulfil CPB Contractors' EMS requirements enabling continued certification to ISO14001 and contribution to CPB Contractors' overall Business Plans.

2.1 Pitt Street Station Scope and Delivery

The Sydney Metro City & Southwest (SMC&S) project will extend Sydney Metro Northwest to the CBD and beyond to Bankstown. The project is being delivered through a suite of contracts for the tunnels, stations, line-wide infrastructure and systems. Pitt Street Integrated Station Development (PSISD) forms a key part of SMC&S and will interface with a number of other works packages as part of the wider SMC&S project. Figure 2-1 illustrates these works packages.

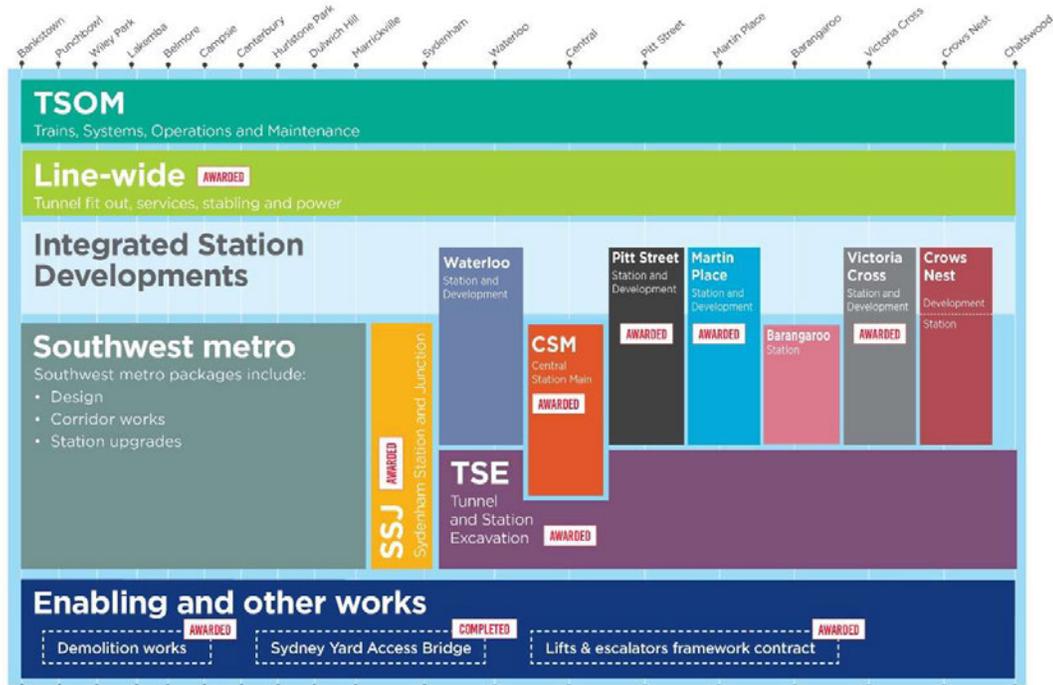


Figure 2-1: SMC&S work packages

Pitt Street is situated within the Sydney CBD, largely surrounded by high-rise commercial and residential buildings. The Station is a binocular cavern station with north and south bound platform caverns running beneath Pitt and Castlereagh Streets respectively. The Station will have two entrance shafts from the surface one at Pitt St North and Pitt St South connected to the platform caverns via adit tunnels.

Pitt Street North, is located on Park Street between Pitt and Castlereagh Street, with the station entrance facing onto Park Street. The OSD Development surrounds the station entrance and access is provided on Pitt, Park and Castlereagh Streets. Pitt Street South, is located on the corner of Pitt and Bathurst Street. It is configured in an 'L' shape which wraps around the Edinburgh Castle Hotel with the station entrance opening onto Bathurst Street. Access to the OSD is provided from Pitt Street. Figure 2-2 illustrates the location of these entrance shafts.

The physical boundary of the Pitt Street Station is defined by the Minimum Clearance Outline, after handover from the Tunnels and Stations Excavation (TSE) Interface Contractor. The excavated station box, tunnels and adits will be handed over to the Station Contractor to construct the permanent structure within. Figure 2-3 illustrates the general arrangement.

The station structure integrates a proposed OSD at both the North and South entrances, allowing for construction of residential and commercial towers above the 'transfer level'. This ensures that

the future development can be constructed independently, without the need to interface or interrupt station operations below. The Over Site Developments (OSD) are a separate Contract from the Station Contract, except for the OSD enabling Works defined in SDD Schedule C1 – Appendix C1.

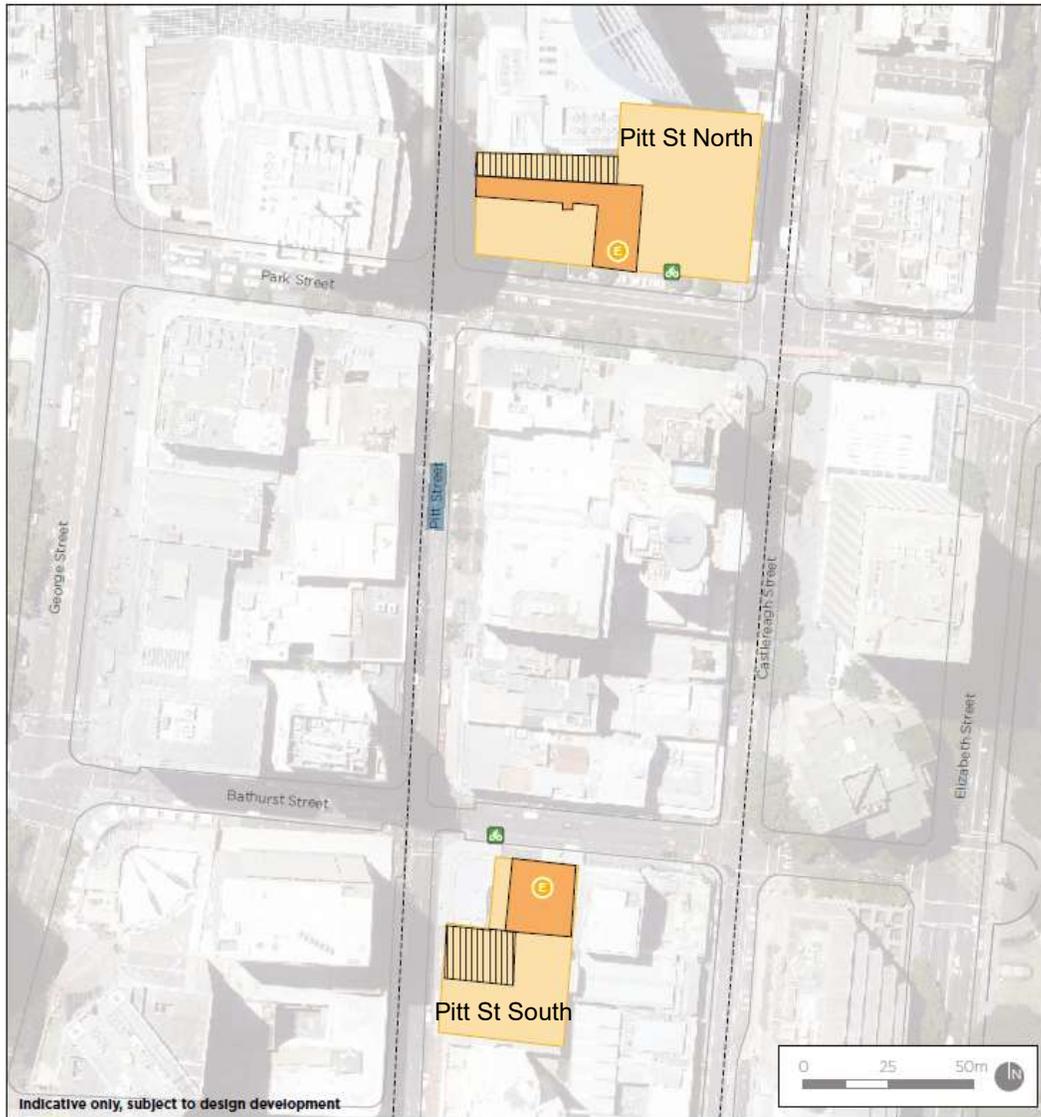


Figure 2-2: Pitt St Station location and indicative layout (Source: SMC&S EIS)

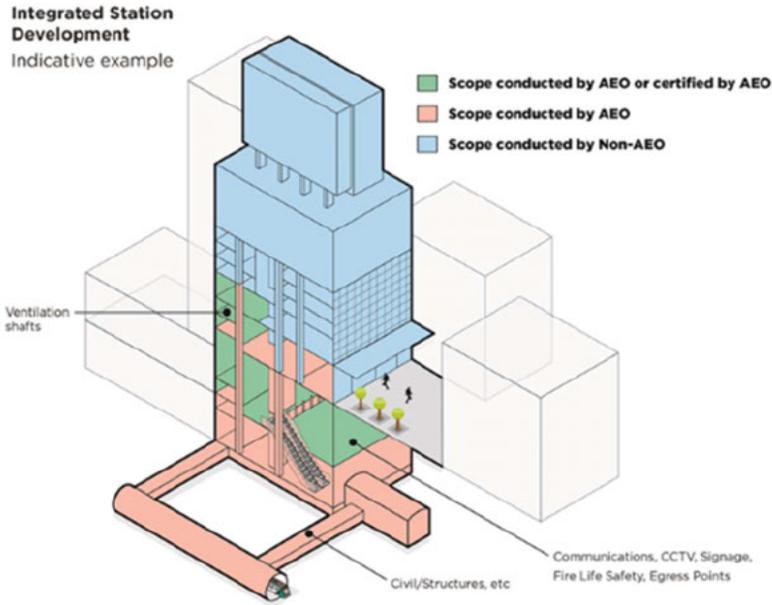


Figure 2-3: Integrated Station Development - General Arrangement

The project will be constructed in the following phases based on Packages approved through the NAC submission process and the Construction Certificate approvals:

Construction Phase	Works under construction	Timing
Early works	Foundations, works within tunnels and adits, inground works	2021 Q1 to Q3
Main Works - Structure	Concrete structure to both North and South Stations, Platforms and Adits	2021 Q2 to Q4
Main Works - Architectural	Architectural works to both North and South Stations, Platforms and Adits	2021 Q3 to 2023 Q2
Building Services	Above ground services works to both North and South Stations, Platforms and Adits	2021 Q3 to 2023 Q2
Civil and Landscaping Works	Above ground civil works and landscaping to both North and South Stations	2021 Q4 to 2023 Q2

2.2 Environmental Contract Requirements

The contractual requirements for the delivery of PS are included in the Obligations Register contained Appendix D2.3 and each of the sub-plans in Part C of this document.

Approval of application SSI 7400 provides for construction and operation of a metro line approximately 16.5 kilometers long (of which approximately 15.5 is in underground rail tunnels) between Chatswood and Sydenham (C2S), including construction of a tunnel under Sydney Harbour, links with the existing rail network, seven metro stations and associated ancillary infrastructure. The SMC&S project has been assessed and approved via the application under Part 5.1 of the Environmental Planning and Assessment Act 1979 (EP&A Act). SMC&S is declared as Critical State Significant Infrastructure (CSSI) and approval was granted on January 9th, 2017. Six (6) separate modifications have been determined (approved) under SSI 7400 to facilitate construction of additional ancillary infrastructure associated with the project. The scope of works that CPB will deliver are described above under section 2.1.

The Construction Environmental Management Framework (CEMF) sets out the environmental, stakeholder and community management requirements for construction and is part of the Environmental Impact Statement (EIS) documentation. In accordance with Condition of Approval (CoA) A12 of the CSSI 7400, PS is covered in *Chatswood to Sydenham Staging Report* (July 2019) that was developed by Sydney Metro. The Staging Report defines the CoA, Revised Environmental Management Mitigation Measures (REMM's) and the CEMF requirements that PS must address to deliver the station development works. Staging Report compliance requirements are managed via the project compliance tracking program. The Appendices A to C of the Staging Report details the applicability of the Planning Approval conditions and associated compliance documents to PSISD.

CPB's approach to compliance with Planning Approval Conditions and other regulatory requirements is provided in the Obligations Register (Appendix D1 and D2) and outlined in each of the sub-plans in Part C.

2.3 Environmental Policy and Culture

The CPB Contractors Environmental Policy describes the company's commitment to continual improvement in environmental performance and compliance with applicable legal requirements. CPB Contractors Pty Ltd Environmental Policy complies with ISO 14001:2015. This is contained in Appendix B1.

A project specific Environmental and Sustainability Policy (Appendix B2) has been prepared as per Appendix B which aligns with the Transport for NSW (TfNSW) Environmental Policy developed for

the Sydney Metro Delivery Office (SMDO). CPB Contractors Pty Ltd seeks to ensure that this policy, environmental procedures and Construction methods are understood, implemented and maintained by personnel at all levels involved with the Project. The Environmental and Sustainability Policy will be displayed at the site office and communicated to staff and other interested parties via inductions and ongoing awareness programs.

A positive environmental management culture will be established and fostered throughout the Project duration. This will be developed and maintained using the following proven techniques:

- Environmental responsibilities will be included in all relevant Position Descriptions. Roles that carry specific environmental accountabilities (e.g. those that supervise or manage work with specific environmental risks) will contain more detailed environmental management content;
- The environmental responsibilities contained in Position Descriptions will be communicated to each person by their immediate supervisor upon commencing in their role; and
- All personnel in leadership roles on the Project will participate in environmental management activities, including task observations, incident reviews and Safety, Health, Environment and/or Quality (SHEQ) meetings.

The Project management team will:

- Regularly review environmental performance against objectives and targets and raise corrective actions to maintain or improve environmental performance as necessary; and
- Address pertinent environmental matters at communication forums.

The Project Environmental and Sustainability Policy will be communicated during Project inductions, included in the project website and prominently displayed at the Project site.

Environmental key performance indicators (KPIs) for the Project are identified in Section 2.5.2. The associated KPIs include lead and lag indicators. Measurable targets will be set for each KPI and an applicable time frame nominated. The targets will be in line with CPB Contractors Group level and Business Unit targets.

Additional targets relevant to environmental performance during construction phase form part of the Sustainability Management Plan (SMCSWSPS-CPB-ALL-SU-PLN-000001). These targets are relevant to: reducing energy and fuel use; landfill avoidance of waste and supporting use of recycled materials; minimizing potable water use and maximizing non-potable water substitution; and reducing the embodied energy of materials.

Environmental management performance goals will be set and reviewed for individuals with environmental leadership roles during the performance and development review process.

Early and Project specific communication with regulatory agencies and the community will be prioritised during the Project start-up phase and will continue throughout Construction. Adoption of environmental regulatory guidelines and advice is standard practice for CPB Contractors during the development of Project specific documents and Construction techniques.

2.4 Legislative Requirements

Legislation relevant to the delivery of PS is included in Appendix D5. The register is reviewed at regular intervals using PS online subscription to EnviroLaw and updated with any applicable changes (refer to Part B - Element 3: Legal and Compliance Requirements and Appendix D). This section provides an overview of compliance requirements that the PS project team shall address during delivery of the station. The Obligation Register provides guidance on how PS will ensure regulatory and contract compliance. Any changes made to the legal requirements register will be communicated to the wider team as required.

CPB will comply and ensure that project works, and temporary works will follow all applicable laws, including any change in Law and any Environmental Notices arising out of or in connection with project activities.

2.5 Objectives and Targets

2.5.1 Key Objectives

The key objectives of this CEMP are to:

- Describe the package of works in detail, including activities to be undertaken and relative timing;
- Provide specific mitigation measures and controls that can be applied on-site to avoid or minimise negative environmental impacts;
- Provide specific mechanisms for compliance with applicable policies, approvals, licences, permits, consultation agreements and legislation;
- Describe the environmental management related roles and responsibilities of personnel;
- State the objectives and targets for issues that are important to the environmental performance of the Project; and
- Outline the monitoring regime to check the adequacy of controls as they are implemented during Construction.

The environmental performance outcomes identified in the EIS and further aspect specific objectives are included in the relevant Environmental Management Sub-Plans found in Part C.

2.5.2 Key Performance Indicators

KPI's for the Project are:

- No Class 1 or 2 incidents or High Potential Incidents (HPI);
- No Stop Work Recommendations; and
- Provide comprehensive environmental training based on environmental risks.

2.5.3 Performance Targets

The Project has set the following environmental performance targets. These include current business plan environmental targets for the Business Unit and the whole of CPB Contractors:

Table 2-1 Leading indicators

Key Performance Indicator	Target	Time Frame	Actions to be Taken	Accountability
SHEQ observations	Two observations conducted per member of leadership team per month	Each month	Two observations to be performed by each member of the leadership team per month	Project Director
Completion of inspections	All scheduled inspections of environmental controls occur	Each month	Inspections of environmental controls to be identified, scheduled and conducted	Site Supervisor

Table 2-2 Lagging indicators

Key Performance Indicator	Target	Time Frame	Actions to be Taken	Accountability
Class 1, 2 & HPI (high potential incident) environmental incidents	Zero	Ongoing	Implementation of the EMP	Project Director
Number of actions taken by regulators and/or client	Zero	At all times	Implementation of the EMP	Project Director
Number of unauthorised discharges	Zero	At all times	Implementation of Soil and Water Sub-Plan	Project Director
Damage to heritage items or places without relevant approvals	Zero	At all times	Implementation of Heritage Sub-Plan	Project Director
Fuel use and GHG emissions generated by the Project is captured and entered into JDE (NGER reporting requirement).	All use / emissions entered into JDE System	Monthly	Implementation Sustainability Management Plan	Project Director

2.6 Key Environmental Stakeholders

Consultation with stakeholders includes desk top reviews of draft plans and meetings to discuss development of plans. Records of meetings, written correspondence and reviews are maintained by CPB. The project team will address stakeholder comments and amend plans as required. Where required, evidence of consultation, endorsement and /or approval is included within documents annexures. Consultation with prescribed stakeholders will occur, as required, for the duration of delivery of the PS. The Community Communications Strategy (SMCSWSPS-CPB-ALL-CL-PLN-000001) provides an overview of stakeholder communications and liaison. Generally, it covers the following aspects:

- Procedures, processes and strategies for the management of community liaison issues and dealing with stakeholders;
- Community liaison reporting and process;
- Development and implementation of community and consultation tools;
- Community and stakeholder consultation and the procedures, processes and timeframes for undertaking consultation;
- Processes for the management of enquiries and complaints; and
- Processes for crisis management.

Key environmental stakeholders for the Project have been identified listed in Table 2-3 below:

Table 2-3 Stakeholder Information

Stakeholder Organisation	Consultation Strategy	Area of Interest	Key Contacts
Sydney Metro	As outlined in Community Communications Strategy (SMCSWSPS-CPB-ALL-CL-PLN-000001	The Proponent with ultimate responsibility for compliance with planning approvals.	Sam Fard Environment Manager
EPA	Direct communication as and when required. Sydney Metro to be updated.	Licensing, approvals, compliance with POEO Act.	Mark Janson
Environmental Representative (ER)	As outlined in Community Communications Strategy (SMCSWSPS-CPB-ALL-CL-PLN-000001	Projects environmental performance	Michael Woolley, Rui Henriques and Brett McLennan Healthy Buildings International Pty Ltd
Acoustic Advisor (AA)	As outlined in Community Communications Strategy (SMCSWSPS-CPB-ALL-CL-PLN-000001	Construction Noise and Vibration planning, management and mitigation outcomes in accordance	Daniel Weston and Carl Fokkema EMM Consulting

Stakeholder Organisation	Consultation Strategy	Area of Interest	Key Contacts
		with planning approvals	
DPE	Communication managed through Sydney Metro	Regulator for compliance with project planning approvals	Susan Harrison
NRAR (formerly DPI Water)	Direct Communication as and when required	Soil and Water Management and monitoring, Groundwater management and monitoring	Ellie Randall Water Regulation Officer
Heritage NSW, Department of Premier and Cabinet	Direct Communication as and when required	Heritage matters	Tim Smith Director – Heritage Operations
Interface Contractors	As outlined in Community Communications Strategy (SMCSWSPS-CPB-ALL-CL-PLN-000001)	Various	Systems Connect TSOM TSE
Sub-Contractors	As outlined in Community Communications Strategy (SMCSWSPS-CPB-ALL-CL-PLN-000001)	Various	

Stakeholder Organisation	Consultation Strategy	Area of Interest	Key Contacts
Sensitive receivers to the project	As outlined in Community Communications Strategy (SMCSWSPS-CPB-ALL-CL-PLN-000001	Various	
City of Sydney Council	As outlined in Community Communications Strategy (SMCSWSPS-CPB-ALL-CL-PLN-000001	Various including Construction Noise and Vibration, Traffic, Biodiversity matters, Soil and Water Quality Management, Environmental Nuisance	Elise Webster Water Regulation Officer
Renzo Tonin & Associates	Direct Communication as and when required	Acoustics Consultant	Thomas Taylor Principal Engineer
GBA Heritage	Direct Communication as and when required	Heritage	Graham Brooks Director
AMBS Ecology & Heritage	Direct Communication as and when required	Indigenous Heritage	Chris Langeluddecke Director Aboriginal Heritage

In accordance with condition A24 (j), minor amendments, to the CEMP will be submitted to the Environmental Representative (ER) and Sydney Metro for review and approval. Minor amendments to the CEMP and associated environmental management system are those that;

- are editorial in nature (e.g. staff and agency/authority name changes);
- are in response to audit findings or periodic reviews;
- are not considered to contradict the project planning approval and associated conditions;
- do not significantly alter the outcomes of the project such that a planning modification would be required by the Department;
- are not considered to carry significant environmental risk, in excess of those outlined in the project EIS; and will not impact surrounding communities.

3. Environmental Management System

3.1 System Overview

3.1.1 Governance documentation

The EMS is based on the requirements of the CPB Management System and has been specifically tailored to ensure compliance with Sydney Metro additional Environmental requirements. The Contract Management Plan provides more detail about 'The Way We Operate' and the process adopted to deliver against Sydney Metros overall requirements.

The CPB Contractors Management System is certified to conform to:

- AS/NZS ISO 14001:2016 Environmental management systems – Requirements with guidance for use.

Evidence of certification is included in Appendix A.

The CPB Management System has been developed and implemented to ensure a consistent approach to project delivery. The management system comprises the following components:

- A Policy is a statement of strategic intent and commitment and defines the minimum mandatory requirements that CPB Contractors expects all levels of the organisation to comply with.
- The Contract Management Plan outlines how the Project will be managed and it is supported by a suite of functional management plans.
- Procedures and Work Instruction specify how to undertake and control specific activities. They also list accountable roles and the tools and knowledge to be used. Where appropriate and approved by the respective Business Unit functional manager, project specific procedures may be produced to reflect specific project circumstances.
- Tools are preformatted documents such as forms and templates that are required to be completed as part of a Procedure.
- Knowledge documents are reference material to provide context, additional information or guidance to a Policy or Procedure.



Figure 3-1CPB Contractors Management System

- Business Applications are the software tools used to manage our business and support our operations.

3.1.2 Construction Environmental Management Plan

Each project team maintains a Project specific EMP (this document) and subsequent Sub-Plans that describes the actions to comply with each Element and Expectation. Implementation of the Project CEMP demonstrates due diligence by nominating and monitoring the following:

- Contractual environmental requirements are being fulfilled;
- The Project is compliant with all relevant environmental legislation; and
- The effect of environmental impacts on the community is minimised.

Table 3-1 below identified the key EMS documentation required to manage environmental aspects associated with delivery of PSISD works according to the SMC&S Staging Report. In summary, each of the key environmental categories listed in the table below will be primarily managed through a Plan or Sub-Plan that will cover requirements of the planning approval applicable to PSISD works.

Table 3-2 outlines the required reviews, endorsements and approvals of the CEMP and various sub-plans by relevant stakeholders.

Table 3-1 Key EMS Documents for delivery of PSISD

CEMF Environmental Management Category	SMC&S (SSI 7400) Staging Requirement	PSISD Compliance Document
Soil & Water	CEMP Procedure	Soil, Water and Groundwater Management Sub-Plan CEMP Part C-1
Groundwater	CEMP Sub-Plan	Soil, Water and Groundwater Management Sub-Plan CEMP Part C-1
Spoil	CEMP Sub-Plan	Spoil Management Sub-Plan CEMP Part C-2
Traffic	CoA E82 Construction Traffic Management Plan (CTMP)	Construction Traffic Management Plan SMCSWSPS-CPB-ALL-TF-PLN-000001
Heritage	CEMP Sub-Plan	Construction Heritage Management Plan SMCSWSPS-CPB-ALL-HE-PLN-000001
Flora & Fauna / Biodiversity	CEMP Procedure	Flora, Fauna and Biodiversity Management Sub-Plan CEMP Part C-4
Visual Amenity	CEMP Sub-Plan	Visual Amenity Management Sub-Plan

CEMF Environmental Management Category	SMC&S (SSI 7400) Staging Requirement	PSISD Compliance Document
		CEMP Part C-5
Materials	SMP Sub-plan	Sustainability Management Plan (Section 10.5) SMCSWSPS-CPB-ALL-SU-PLN-000001
Waste (and Recycling)	SMP Sub-plan	Waste and Recycling Management Sub-Plan CEMP Part C-6
Air Quality	CEMP Procedure	Air Quality Management Sub-Plan CEMP Part C-7
Noise & Vibration	CEMP Sub-Plan	Noise and Vibration Management Sub-Plan SMCSWSPS-CPB-ALL-EM-PLN-000004
Carbon & Energy	SMP Sub-plan	Sustainability Management Plan (Section 10.2) SMCSWSPS-CPB-ALL-SU-PLN-000001
Workforce Development	Workforce Development and Industry Participation Plan	Workplace Relations Management Strategy SMCSWSPS-CPB-ALL-WR-PLN-000001

¹CEMP/SMP/CTMP/WDIPP Sub-Plan – To be addressed in a standalone Sub-Plan of the CEMP/SMP/CTMP/WDIPP.

²CEMP Procedure – Can be addressed in a Procedure included in the CEMP

Table 3-2 Summary of reviews, endorsements and approvals of plans

Plan	SSI	Contractor's Internal Review & Approval	Sydney Metro Review	Government Agency / Stakeholder Consultation	ER Review & Endorsement prior to Implementation	ER Review & Endorsement prior to Secretary Submission	RMS Review & Approval	Secretary Review & Approval	ER Approval of Minor Amendments
CEMP	7400	✓	✓	•		✓		✓	
Spoil Management Sub-Plan	7400	✓	✓	•	✓				
Groundwater Management Sub-Plan (integrated in Soil, Water and Groundwater Management Sub-Plan)	7400	✓	✓	✓		✓		✓	
Noise & Vibration Management Sub-Plan	7400	✓	✓	✓		✓*		✓	
Heritage Management Sub-Plan	7400	✓	✓	✓		✓		✓	
Flora & Fauna / Biodiversity Management Sub-Plan	7400	✓	✓	✓		✓		✓	

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 Date Published: 25/09/2019

Management System - Uncontrolled Document when Printed

Plan	SSI	Contractor's Internal Review & Approval	Sydney Metro Review	Government Agency / Stakeholder Consultation	ER Review & Endorsement prior to Implementation	ER Review & Endorsement prior to Secretary Submission	RMS Review & Approval	Secretary Review & Approval	ER Approval of Minor Amendments
Visual Amenity Management Sub-Plan	7400	✓	✓	•	✓				
Soil & Water Management Sub-Plan (integrated in Soil, Water and Groundwater Management Sub-Plan)	7400	✓	✓	✓		✓		✓	
Air Quality Management Sub-Plan	7400	✓	✓	•		✓		✓	
Construction Traffic Management Plan	7400	✓	✓	✓		✓	✓	Submit to Secretary for info only	
Waste and Recycling Management Sub-Plan	7400	✓	✓	•	•				

✓* Construction Traffic Management plan is reviewed and endorsed by stakeholder members of the TTLG including relevant Council, RMS and the Sydney Coordination Office.

✓** Consultation with the EPA and the relevant council(s).

• At the discretion of Sydney Metro (i.e. not strictly a project requirement).

3.2 Hold Points

The activities below are not to proceed without objective review and approval by the nominated authority and are considered hold points.

Table 3-3 Hold Points

Hold Point Details	Responsibility	Timing
SSI7440 Condition C8 - Construction is not to commence until the CEMP and Sub-Plans have been approved by the Secretary (DPE).	Project Director	Prior to commencement of any construction
SSI7440 Condition C14 – Construction is not to commence until the Secretary has approved all of the required Construction Monitoring Programs, and all relevant baseline data for the specific construction activity has been collected.	Project Director	Prior to commencement of any construction

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 Date Published: 25/09/2019

Management System - Uncontrolled Document when Printed

Hold Point Details	Responsibility	Timing
Construction is not to commence until the Pre-Construction Compliance Report (PCCR) has been submitted to the Secretary	Project Director	Prior to commencement of any construction
Stop work immediately if visible dust is leaving site. Dust must be minimised to the greatest extent practicable. Refer to the Air Quality and Dust Management Procedure (SMCSWSPS-CPB-ALL-EM-PRO-000001)	Environmental Coordinator Project Engineer Site Supervisor	Prior to and during works
Stop work immediately if unexpected heritage finds, including human remains, are discovered. Contact site Supervisor immediately and install temporary exclusion fencing. Project Director is to notify SM. Refer to Unexpected Finds Heritage and Human Remains Procedure (SMCSWSPS-CPB-ALL-HE-PRO-000002)	Site Supervisor Environmental Coordinator Project Director	If required during works
No water will be discharged from the site without written approval of the Environment Manager (or delegate). All water will be tested (and treated if required) prior to discharge from the site to ensure compliance.	Environment Manager	Before discharge
Dewatering to be undertaken in accordance with the Water Management Procedure (SMCSWSPS-CPB-ALL-EM-PRO-000007)	Site Supervisor Environmental Coordinator	Before discharge
Spills must be contained and cleaned-up immediately. All spills must be reported to the environment team regardless of quantity or location. Refer to the Spill Management Procedure (SMCSWSPS-CPB-ALL-EM-PRO-000004)	Site Supervisor Environmental Coordinator	During Works
Detailed, staged Erosion and Sediment Control Plans (ESCPs), including details of temporary stockpiles locations and management, must be developed and implemented prior to commencement of ground disturbance. Refer to the Erosion and Sediment Control Management Procedure (SMCSWSPS-CPB-ALL-EM-PRO-000002)	Environmental Coordinator Project Engineer Site Supervisor	Prior and During Works
Any work to be undertaken outside of Standard Construction Hours will require the completion of an Out of Hours Work Approval form. This requires approval from the Construction Manager, Stakeholder and Community Relations Manager, Environment Manager and might require endorsement by the ER	Project Engineer Environmental Coordinator Senior Project Engineer	Prior and During Works

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 **Date Published:** 25/09/2019

Management System - Uncontrolled Document when Printed

Hold Point Details	Responsibility	Timing
based on the criteria detailed in the Noise and Vibration Management Sub-Plan. Also refer to the Out of Hours Work Procedure (SMCSWSPS-CPB-ALL-CM-PRO-000001)	Stakeholder and Community Relations Manager Acoustic Advisor Environmental Representative	
Stop work if presence of potential contamination is discovered. Prevent further activity in the area. Notify the Site Supervisor and Environment Coordinator and cordon off area (to be marked on the SEP). Refer to the Unexpected Finds Soil Contamination and Asbestos Procedure (SMCSWSPS-CPB-ALL-EM-PRO-000006)	Site Supervisor Environmental Coordinator	During Works
If any unexpected Flora and Fauna finds are encountered refer to the Flora and Fauna Unexpected Finds Procedure (SMCSWSPS-CPB-ALL-EM-PRO-000003)	Environmental Coordinator Project Engineer Site Supervisor	Prior to and during works

Additional hold points may be developed as required during the PSISD project works.

3.3 Aspect Specific Procedures

Aspect specific flowchart Procedures have been developed to guide implementation of risk management processes identified in the CEMP, Plans and Sub-Plans.

These procedures have been developed for use on site by the construction workforce and provide step by step instruction for management and mitigation of potential environmental impacts, including:

- Flowchart diagrams for any required processes or steps to be undertaken. They provide an easy reference point for all site personnel;
- Detail the 'how to', 'dos' and 'don'ts' and hold points for the implementation of controls;
- Define management and mitigation measures;
- Define monitoring and reporting requirements;
- Reference to relevant checklists and forms which are fully electronic to reduce reliance on paper systems and ensure data capture.

They provide a comprehensive and informative means of communicating environmental management requirements to site personnel. Existing Sydney Metro procedures have been used as the basis for these.

The Project Environment Manager will review internal hold points identified in the Procedures and if required develop forms for the release of hold points. The Procedures will be revised and updated as construction progresses and in response to any issues identified during implementation.

Additional Procedures may be developed as required during delivery of the PSISD works. Details of initial procedures developed are provided in Table 3-4 .

Table 3-4 - Aspect Specific Environmental Procedures

Document Number	Procedure title
SMCSWSPS-CPB-ALL-EM-PRO-000003	Flora and Fauna Management
SMCSWSPS-CPB-ALL-EM-PRO-000002	Erosion and Sediment Control Management
SMCSWSPS-CPB-ALL-EM-PRO-000001	Air Quality and Dust Management
SMCSWSPS-CPB-ALL-CM-PRO-000003	Waste Management and Recycling Procedure
SMCSWSPS-CPB-ALL-EM-PRO-000005	Spoil Classification Reuse and Recycling
SMCSWSPS-CPB-ALL-EM-PRO-000007	Water Management
SMCSWSPS-CPB-ALL-CM-PRO-000001	Out of Hours Work
SMCSWSPS-CPB-ALL-EM-PRO-000008	Construction Noise and Vibration Procedure
SMCSWSPS-CPB-ALL-EM-PRO-000004	Spill Management
SMCSWSPS-CPB-ALL-EM-PRO-000006	Unexpected Finds Soil Contamination and Asbestos
SMCSWSPS-CPB-ALL-HE-PRO-000002	Unexpected Finds Heritage and Human Remains

3.4 Environmental Management tools

3.4.1 Site Environmental Plans

Site Environment Plans (SEPs) are prepared to provide site-specific detail and draw the relevant and specific information from the plans, studies and procedures discussed above. SEPs will be developed before the start of construction activities and reviewed as works progress. SEPs

highlight environmental constraints at the worksite, and detail key elements of the site set-up including environmental controls.

SEPs are progressively updated to provide clear and practical mitigation and management measures for each specific construction worksite as works progress. Each SEP will define site boundaries and include illustrative and descriptive management and control measures, e.g. haulage routes and sensitive receivers etc., and reference relevant Procedures that provide the comprehensive details into certain management controls/ measures in a clear step-by-step process. Appendix F contains the current SEPs at the date of this revision. Further updated SEP's will be updated throughout the construction as works change and will be displayed on site noticeboards and communicated through toolboxes.

3.4.2 Environmental Checklist and Forms

In addition to the Management Plans, Sub-Plans and Procedures, checklists and forms (tools) will continually be developed and implemented to assist the monitoring and record keeping requirements of the CEMP. A list of initial forms and checklists is provided below:

- Environmental Inspection Checklist via Enablon App
- Permit to Dewater
- Permit to Clear Land or Vegetation
- Materials Tracking Form
- Unexpected Finds Record Form
- Permit to Excavate and Penetrate
- Out of Hours Works Application Form
- Noise Monitoring Form
- Permit to Enter Protected or No-Go Areas

Tools are used during construction to ensure compliance with environmental obligations and commitments. Checklists and forms are tailored specifically to the requirements of CPB Contractors works. Forms are referenced in the Environmental Procedures and on the SEPs. Tools are developed in a specific format required for the appropriate recording of monitoring data.

3.5 Improvement

In addition to specifying the day-to-day environmental management of a project, each CEMP details activities to be performed to deliver continual improvement in environmental performance.

Continual improvement is achieved through constant measurement and evaluation, audit and review of the effectiveness of EMP and adjustment and improvement, project environmental outcomes, and CPB Contractors EMS.



Figure 3-2 Continual Improvement Mechanism

3.6 Interactions with Other Management Plans

This CEMP is part of an integrated set of project management plans. The table below sets out interactions of this CEMP with the other management plans implemented on PS. The specific linkages that exist between management plans are addressed thoroughly in Part B of this plan.

Table 3-5 Interactions with management plans

		CONTRACT MANAGEMENT PLAN				
		CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN				
Element of EMP	Technical	Construction & Site	Health & Safety	Procurement	Workplace Relations	Community & Communications
Leadership, Accountability and Culture			●		✓	
Planning			●	✓	●	
Legal and Other Compliance	✓	✓	●			●

CONTRACT MANAGEMENT PLAN						
CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN						
Element of EMP	Technical	Construction & Site	Health & Safety	Procurement	Workplace Relations	Community & Communications
Risk Management and Controls	✓	✓	✓	✓	●	
Change Management	●	●	●	●	●	●
Communication, Consultation and Participation			✓		✓	✓
Training and Competency			●		✓	
Subcontractor and Supplier Relationships	●		●	●		
Incident Management			✓			●
Emergency Planning and Response			✓	●	●	●
Document and Records Management	●	●		● ●	●	●
Auditing, Review and Improvement			✓	●		

- Element (or subject) also addressed in other management plans
- ✓ Other plan directly interfaces with the Construction Environmental Management Plan

4. Roles and Responsibilities

Appendix C and section 4.2 of this CEMP outlines roles and responsibilities with regards implementation of this CEMP on the PSISD project.

4.1 Collaboration and consultation with Sydney Metro

Figure 4-1 outlines the relationship between PSISD and the key Planning Approval delivery stakeholders: Sydney Metro, key regulatory stakeholders, the ER, Acoustics Advisor (AA), the Community Complaints Mediator (CCM) and the Independent Certifier (IC).

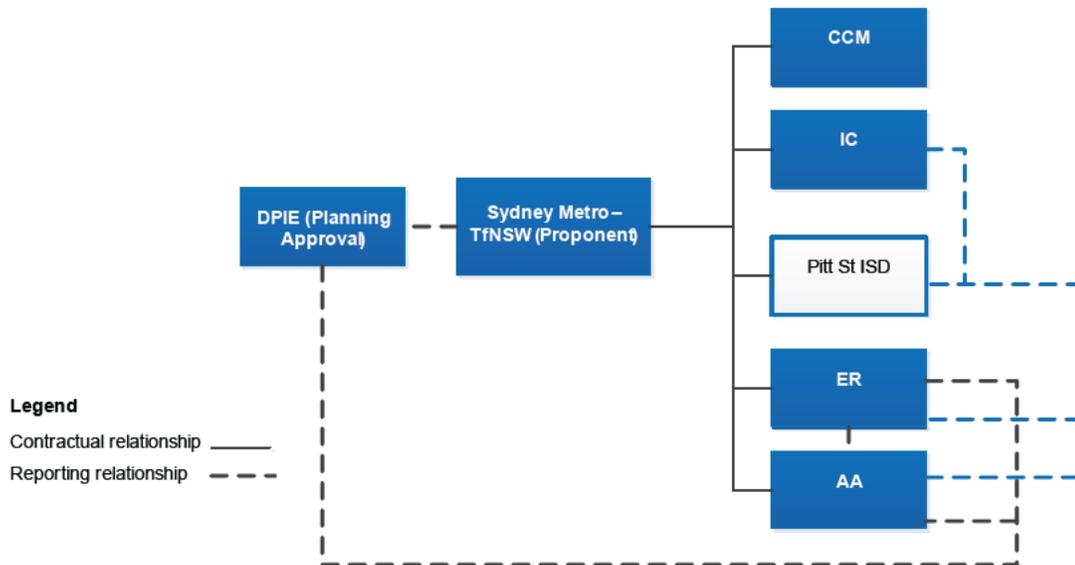


Figure 4-1- PSISD Key Stakeholder Relationships

4.2 PS Environment and Sustainability teams

The Environment Manager will lead the overall delivery of environmental performance and compliance with planning approvals for the duration of the project, supported by members of the construction team. The Sustainability Manager will oversee the implementation of sustainability performance and objectives during the delivery of the design. Specialist environmental consultants are engaged to support the management of specific environmental aspects (eg. noise and vibration). The team will work closely with the design, construction, commercial, quality, safety, planning and community teams. Transport for NSW (Sydney Metro). Figure 4-2 outlines the organizational structure of the environmental team.

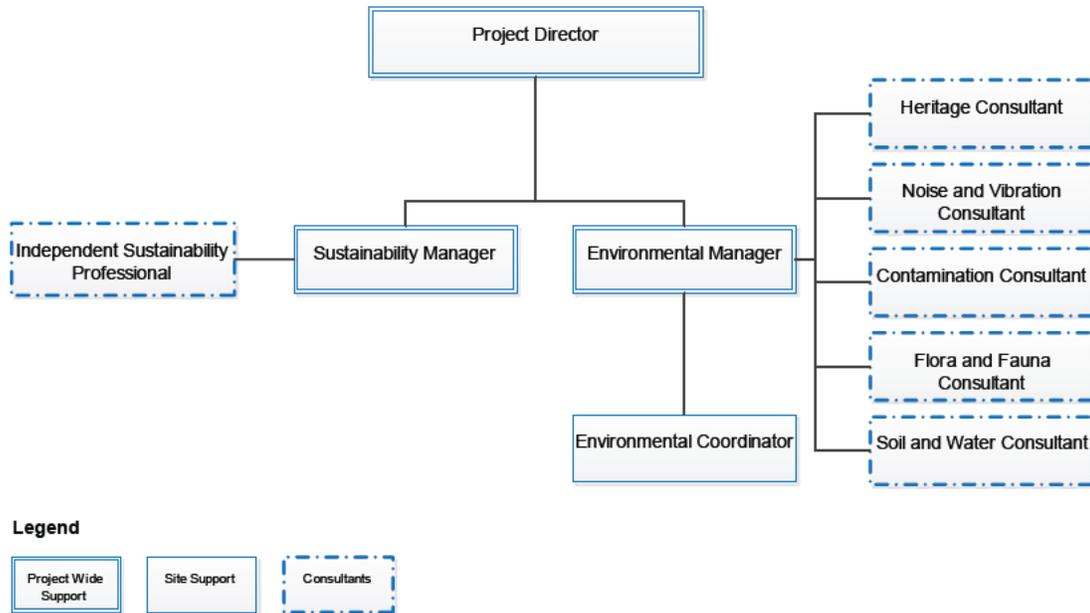


Figure 4-2– PSISD Organisational Chart

Table 4-1 and Table 4-2 outline the role and responsibilities of the Environmental and Sustainability Managers.

Table 4-1 Environmental Manager Role and Responsibilities

Environmental Manager	
Role	<i>Accountable for managing all aspects of environmental management, sustainability and compliance across delivery of PSISD Works</i>
Responsibility	<ul style="list-style-type: none"> • <i>Lead the creation of a consultative and proactive culture that ensures environmental compliance and “One HSE Culture” as a driver of work behaviours</i> • <i>Managing effective communication and consultation with Sydney Metro Environmental Manager, the projects independent Environmental Representative and Acoustic Advisor.</i> • <i>Develop and manage a team of planning, environmental and sustainability personnel and specialist consultants that are able and capable of leading contemporary innovative approaches and practices</i> • <i>Effectively lead and manage the development and implementation of a risk based environmental and sustainability management system for the PSISD Works, including review and continual improvement of this Plan</i> • <i>Ensure adequate environmental and sustainability participation at value engineering workshops</i>

Environmental Manager	
	<ul style="list-style-type: none"> • <i>Provide strategy advice, manage and oversee the granting and implementation of all required environmental and planning approvals, any necessary licences or approvals governing the PSISD Works</i> • <i>Provide specialist environment, planning and sustainability advice to the Project Director and other functional managers to facilitate design and construction</i> • <i>Oversee the development, implementation, assessment and verification of sustainability measures for all PSISD Works</i> • <i>Oversee proactive identification, assigning of responsibility, monitoring and review of environmental, sustainability and planning risks and performance expectations, goals and standards for managing all potential adverse impacts</i> • <i>Oversee the environmental management and sustainability induction and training program</i> • <i>Oversee the preparation of environmental assessments on design changes and obtain any necessary planning approvals</i> • <i>Oversee the environmental site monitoring, inspections and audits</i> • <i>Oversee investigation and close out of any environmental complaints in collaboration with the Stakeholder and Community Relations Manager</i> • <i>Oversee compliance tracking and reporting</i> • <i>In consultation with the Project Director, Area Managers and where relevant the Safety Manager manage, oversee investigation, corrective action and reporting of any environmental incidents.</i>
Authority	<ul style="list-style-type: none"> • <i>Appointed by the Project Director</i> • <i>Authorised to produce any correspondence and documentation necessary for approvals and environmental management</i> • <i>All correspondence and documentation that has legal, commercial or contractual impact must be viewed and agreed upon, by the Project Director</i> • <i>Authorised to require all reasonable steps to be taken to achieve environmental compliance</i>
Lines of Communication	<ul style="list-style-type: none"> • <i>Reports to the Project Director</i> • <i>Principal's Representative's, Environmental Representative, Acoustic Advisor, Community Complaints Mediator primary contact on environmental and sustainability matters</i> • <i>Primary government agency contacts for planning approvals, environmental management and sustainability.</i>
Minimum Skill Level	<ul style="list-style-type: none"> • <i>Tertiary qualification in environmental science and/or planning discipline or equivalent</i>

Environmental Manager	
	<ul style="list-style-type: none"> • <i>Recent relevant experience in environmental management on project similar to the PSISD Contractor's Activities</i> • <i>At least 10 years environmental management experience, with extensive experience in the preparation and implementation of environmental management systems and plans</i> • <i>In depth knowledge of current and emerging environmental issues contemporary environmental management practices and processes</i> • <i>Understand whole-of-business issues as they apply to environmental and sustainability systems at all levels</i>
Interface with project organizational structure	<ul style="list-style-type: none"> • <i>Member of the PSISD Senior leadership / Management Team</i> • <i>Attends environment, sustainability, design, safety, quality and construction meetings as required</i>

Table 4-2 Sustainability Manager Role and Responsibilities

Sustainability Manager	
Role	<i>Accountable for sustainability performance for all PSISD Works</i>
Responsibility	<ul style="list-style-type: none"> • <i>Member of the project team that has central responsibility for managing sustainability</i> • <i>Report annually on the implementation of sustainability initiatives and policy to senior management</i> • <i>Ensuring effective communication and consultation with Sydney Metro Sustainability representative and the projects independent Environmental Representative.</i> • <i>Respond to legislative changes</i> • <i>Establish program controls and reporting systems across project for performance monitoring against targets</i> • <i>Demonstrate continuous improvement to management systems as a result of senior management reviews</i> • <i>Ensure environmental, social and economic risks and opportunities are assessed and addressed</i> • <i>Ensure sustainability objectives, targets and/or indicators are reflected in project contracts</i>

Sustainability Manager	
	<ul style="list-style-type: none"> • <i>Provide sustainability training for procurement team and participate in industry engagement: holding forums with key suppliers to discuss the sustainability targets and commitments for the project</i> • <i>Provide advice to the sustainability team on delivery method implications</i> • <i>Provide leadership and technical direction to design, construction, commercial and operational personnel in relation to sustainability issues</i> • <i>Develop and implement the Sustainability Management Plan (SMCSWSPS-CPB-ALL-SU-PLN-000001), including the Carbon and Energy and Materials Management Sub-Plans, so that it is consistent with other plans (e.g. the CEMP)</i> • <i>Develop and deliver the sustainability training program for relevant project personnel and contractors</i> • <i>Interface with, and report to, key project stakeholders in relation to sustainability issues, including Sydney Metro, Infrastructure Sustainability Council of Australia (ISCA) and the Green Building Council of Australia (GBCA)</i> • <i>Manage sustainability performance and reporting, including performance tracking against the ISCA IS Rating Tool, TfNSW Sustainable Design Guidelines and any other relevant sustainability rating tools</i> • <i>Drive the achievement of the project's Sustainability Objectives and Targets and associated Key Performance Indicators</i> • <i>Manage the development and implementation of the SMP and associated sub-plans</i> • <i>Work collaboratively with procurement, design and construction leads to embed sustainability initiatives across the project</i>
Authority	<i>Appointed by the Project Director</i>
Lines of Communication	<ul style="list-style-type: none"> • <i>Reports to the Project Director</i> • <i>Primary contact for Principal's Sustainability Representatives</i> • <i>Environmental Representatives primary contact on sustainability matters</i> • <i>Primary government agency contact for sustainability</i> • <i>Coordinates with the Environment Manager and other functional managers to ensure the project's sustainability objectives and targets are achieved</i>
Minimum Skill Level	<ul style="list-style-type: none"> • <i>At least 5 years' sustainability management experience, with previous experience in the provision of sustainability advice on the design and construction of engineering</i> • <i>Previous experience applying the TfNSW Sustainable Design Guidelines to transport projects</i> • <i>Understanding of life cycle analysis, including life cycle costing</i>

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 **Date Published:** 25/09/2019

Management System - Uncontrolled Document when Printed

Sustainability Manager	
	<ul style="list-style-type: none"> • <i>Previous experience applying Greenstar Rating tools to building projects</i> • <i>In depth knowledge of current and emerging sustainability issues, practices and processes</i> • <i>Understand whole-of-business issues as they apply to sustainability systems at all levels</i>
Interface with project organizational structure	<ul style="list-style-type: none"> • <i>Attends environment, sustainability, design and construction meetings as required</i>

Table 4-3 outlines the role, authority and responsibility of other key PSISD personnel with respect to Environment and sustainability.

Table 4-3 Key Personnel – Environmental Responsibility and Authority

Project Role	Responsibility and Authority
Project Director	<ul style="list-style-type: none"> • Managing the delivery of the PSISD Works including overseeing Planning Approval and environmental management, including implementation of this CEMP • Authority to direct personnel and/or subcontractors to carry out actions to avoid or minimise unintended environmental impacts • Act as the Contractor's Representative • Ensuring effective communication and consultation occurs between the project team, the Sydney Metro Environmental and Sustainability Representatives, Environmental Representative and Acoustic Advisor.
Commercial Manager	<ul style="list-style-type: none"> • Ensure relevant sustainability requirements are considered in procuring materials and services
Engineering Manager	<ul style="list-style-type: none"> • Ensure relevant environmental and planning requirements are addressed in design development • Provide input to and review consistency of assessments on design changes

Project Role	Responsibility and Authority
Interface Manager	<ul style="list-style-type: none"> Ensures that relevant Planning and contract requirements are addressed via the interface process
Safety Manager	<ul style="list-style-type: none"> Ensure environmental and planning requirements are addressed in relevant safety documents Collaborative incident management and reporting in the event of safety incidents with a potential to cause environmental impact.
Stakeholder and Community Relations Manager	<ul style="list-style-type: none"> Assist the Environment Manager in consulting regulatory agencies Communicate sustainability initiatives and potential environmental impacts to the surrounding community Work collaboratively with the Environment and Sustainability Manager and Project Environment and Sustainability Manger to resolve environmental complaints.
Area Managers / Senior Project Engineers	<ul style="list-style-type: none"> Manage construction in relation to environmental management for their work activity in conjunction with the Project Environment Manger, Environment Advisor and environment coordinators Ensure compliance with this Plan, Sub Plans and Aspect Specific Management Plans and Procedures.
Project Engineers Site Engineers Supervisors	<ul style="list-style-type: none"> Implement and monitor onsite environmental management and compliance measures across all sites in conjunction with environmental coordinators Undertake site inspections, provide support to report on environmental performance.

Transport for NSW (TfNSW) is the Proponent under the EP&A Act with ultimate responsibility to DPE for compliance with the Project Planning Approvals. Personnel from Sydney Metro Project Delivery will ensure compliance with the Project Planning Approvals and Revised Environmental Mitigation Measure and obligations held by TfNSW, as set out in Schedule D3 of the Contract.

CPB will report to Sydney Metro as required to comply with regulatory approvals, statutory obligations and in accordance with the contract.

4.3 Environmental Representative

Sydney Metro have engaged Independent Environmental Representatives (ER) Michael Woolley, Rui Henriques and Brett McLennan (Healthy Buildings International Pty Ltd) in accordance with the Planning Approval Requirements, conditions A22-24 of SSI-7400 who have been approved by DPE.

The ER is an independent professional and represents the main point of contact regarding the Project's environmental performance. CPB understand that the role of the ER as defined in condition A24 varies, and as such, will undertake all necessary steps to ensure that any differences in CoA are managed in accordance with the Planning Approval. From the commencement of construction until completion of construction, that the approved ER must:

- a) receive and respond to communications from the Secretary in relation to the environmental performance of the CSSI;
- b) consider and inform the Secretary on matters specified in the terms of this approval;
- c) consider and recommend any improvements that may be made to work practices to avoid or minimise adverse impact to the environment and to the community;
- d) review documents identified in Conditions C1, C3 and C9 and any other documents that are identified by the Secretary, to ensure they are consistent with requirements in or under this approval and if so:
 - i. make a written statement to this effect before submission of such documents to the Secretary (if those documents are required to be approved by the Secretary), or
 - ii. make a written statement to this effect before the implementation of such documents (if those documents are required to be submitted to the Secretary for information or are not required to be submitted to the Secretary);
- e) regularly monitor the implementation of environmental management related documents to ensure implementation is being carried out in accordance with what is stated in the document and the terms of this approval;
- f) review the Proponent's notification of incidents in accordance with Condition A41 of this approval;
- g) as may be requested by the Secretary, help plan, attend or undertake Department audits of the CSSI, briefings, and site visits;
- h) if conflict arises between the Proponent and the community in relation to the environmental performance of the CSSI, follow the procedure in the Community Communication Strategy approved under Condition B3 of this approval to attempt to resolve the conflict, and if it cannot be resolved, notify the Secretary;
- i) review any draft consistency assessment that may be carried out by the Proponent, and provide advice on any additional mitigation measures required to minimise the impact of the work;

- j) consider any minor amendments to be made to the documents listed in Conditions C1, C3 and C9 and any document that requires the approval of the Secretary (excluding noise and vibration documents) that comprise updating or are of an administrative or minor nature, and are consistent with the terms of this approval and the documents listed in Conditions C1, C3 and C9 or other documents approved by the Secretary and, if satisfied such amendment is necessary, approve the amendment. This does not include any modifications to the terms of this approval;
- k) assess the impacts of minor ancillary facilities as required by Condition A18 of this approval; and
- l) prepare and submit to the Secretary and other relevant regulatory agencies, for information, a monthly Environmental Representative Report detailing the ER's actions and decisions on matters for which the ER was responsible in the preceding month (or other timeframe agreed with the Secretary). The Environmental Representative Report must be submitted within seven (7) days following the end of each month for the duration of works and construction of the CSSI, or as otherwise agreed with the Secretary.

The relationship between CPB, the ER and Sydney Metro is shown in Figure 4-1. CPB's obligations to the ER are defined in Schedule D3 of the Contract.

To support the ER, CPB will:

- Provide SM with all information, documents, details and data relating to the PS Contractor's Activities that could relate to the approved ER's functions and obligations
- Facilitate any actions necessary for the ER to carry out its functions and obligations
- Provide suitable company staff for ER inspections
- Consider and potentially adopt any of the ER's recommendations or improvements.

4.4 Acoustic Advisor

The independent Acoustic Advisors (AA) Daniel Weston and Carl Fokkema (EMM Consulting) are engaged by Sydney Metro and approved by DPE. The primary role of the AA is to independently oversee construction noise and vibration planning, management and mitigation in accordance with conditions A25-27 of the CoA for activities under SSI 7400.

The role of the Acoustic Advisor, as set in CoA A25 to A27, is to:

- Receive and respond to communication from the Secretary in relation to the performance of the CSSI in relation to noise and vibration;
- Consider and inform the Secretary on matters specified in the terms of this approval relating to noise and vibration;
- Consider and recommend, to the Proponent, improvements that may be made to work practices to avoid or minimise adverse noise and vibration impacts;
- Review all noise and vibration documents required to be prepared under the terms of this approval and, should they be consistent with the terms of this approval, endorse them before submission to the Secretary (if required to be submitted to the Secretary) or before implementation (if not required to be submitted to the Secretary);

- Regularly monitor the implementation of all noise and vibration documents required to be prepared under the terms of this approval to ensure implementation is in accordance with what is stated in the document and the terms of this approval;
- Notify the Secretary of noise and vibration incidents in accordance with Condition A41 of this approval;

In conjunction with the ER (where required), the AA must:

- Consider requests for out of hours construction activities and determine whether to endorse the proposed activities in accordance with Condition E47;
- As may be requested by the Secretary or Complaints Mediator, help plan, attend or undertake audits of noise and vibration management of the CSSI including briefings, and site visits;
- If conflict arises between the Proponent and the community in relation to the noise and vibration performance during construction of the CSSI, follow the procedure in the Community Communication Strategy approved under Condition B3 of this approval to attempt to resolve the conflict, and if it cannot be resolved, notify the Secretary;
- Consider relevant minor amendments made to any noise and vibration document approved by the Secretary that require updating or are of an administrative nature and are consistent with the terms of this approval and the document approved by the Secretary and, if satisfied such amendment is necessary, approve the amendment. This does not include any modifications to the terms of this approval;
- Assess the noise impacts of minor ancillary facilities as required by Condition A18 of this approval; and
- Prepare and submit to the Secretary and other relevant regulatory agencies, for information, a monthly Noise and Vibration Report detailing the AAs actions and decisions on matters for which the AA was responsible in the preceding month (or other timeframe agreed with the Secretary). The Noise and Vibration Report must be submitted within seven (7) days following the end of each month for the duration of construction of the CSSI, or as otherwise agreed with the Secretary.

The relationship between CPB, the AA and Sydney Metro is shown in Figure 4-1. CPBs obligation to the AA are defined in Schedule D3 of the Contract.

To support the AA CPB will:

- Provide Sydney Metro with all information, documents, details and data relating to the PS Contractor's Activities that could relate to the approved AA's functions and obligations;
- Facilitate any actions necessary for the AA to carry out its functions and obligations.

4.5 Independent Certifier

The role of the Independent Certifier (IC) with respect to the environmental management of the PS Works is set out in the Independent Certifier Deed. The IC will oversee implementation of environmental controls in accordance with this Plan and relevant aspect specific management plans.

The IC will report concurrently to CPB and Sydney Metro with respect to environmental monitoring. The relationship between CPB, the IC and Sydney Metro is shown in Figure 5-1.

4.6 Department of Planning & Environment (DPE)

The Department of Planning and Environment (DPE, Major Infrastructure Assessments) is responsible for assessing compliance with the Project Planning Approvals and any documents which need the specific approval of a representative of the Department. As shown in Figure 5-1 above, communications with the DPE is managed through Sydney Metro as they are the representative of the Proponent under the EP&A Act.

CPB will need to be fully involved in any communication with DPE about approvals and compliance with Project Planning Approval Conditions relevant to delivery of PSISD.

4.7 Stakeholder and Community Consultation

The Community Communications Strategy (SMCSWSPS-CPB-ALL-CL-PLN-000001) provides an overview of stakeholder communications and liaison. The Communications representative will inform stakeholders and the community of significant events or changes that affect or may affect individual properties, residences and businesses. Generally, it covers the following:

- Procedures, processes and strategies for the management of community liaison issues and dealing with stakeholders;
- Community liaison reporting and process;
- Development and implementation of community and consultation tools;
- Community and stakeholder consultation and the procedures, processes and timeframes for undertaking consultation;
- Processes for the management of enquiries and complaints; and
- Processes for crisis management.

The Environment team will work closely with the Community and Stakeholder Relations Manager to assist with the following:

- Responding to environmental complaints;
- Inform whenever construction activities (e.g. OOH, high noise, traffic changes, etc.) might affect properties, residences and business requiring previous consultation and notification; and
- Identify measures to minimise potential impacts on sensitive receivers near the construction area, within the scope of this CEMP and associated Plans and Sub-Plans.

5. Environmental Aspect and Impact Management

5.1 Key Environmental Aspects and Impacts

This Section of the CEMP has been developed to ensure that:

- All key environmental aspects are identified, and potential impacts are addressed across the staging of delivery in accordance with the staging reports;
- That there is a clear linkage between the aspects and impacts and the EMS documents used to manage and mitigate potential and actual harm to the environment and the community during delivery of PSISD; and
- To address other requirements not covered under the key environmental aspect's management.

5.2 Significant Environmental Hazards and Environmental Sub-plans

This CEMP includes Environmental Sub-plans for Significant Environmental Hazards (SEH), and Environmental Sub-plans for Other Environmental Hazards. As with all Environmental Hazards, SEHs have been identified through the review and analysis of environmental reports, contractual documents, community and legal compliance requirements relating to the Project, professional experience and the environmental risk register in Appendix G . Each of the Sub-plans listed below will be regularly reviewed during construction as the project risks are reviewed. The Environmental Risk Register (Appendix G) has been used to develop the required control mitigation measures for each of the sub-plans.

Table 5-1 Environmental Aspects and associated Environmental requirements

Environmental Hazards (Aspect)	Associated Significant Environmental Impact (Risk)	EMS Document (Control /Mitigation measure)
Air Quality	Dust and air pollution affecting public health, property and visibility on surrounding roads.	Air Quality Management Sub-Plan (CEMP Part C-7) <ul style="list-style-type: none"> ■ Air Quality and Dust Management Procedure
Soil, Water and Groundwater	Soil contamination; Pollution of water; Damage to groundwater dependent ecosystems; Contamination of Groundwater.	Soil, Water and Groundwater Management Sub-Plan (CEMP Part C-1) <ul style="list-style-type: none"> ■ Water Management Procedure ■ Unexpected Finds Soil Contamination and Asbestos Procedure ■ Spill Management Procedure

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 **Date Published:** 25/09/2019

Management System - Uncontrolled Document when Printed

Environmental Hazards (Aspect)	Associated Significant Environmental Impact (Risk)	EMS Document (Control /Mitigation measure)
		<ul style="list-style-type: none"> ■ Contingency Groundwater Monitoring and Management Procedure
Heritage and Aboriginal Heritage	Loss or damage to Heritage items or areas.	Construction Heritage Management Plan SMCSWSPS-CPB-ALL-HE-PLN-000001 <ul style="list-style-type: none"> ■ Unexpected Finds Heritage and Human Remains Procedure
Noise and Vibration	Reduced wellbeing in surrounding receivers; Impacting surrounding commercial activities causing loss of business; Damage to buildings or other structures. Complaints / negative publicity	Noise and Vibration Management Sub-Plan SMCSWSPS-CPB-ALL-EM-PLN-000004 <ul style="list-style-type: none"> ■ Out of Hours Works Procedure
Flora and Fauna	Loss of or harm to flora or fauna and habitats.	Flora and Fauna Management Sub-Plan (CEMP Part C-4) <ul style="list-style-type: none"> ■ Flora and Fauna Unexpected Finds Procedure
Waste and Recycling	Inadequate waste processing and disposal causing environmental harm and potential harm to public health; Depletion of raw materials.	Waste Management and Recycling Sub-Plan (CEMP Part C-6) <ul style="list-style-type: none"> ■ Waste Management and Recycling Procedure
Traffic Management	Disruption to public roads traffic; Damage to property, structures or members of the public getting injured.	Construction Traffic Management Plan SMCSWSPS-CPB-ALL-TF-PLN-000001
Visual Amenity	Light spill affecting surrounding receivers; Visual sensitivity.	Visual Amenity Management Sub-Plan (CEMP Part C-5)

The above terminology is consistent with ISO 14001 definitions, see below:

Environmental aspect:

element of an organization's activities or products or services that interacts or can interact with the environment.

Note 1: An environmental aspect can cause (an) environmental impact(s). A significant environmental aspect is one that has or can have one or more significant environmental impact(s).

Note 2: Significant environmental aspects are determined by the organization applying one or more criteria.

Environmental impact:

change to the environment, whether adverse or beneficial, wholly or partially resulting from an organization's environmental aspects.

5.3 Standard Construction Hours

Construction activities, as defined in the Planning Approvals, are to be undertaken during the following standard construction hours:

- 7:00am to 6:00pm Mondays to Fridays;
- 8:00am to 6:00pm Saturdays; and
- at no time on Sundays or public holidays.

CSSI_7400 Modification 9 granted 30 June 2022 extended the standard construction hours from 1pm to 6pm Saturdays.

Any work required outside of the standard construction hours must have an OOHW Approval. Further details about management of OOHW are provided in the Noise and Vibration Management Sub-Plan.

In the need for emergency construction in accordance with Condition E44(b), the ER and AA must be notified as well as the sensitive receivers most likely to be impacted by the works. It is noted that an EPL does not apply to this Project, however in the instance of environmental or material harm the EPA would be notified in accordance with the POEO Act. (Refer Part B Element 9.1).

5.4 Impacts on Property

The environmental aspects and impacts associated with the Project, as set out in section 5.1, have the potential to impact private or public property. All aspects and impacts will be managed in

accordance with the control / mitigation measures summarised in section 5.2 in order to eliminate or minimise any potential impacts on property and to prevent any damage.

An Independent Property Impact Assessment Panel (IPIAP) has been established by Sydney Metro as required by condition E62 to: independently verify the building condition surveys undertaken as required by conditions E59 and E 60; resolve property damage disputes and establish ongoing settlement monitoring requirements for the SMCSW project.

5.5 Damage or Disruption to Utilities and Services

Construction activities have the potential to impact upon existing utilities, services and other infrastructure assets. Within and around the worksites these may include in-ground services such as water, electricity, telecommunications and drainage services, and railway infrastructure.

CPB has in place a suite of management procedures, plans and tools for managing and controlling activities which have potential to damage, disrupt or otherwise impact upon utilities, services and similar assets. These are aimed at protecting both assets and people, and include:

- Procedures for managing work on or around services;
- Procedures for working in and around mobile plant;
- Construction Area Plans;
- Work Packs;
- Permit to Excavate or Penetrate; and
- Safe Work Method Statements.

The above management documents and tools incorporate processes for:

- Identifying and documenting utilities, services and other potentially affected infrastructure;
- Contacting and consulting with the owner or provider of any such assets that may be affected; and
- Determining and implementing all requirements for safely accessing, diverting and/or protecting such assets as applicable.

Part B: Implementation

6. Elements and Expectations

Part B of this Plan explains how the CPB Contractors EMS will be implemented. It is based on a set of 12 Elements that describe the requirements for environmental management in accordance with IS 14001. Compliance with all elements of the EMS will minimise the likelihood of causing unauthorised environmental harm and maximise the uptake of opportunities to reduce environmental impact in delivering PSISD works.

Part B contains the following:

Environmental Elements and Expectations: These describe what is required of the project to implement the objectives of the **Environment and Sustainability Policy Statement:**

- **Element** Key aspects for managing this function in delivering the PS
- **Expectation** The outcomes achieved as part of each Element.

Requirements: These are the specific actions required to demonstrate compliance with the Elements and Expectations.

Responsibility and Key Contributor: Designation of responsibility for achieving compliance with the stated Expectation. Key contributors assist/contribute to achieving compliance.

Deliverables: Tangible outcomes produced to demonstrate compliance with the environmental Elements and Expectation.

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 **Date Published:** 25/09/2019

Management System - Uncontrolled Document when Printed

This two-level hierarchy provides a consistent structure that is applied across all Management Plans on the Project. Those Elements are:

- Element 1: Leadership, Accountability and Culture
- Element 2: Planning
- Element 3: Legal and Other Requirements
- Element 4: Risk and Opportunity Management
- Element 5: Change Management
- Element 6: Communication and Consultation
- Element 7: Training and Competency
- Element 8: Subcontractor Relationships
- Element 9: Incident Management
- Element 10: Emergency Planning and Response
- Element 11: Document and Record Management
- Element 12: Auditing, Review and Improvement

Element 1: Leadership, Accountability and Culture

Expectations	How we will meet the Expectations (minimum requirements)	Responsible Key Contributor	Deliverables
<p>1.1 Environmental accountabilities, roles and responsibilities for managers, staff, employees and subcontractors are clearly defined, documented and communicated</p>	<p>Roles and Responsibilities</p> <p>Environmental responsibilities are included in all Position Descriptions. Roles that carry specific environmental accountabilities (e.g. those that supervise or manage work with specific environmental risks) will contain more detailed environmental content.</p> <p>The environmental responsibilities contained in Position Descriptions are communicated to each person by their immediate supervisor upon commencing in their role.</p>	<p>Project Director</p> <p>HR Manager</p> <p>Environmental Manager</p> <p>Relevant functional managers</p>	<p>Position Descriptions</p>
<p>1.2 Environmental leadership and commitment is demonstrated through measurable participation in environmental management</p>	<p>Participation and Measurement</p> <p>All personnel in leadership roles on the Project participate in environmental management activities, including observations, incident reviews and HSE committee meetings. In addition, project management will:</p> <p>Regularly review environmental performance against Project KPIs and raise corrective actions to maintain or improve environmental performance as necessary.</p> <p>Address pertinent environmental matters at communication forums.</p>	<p>Project Director</p> <p>Line managers</p> <p>Functional managers</p> <p>Supervisory staff</p> <p>Environmental Manager</p>	<p>Measurement system output to include:</p> <p>Observation records,</p> <p>Incident reviews,</p> <p>HSE Committee meeting attendance (minutes),</p> <p>delivering toolbox talks</p>
<p>1.3 Environmental expectations are clearly defined with appropriate reward and disciplinary processes in place.</p>	<p>Environmental Policy</p> <p>The CPB Contractors Environmental Policy and project specific Environmental Policy (Appendix B) will be communicated in project inductions and prominently displayed at the Project.</p> <p>Project Environmental Rules</p>	<p>Project Director</p> <p>All personnel</p>	<p>Environmental policy displayed and communicated in site inductions</p> <p>Project environmental rules</p>

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 Date Published: 25/09/2019

Management System - Uncontrolled Document when Printed

Expectations	How we will meet the Expectations (minimum requirements)	Responsible Key Contributor	Deliverables
	<p>The Project Director and Environmental Manager will assist in development of “Project Rules” during Project start-up to address key environmental matters. These rules will be documented, communicated and prominently displayed at the Project and will be reviewed at least every six months.</p> <p>Any person who breaches these rules will be managed in accordance with CPB Contractors requirements for counselling, discipline and, if needed, termination.</p>		KPIs defined (Part A)
	<p>Performance Targets</p> <p>Environmental performance targets for the Project have been identified in Part A of this document. The associated KPI include lead and lag indicators. Measurable targets have been set for each KPI and an applicable time frame nominated. The targets are in line with CPB Contractors Corporate and Business Unit targets.</p>	<p>Project Director Environmental Manager</p>	Monthly reports
	<p>Managing Personal Performance</p> <p>Environmental performance goals will be set and reviewed for individuals with environmental leadership roles (refer to Element 1.1 above) during the performance and development review process.</p>	<p>Project Director Line Managers</p>	Performance and development reviews

Element 2: Planning

Expectations	How we will meet the Expectations (minimum requirements)	Responsible Key Contributor	Deliverables
<p>2.1 Adequate resources are provided to effectively implement the EMP</p>	<p>Resources</p> <p>The Project budget includes sufficient allowances to implement the EMP, including people, technical environmental expertise, equipment, materials, training, plant, and infrastructure.</p> <p>The Environmental Manager is consulted in setting and revising (forecasting) the Project budget.</p> <p>Sufficient people are appointed to the Project to implement the EMP.</p>	<p>Project Director</p> <p>Commercial Manager</p> <p>Environmental Manager</p> <p>HR Manager</p>	<p>Project budget</p> <p>Project forecasts</p> <p>Organisational structure</p> <p>Training matrix</p> <p>Training schedule</p>
	<p>Environmental Monitoring</p> <p>The Environmental Manager is accountable for developing the Environmental Monitoring Schedule(s) prior to any works commencing on the project. The Environmental Manager will identify all equipment, equipment maintenance (including calibration) and personnel required to implement the schedule and ensure necessary allowances in the Project budget and forecasts.</p> <p>All environmental monitoring on the Project is planned according to the requirements of the Knowledge document Environmental Monitoring and is defined where relevant in the Environmental Sub-Plans within Part C of this Plan.</p>	<p>Environmental Manager</p>	<p>Environmental Monitoring Schedule(s)</p> <p>Environmental Sub-Plans</p> <p>Environmental input into Project budget</p> <p>Project forecasts</p>
<p>2.2 Business systems are defined and established</p>	<p>Define and set up IT Systems</p> <p>Applications required to management environment on the Project are defined and established prior to works commencing. Systems to be used include:</p> <ul style="list-style-type: none"> ▪ Synergy – Record water and waste data. Reporting and recording all environmental incidents, audit results and corrective actions (once module is finalized) 	<p>Project Controls Manager</p> <p>Environmental Manager</p>	<p>Applicable business systems</p>

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 Date Published: 25/09/2019

Management System - Uncontrolled Document when Printed

Expectations	How we will meet the Expectations (minimum requirements)	Responsible Key Contributor	Deliverables
	<ul style="list-style-type: none"> ▪ Synergy - To schedule all inspections and environmental monitoring activities and track completion of scheduled activities (once module is finalized) ▪ SHE Risk Register – To manage environmental risk registers ▪ JD Edwards (NGER module) to capture fuel and energy use and associated emissions. ▪ Aconex – Records and documents management and archiving ▪ Environmental Monitoring Spreadsheet – To capture and analyse all environmental monitoring data 		
2.3 Environmental Sub-Plans are prepared and maintained for Significant Environmental Hazards	<p>Identify Significant Environmental Hazards (SEH)</p> <p>Significant environmental hazards relating to the project activities have been identified through the review and analysis of environmental reports, contractual documents, and community and legal compliance requirements relating to the Project and supported by professional experience of the assessor. The project SEH list in Part A is reviewed by the Environmental Manager at a minimum of 6 monthly intervals. The review should be supported by the current environmental risk and opportunities identification and analysis assessment and project environmental performance.</p>	Environmental Manager	Significant Environmental Hazards and Environmental Sub-Plans listed in Part A Sub-Plans contained in Part C
	<p>Environmental Sub-Plans</p> <p>Environmental Sub-Plans (Part C) are reviewed for on-going relevance and accuracy by the Environmental Manager. The frequency of review is triggered by incident history, changes to the project, including contract variations, and management review requirements.</p> <p>Reviews are documented and records retained in the project document management system.</p>	Environmental Manager	Reviews of SEH and environmental Sub-Plans

Element 3: Legal and Other Requirements

Expectations	How we will meet the Expectations (minimum requirements)	Responsible Key Contributor	Deliverables
<p>3.1 Relevant legal, contractual and other requirements are identified and maintained in a legal and other obligations register</p>	<p>Identifying Environmental Obligations</p> <p>The Environmental Manager has reviewed the Contract, construction methodology and program and identified all:</p> <ul style="list-style-type: none"> ■ Contractual conditions specific to environmental management; ■ Regulatory approvals required and associated conditions; ■ Specific requirements of local, state and federal laws that are additional to the requirements of Project approvals using CPB Contractors' online subscription to EnviroLaw; and ■ Targets and objectives in CPB Contractors Business Unit or whole of CPB Contractors Business Plans. <p>The sources and details of, and means of compliance with the above, are captured within an Environmental Obligations Register.</p> <p>Documentary evidence must be available to show that all owners of obligations have been informed of their responsibility and are in a position to deliver the obligation.</p>	<p>Environmental Manager</p> <p>Project Director</p>	<p>Environmental Obligations Register(s)</p> <p>Business critical environmental obligations included in Project's Rights and Obligations Summary</p> <p>Project Management Plan (SMC&SSPS-CPB-ALL-PM-PLN-000001)</p>
<p>3.2 All necessary environmental approvals are obtained prior to commencing relevant works and surrendered on completion</p>	<p>Obtaining and Surrendering Environmental Approvals</p> <p>Approvals required to deliver the project are obtained prior to the commencement of any activities relating to the scope of the approval. The timing to obtain each necessary regulatory approval is determined and included within the Project program linked to relevant activities.</p> <p>Details of all approvals and licences (including applications and decision notices where appropriate) are maintained in the Project's Environmental Obligations Register.</p>	<p>Environmental Manager</p> <p>Engineers</p> <p>Project Director</p>	<p>Environmental approvals in program</p> <p>Environmental approval documentation</p> <p>Approval and licence conditions entered into Project's</p>

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 Date Published: 25/09/2019

Management System - Uncontrolled Document when Printed

Expectations	How we will meet the Expectations (minimum requirements)	Responsible Key Contributor	Deliverables
	<p>All regulatory approvals will be surrendered according to the requirements of the approval or, where not stated, as soon as practical following the completion of the activity to which the approval relates.</p> <p>An Environmental Obligations Register will be updated to include conditions associated with newly received regulatory approvals.</p>		<p>Environmental Obligations Register Updated</p> <p>Environmental Obligations Register</p>
<p>3.3 Work is planned and executed to ensure compliance</p>	<p>Planning for Compliance</p> <p>The Environmental Manager is consulted upon commencement of development of all Construction Area Plans (CAPs) and Work Packs, and throughout their development. All controls necessary to ensure compliance are included in the CAPs and Work Packs and in the Environmental Sub-Plans (Part C of this Plan).</p> <p>CAP's and Work Packs should include Site Environmental Plans that clearly shows the controls to be implemented. The Project program is updated to include new approvals determined to be necessary following the review of work plans.</p> <p>CAPs and Work Packs are reviewed by Environmental Manager prior to the commencement of works described in their scope.</p>	<p>Project Director</p> <p>Site Supervisor</p> <p>Engineers</p> <p>Environmental Manager</p> <p>Engineering Manager</p>	<p>Reviewed CAPs and Work Packs by Project Environmental Rep</p> <p>Update project program</p>
<p>3.4 Inspections, observations and monitoring are performed to ensure compliance is maintained</p>	<p>Implementing Controls</p> <p>Controls required to achieve compliance, as detailed in the CAPs and Work Packs, will be implemented before relevant works commence.</p> <p>The Environmental Obligations Register contains an explanation, or link to an Environmental Sub-Plan containing an explanation, of how compliance with each listed requirement is to be achieved and how the project will regularly demonstrate compliance with the requirement (if relevant).</p>	<p>Site Supervisor</p> <p>Engineers</p> <p>Environmental Manager</p>	<p>Engineered (physical) and administrative controls (e.g. procedures, forms, training) in place</p>
	<p>Inspections and Observations</p>	<p>Site Supervisor</p> <p>Engineers</p>	<p>Observation records</p> <p>Inspection schedules</p>

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 Date Published: 25/09/2019

Management System - Uncontrolled Document when Printed

Expectations	How we will meet the Expectations (minimum requirements)	Responsible Key Contributor	Deliverables
	<p>Controls are to be inspected regularly to ensure their ongoing suitability and effectiveness. Inspections and observations are planned and conducted according to the requirements of the Workplace Hazard Inspections and Observations Procedures. Inspections and observations are scheduled using Synergy and detailed in Appendix E.</p> <p>The outcomes of inspections are captured on the inspection checklists. Corrective actions are raised, tracked and closed out in the Synergy – Action Plan Module or through the inspection records (for actions closed out within 72 hours) for all controls found to be inadequate.</p>	Environmental Manager	<p>Inspection checklists</p> <p>Corrective actions in Synergy – Action Plan Module or inspection records</p>
	<p>Environmental and Sustainability Monitoring</p> <p>Environmental monitoring is carried out to confirm compliance with the conditions of environmental approvals and laws, and to provide early indication of potential adverse impacts to the environment or community. All monitoring is planned and conducted according to the requirements of the procedure Environmental Monitoring and as detailed in the Environmental Sub-Plans (Part C of this Plan).</p> <p>Environmental monitoring results are interpreted to identify actual and potential non-compliances and events that may result in nuisance, environmental harm, and unacceptable loss of amenity or community complaints. Corrective actions are taken immediately or are raised and managed using Synergy.</p>	Environmental Manager	<p>Environmental Monitoring Schedule</p> <p>Monitoring records</p> <p>Calibration records</p> <p>Corrective actions</p>
	<p>Hold Points</p> <p>SEPs and Procedures will clearly identify all 'Hold Points' established to ensure all required approvals, management and mitigation are in place and where relevant sign-off is required prior to works/ actions commencing or recommencing.</p>	Environmental Manager	Engineered (physical) and administrative controls (e.g. procedures, forms, training) in place
3.5 All non-compliances are reported as incidents	Reporting Non-Compliances	Environmental Manager	Incident reports

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 Date Published: 25/09/2019

Management System - Uncontrolled Document when Printed

Expectations	How we will meet the Expectations (minimum requirements)	Responsible Key Contributor	Deliverables
	<p>All non-compliances with conditions of approval are reported to Sydney Metro and the ER in accordance with requirements of <i>Sydney Metro Environmental Incident Classification and Reporting Procedure</i> (SM ES-PW-303). In addition, all non-compliances are recorded and reported internally as incidents in CPB's incident reporting tool <i>Synergy</i>. This includes events involving an action being taken against the project by a regulator or the ER. Details of all non-compliances will be reported during the monthly report.</p> <p><i>Synergy</i> is an internal incident management system used across CPB and will detail the following information with regards to non-compliances:</p> <ul style="list-style-type: none"> • <i>Date raised and by whom</i> • <i>Description of the system deficiency (non-compliance)</i> • <i>Cause and proposed remedy and action to prevent recurrence</i> • <i>Reinspection information</i> • <i>Date closed and by whom</i> <p>Details included in non-compliance reports will be specific to the event that has taken place.</p> <p>Environmental or sustainability non-compliance</p> <p>An environmental or sustainability non-compliance (against requirement of Conditions of Approval CSSI 15_7400) can generally be defined as a failure to comply with:</p> <ul style="list-style-type: none"> ▪ Relevant environmental legislation; ▪ Project Planning Approval; ▪ Environment Protection Licence (where applicable); ▪ Deed; and ▪ Relevant Environmental Management Plans/Sub-Plans. 	All personnel	<p>Inspection records</p> <p>Audit records</p>

Expectations	How we will meet the Expectations (minimum requirements)	Responsible Key Contributor	Deliverables
	<p>Where a non-compliance is raised as part of an audit or an incident or complaint investigation the audit, incident or complaint report may be used to close out the non-compliance and it is not necessary to raise a separate non-compliance reporting process.</p> <p>Corrective and Preventative Actions</p> <p>Corrective actions will be identified as follows:</p> <p>Where an issue is identified and raised, the Environment Manager or delegate will liaise with the appropriate CPB personnel or qualified person(s) to determine the most appropriate corrective action to implement.</p>		
<p>3.6 All energy and greenhouse data are collected and entered into JDE</p>	<p>Greenhouse and Energy</p> <p>All subcontractor fuel use to be collated and entered into the JDE NGER Module at the site level.</p> <p>Projects will track subcontractor energy reporting.</p> <p>All relevant records relating to the reporting of NGER data will be retained with project records for seven years.</p> <p>Any NGER data to be reported to the Client will be extracted from JDE using the Business Intelligence Tool.</p> <p>All energy (fuels, oils, greases, gases, electricity, solvents) purchased by CPB Contractors and processed through JDE are captured centrally at the Group level.</p>	<p>Environmental Manager Commercial Manager Project Director</p>	<p>NGER subcontractor register</p> <p>NGER data checklist</p> <p>Completed NGER subcontractor records</p> <p>Monthly HSE Statistical reports</p>
<p>3.7 Personnel on the site have access to current versions of relevant legislation, standards and codes of practice</p>	<p>Updates to Legislation, Standards and Codes of Practice</p> <p>Access to all relevant legislation will be available to personnel via EnviroLaw or other online resources (e.g. state or Commonwealth government websites or www.austlii.edu.au).</p> <p>Updates to legislation, standards and codes of practice will be reviewed to determine relevance.</p>	<p>Business Unit Environmental Representative Environmental Manager</p>	<p>Updates distributed</p>

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 Date Published: 25/09/2019

Management System - Uncontrolled Document when Printed

Expectations	How we will meet the Expectations (minimum requirements)	Responsible Key Contributor	Deliverables
	<p>Work practices, the environmental Sub-Plans attached to this EMP, and Environmental Obligations Register will be altered where appropriate to ensure compliance and all affected personnel informed in a timely manner.</p> <p>Regulatory approvals will be obtained or amended as necessary, work practices altered to ensure compliance and all affected personnel informed in a timely manner.</p>		
<p>3.8 Compliance tracking and reporting is performed as per contract requirements</p>	<p>Compliance Tracking and Reporting</p> <p>Tracking of compliance against planning, licensing and permit conditions held by CPB will be undertaken in accordance with SM's Compliance requirements.</p> <p>Sydney Metro has developed a Compliance Tracking Report to incorporate the PSISD project under SSI 7400. Compliance will entail population (by CPB) of SM's Compliance Tracking Report template each quarter. This completed template will be forwarded to the ER for endorsement (and submission to the Director General) through the project Document Management System. A Pre-Construction Compliance Report (PCCR) is required in accordance with conditions A31 and A32 to be submitted to DPE prior to the commencement of construction and subsequent compliance reports at 6 monthly intervals.</p> <p>In accordance with the contract requirements, CPB will provide the SM with:</p> <ul style="list-style-type: none"> A. all the information, documents, details and data relating to the PSISDs Activities to enable the SM to comply with condition of approval A28, A29, A30, A31, A32, A34, A35, A40 and D9; B. participate in any activities necessary under the Compliance Tracking Program. 	<p>Environment Manager</p>	<p>Compliance Tracking Report</p> <p>Pre-Construction Compliance Report</p> <p>Construction Compliance Report</p>

Element 4: Risk and Opportunity Management

Expectations	How we will meet the Expectations (minimum requirements)	Responsible Key Contributor	Deliverables
<p>4.1 Systematic processes are defined and implemented for identifying environmental risks and opportunities at all stages of the Project</p>	<p>Identifying Environmental Risks and Opportunities</p> <p>Environmental risks and opportunities associated with activities, products and services of the project will be identified, recorded and tracked in the Project Environmental Risk and Opportunity Register. The Environmental Risk and Opportunity Register is an excel Spreadsheet contained in the Project Management System. Any environmental risks identified as critical will also be captured and monitored via the Project Risk Register.</p> <p>Environmental risks and opportunities are considered during all subsequent project risk assessments as per the Contract Management Plan. This includes:</p> <ul style="list-style-type: none"> ▪ The Principal Risk Assessment conducted at bid stage for major tangible risks; ▪ Safety/Environment-in-Design workshops conducted throughout the Project; ▪ CAP risk assessments; ▪ Work Pack risk assessments; and ▪ Project Prestart Meeting. <p>The Environmental Manager is involved in the Principal Risk Assessment and Safety/Environment-in-Design workshops and has approval authorities for all other risk assessment types (except for START/Restart Cards) to ensure environmental risks and opportunities are adequately raised and addressed.</p>	<p>Project Director</p> <p>Environmental Manager</p> <p>Engineering Manager</p> <p>Engineers</p> <p>Site Supervisor</p>	<p>Environmental Risk and Opportunity Register</p> <p>Construction Area Plan risk assessments</p> <p>Project Prestart Meeting</p>
<p>4.2 Identified risks and opportunities are analysed and evaluated according to agreed criteria and recorded in a risk register</p>	<p>Analysing Environmental Risks and Opportunities</p> <p>Each environmental risk and opportunity will be evaluated and assigned a rating which is determined using the consequence and likelihood criteria in the Risk Management Procedure. The influence of existing controls is considered in determining the risk rating.</p> <p>For each environmental risk:</p> <ul style="list-style-type: none"> ▪ An owner is assigned by the Project Director; 	<p>Project Director</p> <p>Risk owners</p> <p>Environmental Manager</p> <p>Engineers</p>	<p>Environmental Risk and Opportunity Register</p>

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 Date Published: 25/09/2019

Management System - Uncontrolled Document when Printed

Expectations	How we will meet the Expectations (minimum requirements)	Responsible Key Contributor	Deliverables
	<ul style="list-style-type: none"> ▪ Existing controls are recorded, including the owner of that control; and ▪ The residual risk will be evaluated. <p>Opportunities will be assessed to determine whether or not they can be implemented on the project and be based on a cost-benefit business case for the opportunity.</p> <p>Advice is sought from the Environmental Manager as necessary by the project team to ensure CAP, Work Pack and SEP risk assessments are as informed and accurate as possible.</p>		<p>Construction Area Plan risk assessments Project Prestart Meeting</p>
<p>4.3 Environmental controls appropriate to the level of risk are identified, documented and implemented</p>	<p>Identifying Adequate Controls</p> <p>If the risk rating returns a result of 'medium' or above, then additional controls sufficient to reduce the risk rating to 'low' or an alternative acceptable level using cost effective designs and engineering and/or administrative controls are to be utilised. Residual risks with a high or extreme risk rating will be considered 'significant' and must be controlled using appropriate systems of work, including Environmental Sub-Plans and project work procedure, along with available "hard controls". Approval to proceed is required prior to commencing.</p> <p>Accountability for the implementation of each control is assigned in the respective Sub-plan and SEPs and a due date set for its implementation as appropriate. Controls are selected in consultation with the Environmental Manager to achieve the following, in order of preference:</p> <ul style="list-style-type: none"> ▪ Eliminate the risk by not performing the relevant activity; ▪ Substitute by performing the relevant activity in a way that presents a lower risk; ▪ Implement physical (engineered) controls (e.g. sediment basins, check dams); and ▪ Implement administrative controls (e.g. procedures, training, inspections). 	<p>Risk owners</p> <p>Environmental Manager Project Director Project Engineers</p>	<p>Controls agreed (engineered or administrative)</p>

Expectations	How we will meet the Expectations (minimum requirements)	Responsible Key Contributor	Deliverables
	<p>Implementing Controls</p> <p>Controls are implemented by the accountable person as specified in the Sub-Plan or SEP by the due date. No activity is commenced until all relevant controls are implemented.</p>	<p>Risk owners</p>	<p>Controls in place (engineered or administrative)</p>
<p>4.4 Feasible opportunities are implemented</p>	<p>Implementing Opportunities</p> <p>Opportunities identified and for which a business case has been developed, are submitted to the appropriate member of the project leadership team for approval. Once approved, accountability for implementation of the opportunity is assigned and the opportunity is implemented. Environmental and cost benefits are recorded and reported in monthly reporting.</p>	<p>Project Director Opportunity Owner</p>	<p>Monthly reports Case studies</p>
<p>4.5 Identified environmental risks and controls are communicated to all relevant personnel</p>	<p>Communications in line with Construction Planning</p> <p>The environmental risks, controls and accountabilities identified are communicated to all relevant personnel. This is achieved through the preparation and communication of the construction methodology, CAPs, Work Packs, SEPs, the conduct of Safety/Environment-in-Design workshops.</p>	<p>Project Director Engineers Environmental Manager</p>	<p>Toolbox talk content and attendee records Pre-start meeting content Records of communications and meetings</p>
	<p>HSE Communications</p> <p>Environmental risks, controls and accountabilities are also communicated through delivery of HSE communications, including HSE Committee meetings, toolbox talks and pre-start meetings.</p>	<p>Engineers Site Supervisor Environmental Manager Project Director</p>	<p>Site induction content Toolbox talk content and attendee records</p>

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 **Date Published:** 25/09/2019

Management System - Uncontrolled Document when Printed

Expectations	How we will meet the Expectations (minimum requirements)	Responsible Key Contributor	Deliverables
	<p>Communication through Training</p> <p>Nominated administrative controls, including procedures and training, will be communicated through the delivery of training in their requirements. The planning and delivery of this training is provided according to the requirements of Workplace Relations Management Plan.</p>	<p>Health and Safety Manager</p> <p>Environmental Manager</p> <p>P&C Manager</p>	<p>Pre-start meeting content</p> <p>Records of communications and meetings</p> <p>Training schedule</p> <p>Training matrix</p> <p>Training records</p>
<p>4.6 Regular inspections and monitoring are conducted to check effectiveness of controls</p>	<p>Inspections, Observations and Monitoring</p> <p>The processes for inspections, observations and monitoring are described in Expectation 3.4 of this EMP and detailed in Appendix E.</p>	<p>Environmental Manager</p> <p>Project Director</p> <p>Engineers</p> <p>Site Supervisor</p>	<p>Observation records</p> <p>Inspection schedules</p> <p>Inspection checklists</p> <p>Corrective actions in Synergy</p>
<p>4.7 Environmental risks and controls are regularly reviewed.</p>	<p>Risk Review</p> <p>The relevance and adequacy of environmental risks and controls identified in this EMP, the Principal Risk Assessment, CAP and Work Pack risk assessments are reviewed and updated according to Contract Management Plan and MIRRA schedule (Appendix E).</p>	<p>Project Director</p> <p>Environmental Manager</p> <p>Engineers</p>	<p>Environmental Risk Register</p> <p>Updated risk registers, CAPs and Work Packs</p>

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 **Date Published:** 25/09/2019

Management System - Uncontrolled Document when Printed

Element 5: Change Management

Expectations	How we will meet the Expectations (minimum requirements)	Responsible Key Contributor	Deliverables
<p>5.1 Changes to planned operations that have potential environmental consequences are identified</p>	<p>Identifying Change</p> <p>Personnel promptly report any 'medium' or 'major' changes that could affect the environment and/or community.</p> <p>A 'medium' or 'major' change could result from a change to design, plant (fixed and mobile), systems, personnel and work methods such that the absence of a considered review could compromise the project's ability to comply with its obligations and/or result in an inadequate range of controls which could lead to an incident or result in community nuisance.</p> <p>A 'medium' change is one which includes permanent changes to Work Pack methodology or work conditions. A 'major' change is one which is site-wide or requires a revision of CAP's.</p> <p>Personnel have received appropriate training to identify changes and apply change management processes. This includes all supervisory staff being informed of the need to have changes approved prior to commencing relevant works.</p>	<p>Project Director</p> <p>Environmental Manager</p> <p>Engineering Manager</p> <p>Engineers</p> <p>Site Supervisor</p>	<p>Change Requests</p> <p>Training matrix</p> <p>Training records</p>
<p>5.2 Risks associated with identified changes are assessed and controlled before changes are implemented</p>	<p>Risks Associated with Change</p> <p>All proposed changes are documented, including the assessment of risks relating to the change. Key personnel affected by the change are involved in the risk assessment. All changes are requested or sponsored by a supervisor or manager, who then becomes the change owner. Input from environmental personnel is sought as necessary.</p> <p>The approach to risk assessment and the implementation of controls will follow the requirements of Element 4 of the EMP.</p>	<p>Project Director</p> <p>Site Supervisor</p> <p>Environmental Manager</p>	<p>Change Requests</p> <p>Revised risk assessments</p>

Expectations	How we will meet the Expectations (minimum requirements)	Responsible Key Contributor	Deliverables
	<p>Where the requirement for an additional environmental assessment is identified, this will be undertaken prior to undertaking any physical works. The environmental assessment will include:</p> <ul style="list-style-type: none"> ▪ A description of the existing surrounding environment; ▪ Details of the ancillary works and construction activities required to be carried out including the hours of works; ▪ An assessment of the environmental impacts of the works, including, but not necessarily limited to, traffic, noise and vibration, air quality, soil and water, ecology and heritage; ▪ Details of mitigation measures and monitoring specific to the works that would be implemented to minimise environmental impacts; and <p>Identification of the timing for completion of the construction works, and how the sites would be reinstated (including any necessary rehabilitation).</p>		
5.3 All changes with environmental consequences are authorised before they are implemented	<p>Approvals of Change</p> <p>All change requests are approved by the supervisor or manager of the change owner, or as otherwise required by the project delegations, before any relevant work commences, and a record is maintained. This must include any approvals associated with revised CAPs and Work Packs by the Environmental Manager.</p>	<p>Project Director Construction Manager Engineering Manager Environmental Manager</p>	Change Requests
5.4 Controls associated with change are communicated to all affected personnel	<p>Communication of Change</p> <p>Affected personnel will be consulted and understand the effects of change before the relevant works commence. This is achieved through toolbox talks, daily pre-start meeting, HSE committees or forums arranged to specifically address changes.</p>	<p>Engineering Manager Site Supervisor</p>	<p>Toolbox talk material Pre-start meetings Attendance records Meeting minutes</p>

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 Date Published: 25/09/2019

Management System - Uncontrolled Document when Printed

Element 6: Communication and Consultation

Expectations	How we will meet the Expectations (minimum requirements)	Responsible Key Contributor	Deliverables
6.1 External environmental stakeholders are identified	<p>Identifying External Stakeholders</p> <p>A comprehensive stakeholder analysis will be performed to identify external stakeholders and their interests in the environmental management of the Project. This will include community members and others who could be affected by the Project works, as well as government and environmental lobby groups. The Environmental Manager will be involved in the analysis process.</p>	<p>Community & Stakeholder Manager</p> <p>Environmental Manager</p>	<p>Stakeholder register or database</p> <p>Stakeholder Analysis</p>
6.2 Relationships with external stakeholders are effectively managed	<p>Managing Relationships</p> <p>Activities performed to effectively manage relationships with external stakeholders include:</p> <ul style="list-style-type: none"> ▪ Identifying environmental risks that relate to stakeholder interests by considering the impacts to stakeholders (documented in Environmental Risk Register); ▪ Determining suitable controls and activities to mitigate risks (general controls and activities documented in Environmental Risk Register, details in Environmental Sub-Plans, CAPs, and Work Packs); and ▪ Performing inspections, audits, stakeholder engagement and monitoring activities to assess the effectiveness of controls. <p>Actively engaging stakeholders through open communication and involvement.</p> <p>Consultation with various government agencies and identified parties within the Conditions of Approval is required for the various sub-plans and at specified times prior to and during construction. Evidence of consultation (eg. details of consultation, matters raised, how these were addressed etc) must accompany the strategies, plans, programs, reviews, audits, protocols and the like when these are submitted to DPE in accordance with condition A9. All external consultation will be managed in accordance with the Community Consultation Strategy (SMCSWSPS-CPB-ALL-CL-PLN-000001) and logged on</p>	<p>Environmental Manager</p> <p>Community & Stakeholder Manager Project Director</p>	<p>Environmental Risk Register</p> <p>Risk assessments in CAPs, Work Packs, Environmental Sub-Plans and Procedures</p> <p>Audit reports</p> <p>Monitoring results</p> <p>Communications material</p> <p>Forums and opportunities for stakeholder engagement</p>

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 Date Published: 25/09/2019

Management System - Uncontrolled Document when Printed

Expectations	How we will meet the Expectations (minimum requirements)	Responsible Key Contributor	Deliverables
	Consultation Manager. Consultation evidence for this CEMP and Sub-Plans is provided in Appendix I.		
6.3 Internal consultative forums are established with regular meetings scheduled, conducted, documented and communicated	<p>Consultative Forums</p> <p>A schedule of communication forums will be developed which includes:</p> <ul style="list-style-type: none"> ■ Managers' meetings that are to address environmental matters at least monthly; ■ Environmental Toolbox Talks at least monthly; and ■ Pre-start meetings prior to commencing a shift. <p>The Project Director will establish appropriate environmental interfaces with the Client and regulatory bodies. Records will be kept of all HSE communication activities (e.g. attendance records). The effectiveness of the meeting outcomes will be reviewed as required.</p> <p>Actions from Consultative Forums</p> <p>Actions arising from consultative forums are assigned and communicated to a responsible person and confirmed as being completed.</p> <p>The Project will identify, track and complete environmental related actions using Synergy – Action Plans Module.</p> <p>HSE Signs and Notice Boards</p> <p>Dedicated HSE notice boards will be prominently located and maintained with current environmental information.</p>	<p>Project Director</p> <p>Environmental Manager</p> <p>H&S Manager</p>	<p>Minutes of meetings</p> <p>Toolbox Talks</p> <p>Pre-Start meetings</p> <p>Attendance records</p>
6.4 Environmental complaints and enquiries are recorded	<p>Responding to Complaints and Enquiries</p> <p>All environmental related complaints will be classified according to the Incident Classification Matrix and recorded in Consultation Manager in accordance with</p>	Community & Stakeholder Liaison Environmental Manager	<p>Synergy – Action Plans Module</p>

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 Date Published: 25/09/2019

Management System - Uncontrolled Document when Printed

Expectations	How we will meet the Expectations (minimum requirements)	Responsible Key Contributor	Deliverables
and responded to appropriately	<p>requirements set out in the Community Communication Strategy (SMCSWSPS-CPB-ALL-CL-PLN-000001) and in accordance with requirements of the Sydney Metro construction complaints management system (SM-17-00088079).</p> <p>Complaints are treated as an incident and managed according to Element 9 of the EMP. Corrective actions are agreed and implemented, with accountabilities and time frames assigned. The complainant or enquirer is notified of the intended Project response once approved by the Project Director.</p>	<p>Environmental Manager Project Director</p>	
	<p>Changes to Environmental Monitoring</p> <p>Environmental monitoring programs will be reviewed to address matters raised through valid complaints (ie. associated with the works and are not vexatious in nature) and consultations with stakeholders. Amendments to the monitoring program will be adequate to allow early identification of conditions that are likely to result in further complaints and/or exceedances. Data will be analysed to identify actual and potential impacts to the community, and corrective actions implemented.</p>	<p>Environmental Manager Community & Stakeholder Manager</p>	<p>Monitoring schedule Monitoring records Corrective actions in Synergy</p>
	<p>Client and Internal Notifications</p> <p>The Business Unit Environment Manager and Corporate Communications Manager are notified of complaints that have or are likely to generate media interest.</p> <p>The Client is notified according to the conditions outlined in the Contract.</p>	<p>Project Director</p>	<p>Record of communication</p>

Expectations	How we will meet the Expectations (minimum requirements)	Responsible Key Contributor	Deliverables
6.5 The effectiveness of internal and external stakeholder engagement is evaluated and improved.	<p>Evaluation of Internal and External Communications</p> <p>The effectiveness of internal communication and consultation activities will be formally reviewed as required. The effectiveness of external communication and consultation activities will be formally reviewed as required. The Environmental Manager participates in both of these reviews, which are led by the Project Director and include the Community and Stakeholder Manager and Health and Safety Manager.</p> <p>The Environmental Manager will also regularly attend and review the effectiveness of forums and recommend changes to the scheduling or style of forum.</p>	<p>Project Director</p> <p>Community & Stakeholder Manager</p> <p>Environmental Manager</p> <p>H&S Manager</p>	Meeting minutes

Element 7: Training and Competency

Expectations	How we will meet the Expectations (minimum requirements)	Responsible Key Contributor	Deliverables
<p>7.1 All personnel have completed an induction containing relevant environmental information before they are authorised to work on the Project</p>	<p>Inductions</p> <p>All personnel, subcontractors and visitors will undergo an induction before commencing work on-site. The induction addresses general and Project-specific environmental issues, including:</p> <ul style="list-style-type: none"> ▪ CPB Contractors' environmental policy and key performance indicators; ▪ Training purpose, objectives and key issues; ▪ Due diligence, duty of care and responsibilities; ▪ Relevant conditions of any environmental licence and/or the relevant conditions of approval; ▪ Communication protocols; ▪ CEMP and associated sub-plans implementation on-site; ▪ High-risk environmental activities on the Project and their controls; and ▪ Reporting procedure for environmental hazards and incidents. <p>An assessment will be conducted upon completion of the induction.</p> <p>Induction materials are reviewed at least annually and amended to reflect changes to Project environmental risks, the status of community relations and the occurrence of incidents.</p>	<p>Environmental Manager</p> <p>HR Manager</p> <p>Health and Safety Manager</p>	<p>Induction materials</p> <p>Training attendance records</p> <p>Completed induction assessments</p>
<p>7.2 A training plan is developed and documented</p>	<p>Identifying Training Needs</p> <p>Environmental training needs required to deliver this EMP are identified and documented within the Project's training matrix. In populating the training matrix, the environmental training requirements for each role are addressed, including competency, needs and capability.</p>	<p>Environmental Manager</p> <p>HR Manager</p>	<p>Training matrix</p> <p>Training Management Plan</p> <p>Subcontractor agreements</p>

Expectations	How we will meet the Expectations (minimum requirements)	Responsible Key Contributor	Deliverables
	<p>The Environmental Manager will contribute to the development of the training matrix to ensure relevant environmental training is provided.</p> <p>The performance and development management process provides an opportunity to identify and plan the delivery of training needs not provided in the training matrix, or that are necessary to aid in the development of the individual.</p> <p>Subcontractor training and competency responsibilities will be included in subcontractor agreements.</p> <p>The minimum training requirements for sub-contractors and other workers at this project include:</p> <ul style="list-style-type: none"> ▪ General Industry WHS / OHS Induction / Safety Awareness Training for the construction industry; ▪ Project online induction – via MTA online system; ▪ Face to face site induction – which will include environmental obligations of the CoA; ▪ Safety Essentials and safe work method statement training for high risk construction works; ▪ Sub-contractor supervisors that issue or receive works covered by a Permit to Work (eg. Permit to Dewater, Permit to Penetrate) must undertake Permit to Work training. ▪ Evidence of competence for operators of all mobile plant operators and prior to the employee operating that mobile plant and equipment. ▪ Participate in toolbox talks and pre-starts meetings ▪ Cultural awareness training as part of the site induction ▪ Relevant certificates of competency for work activity related training, eg. Confined spaces, electrical works etc. 		<p>Subcontractor Start-Up Meeting minutes</p>

Expectations	How we will meet the Expectations (minimum requirements)	Responsible Key Contributor	Deliverables
	<p>Scheduling Training Needs</p> <p>A project training schedule will be developed to plan the delivery of training needs identified in the training matrix. Refresher training intervals will also be stated where applicable.</p> <p>The Training Needs Analysis will include:</p> <ul style="list-style-type: none"> ■ Competency requirements of staff that hold environmental roles and responsibilities listed in the CEMP; ■ Identifies training courses and the frequency of the courses needed to achieve the requirement; and <p>Training schedule that plans attendance at environmental training events, provides mechanisms to notify staff of their training requirements, and identifies staff who do not attend scheduled training events or who have overdue training requirements.</p>	<p>HR Manager</p> <p>Environmental Manager</p>	<p>Training schedule</p> <p>Training records</p>

Expectations	How we will meet the Expectations (minimum requirements)	Responsible Key Contributor	Deliverables
7.3 Personnel are trained and assessed according to the training plan	<p>Provide Training Resources</p> <p>All resources to deliver the training schedule, including personnel, equipment, funding and materials, will be allowed for in the Project budget.</p>	<p>Project Director</p> <p>Environmental Manager</p>	<p>Project budget</p>
	<p>Delivery of Training</p> <p>All training identified in the training matrix will be delivered according to the training schedule. Training and development needs identified through the performance and development process will be achieved as per time frames nominated in individual plans. Personnel delivering environmental training must be deemed competent by the Environmental Manager or Business Unit Environment Manager.</p>	<p>Project Director</p> <p>HR Manager</p> <p>Environmental Manager</p>	<p>Training records</p>
	<p>Training Evaluation and Review</p> <p>Training assessments and evaluation forms will be used to assess the effectiveness of training. Training evaluation and feedback will be reviewed and used to improve the quality of environmental training delivered on the Project.</p> <p>The training matrix and schedule will be completely reviewed at least annually or prior to the commencement of major new tasks.</p>	<p>HR Manager</p> <p>Environmental Manager</p>	<p>Training evaluation forms</p> <p>Training matrix</p>
7.4 Training records are maintained and accessible to relevant personnel.	<p>Training Records</p> <p>Records of all training activities, including inductions, will be maintained. Records will include the name and role of the attendee, the name of the course and, where applicable, reference to the document-controlled version of the material presented, and a copy of the assessment completed.</p>	<p>HR Manager</p> <p>Environmental Manager</p>	<p>Training records</p>

Element 8: Subcontractor Relationships

Expectations	How we will meet the Expectations (minimum requirements)	Responsible Key Contributor	Deliverables
8.1 Selection processes ensure that subcontractors meet CPB Contractors' minimum environmental requirements	<p>Subcontractor Selection and Engagement</p> <p>Subcontractors engaged on the project are required to undergo a thorough assessment prior to selection. The Environmental Manager will be consulted on environmental requirements of subcontracts and the adequacy of proposed conditions.</p> <p>Subcontractors will be made aware of CPB Contractors' environmental requirements during the tender process and Start-Up meetings.</p>	<p>Commercial Manager</p> <p>Engineers</p> <p>Environmental Manager</p>	<p>Subcontractor Agreements</p>
8.2 Planning requirements of all subcontractor work scopes are completed and communicated prior to commencing work	<p>Identify, Complete and Communicate Planning Requirements and Documentation</p> <p>The scope of work to be performed by each subcontractor is reviewed to determine whether it includes works for which project planning and environmental risk assessments have been completed. If so, the subcontractor is formally informed of all relevant risks and existing project documents, systems and procedures to be followed prior to commencing works (in addition to having been informed of these during the tendering process). These may include the contents of the construction methodology, CAPs, Work Packs, SEPs, and Environmental Sub-Plans in this CEMP.</p> <p>If the scope of works includes activities not already addressed in Project planning and risk assessment, then an appropriate risk assessment is performed and either existing documentation is revised or new documentation produced. The Environmental Manager should review this new documentation to ensure it meets project requirements.</p> <p>In either case, the subcontractor must be formally informed of all requirements prior to commencing works.</p>	<p>Engineers</p> <p>Environmental Manager</p> <p>Commercial Manager</p>	<p>CAPs</p> <p>Work Packs</p> <p>SEPs</p> <p>Records of subcontractor notification</p>

Expectations	How we will meet the Expectations (minimum requirements)	Responsible Key Contributor	Deliverables
8.3 Compliance requirements for high risk environmental activities are identified and enforced	<p>Compliance requirements</p> <p>For high risk environmental activities, the Environmental Manager will review the subcontractor's scope of works with the supervising Engineer and:</p> <ul style="list-style-type: none"> ■ Identify any new issues relevant to the subcontractor's scope of works; ■ Identify any additional compliance requirement not captured; ■ Identify necessary approvals not already in place and obtain those approvals prior to any works commencing; and ■ Update the relevant Environmental Sub-Plans, SEPs, and Environmental Obligations Register with details new approvals and their conditions. <p>The Environmental Manager will review the CAP and Work Packs, for high risk environmental issues.</p> <p>The subcontractor will be informed of all relevant environmental issues/risks and controls, procedures and documents to be followed and implemented in order to achieve compliance during the tendering process. This will be reinforced during the Start-Up meeting.</p> <p>The subcontractor will be informed of the requirement to provide all relevant data relating to their works as per the National Greenhouse and Energy Reporting Act 2007 (Cth).</p>	<p>Engineers</p> <p>Environmental Manager</p> <p>Commercial Manager</p>	<p>Records of subcontractor notification</p>
8.4 Subcontractor documentation is submitted and reviewed to meet Project requirements	<p>Documentation Preparation and Review</p> <p>The subcontractor will provide CPB Contractors with all required environmental documentation prior to commencing work on the Project as described in the executed agreement, including any requirement to produce an Environmental Management Plan. Any further requirements will be agreed by the Commercial Manager and the Environmental Manager.</p>	<p>Environmental Manager</p> <p>Engineer</p> <p>Commercial Manager</p>	<p>Subcontractor environmental documentation</p>

Expectations	How we will meet the Expectations (minimum requirements)	Responsible Key Contributor	Deliverables
8.5 Changes to the scope of work are managed as a Project change	<p>Manage Changes/Variations</p> <p>Changes and variations to subcontractor scopes of work will be assessed as a change according to the requirements of Element 5 of the EMP. Documentation will be amended accordingly.</p>	<p>Commercial Manager</p> <p>Engineers</p>	<p>Change Requests</p>
8.6 Subcontractors actively participate in environmental management and training on the Project	<p>Subcontractor Environmental Participation</p> <p>Subcontractors will participate in HSE communication forums and monitoring activities, as a minimum, including:</p> <ul style="list-style-type: none"> ▪ Project induction; ▪ Scheduled HSE management meetings, toolbox talks, pre-start meetings, HSE committees (as required); ▪ HSE observations, inspections and audits; ▪ Incident investigations (as required); and ▪ Development or review of safe work systems SEPs (as required). 	<p>Commercial Manager</p> <p>Environmental Manager</p> <p>Subcontractors</p> <p>Engineers</p>	<p>Attendance records</p> <p>Monitoring records</p>

Expectations	How we will meet the Expectations (minimum requirements)	Responsible Key Contributor	Deliverables
	<p>Subcontractor Training</p> <p>Subcontractors will undergo all necessary environmental training including any required by the Project. The required training will be determined by reviewing the training matrix relative to the scope of work and roles being filled or supplied by the subcontractor. The delivery and management of training will be as per Element 7 of the EMP.</p>	<p>Subcontractor</p> <p>Environmental Manager</p>	<p>Subcontractor training records</p>
<p>8.7 Subcontractors are reviewed to assess their performance and compliance with our minimum environmental requirements.</p>	<p>Subcontractor Audits and Reviews</p> <p>Subcontractors will be regularly inspected and observed for environmental performance as per Element 3.4 of this EMP.</p>	<p>Environmental Manager</p> <p>Engineers Supervisors</p>	<p>Audit reports Inspection and monitoring records</p>

Element 9: Incident Management

Expectations	How we will meet the Expectations (minimum requirements)	Responsible Key Contributor	Deliverables																					
<p>9.1 All incidents are followed by appropriate response and notification</p>	<p>Incident Definition (CSSI 7400)</p> <p>Under the definitions of the Condition of Approval an incident is defined as <i>an occurrence or set of circumstances that causes, or threatens to cause, material harm to the environment, community or any member of the community, being actual or potential harm to the health or safety of human beings or to threatened species, endangered ecological communities or ecosystems that is not trivial.</i></p> <p>Ratings and Definitions</p> <table border="1" data-bbox="527 591 1419 841"> <thead> <tr> <th data-bbox="527 591 625 607">Environment</th> <th data-bbox="625 591 743 607">Insignificant</th> <th data-bbox="743 591 896 607">Minor</th> <th data-bbox="896 591 1022 607">Moderate</th> <th data-bbox="1022 591 1136 607">Major</th> <th data-bbox="1136 591 1276 607">Severe</th> <th data-bbox="1276 591 1419 607">Catastrophic</th> </tr> </thead> <tbody> <tr> <td data-bbox="527 607 625 748"></td> <td data-bbox="625 607 743 748">No appreciable changes to environment and/or highly localised event.</td> <td data-bbox="743 607 896 748">Change from normal conditions within environmental regulatory limits and environmental effects are within site boundaries.</td> <td data-bbox="896 607 1022 748">Short-term and/or well-contained environmental effects. Minor remedial actions probably required.</td> <td data-bbox="1022 607 1136 748">Impacts external ecosystem and considerable remediation is required.</td> <td data-bbox="1136 607 1276 748">Long-term environmental impairment in neighbouring or valued ecosystems. Extensive remediation required.</td> <td data-bbox="1276 607 1419 748">Irreversible large-scale environmental impact with loss of valued ecosystems.</td> </tr> <tr> <td data-bbox="527 748 625 841">Incident DPE Notifiable (<24 hours) Condition A41</td> <td data-bbox="625 748 743 841">No</td> <td data-bbox="743 748 896 841">No</td> <td data-bbox="896 748 1022 841">No</td> <td data-bbox="1022 748 1136 841">Yes</td> <td data-bbox="1136 748 1276 841">Yes</td> <td data-bbox="1276 748 1419 841">Yes</td> </tr> </tbody> </table> <p>Incident Response</p> <p>CPB must carry out works activities in a manner that protects and prevents damage to property and the environment. Environmental incidents and emergencies will be managed in accordance with the PSISD EMS Procedure <i>Manage and Report SHE Incidents</i> and the <i>Sydney Metro Environmental Incident Classification and Reporting Procedure</i> (SM ES-PW-303).</p> <p>The immediate response to all incidents is to make the area safe and undertake measures to prevent further environmental harm. An assessment will be made in consultation with the Environmental Manager to ensure that responses do not result in further harm.</p>	Environment	Insignificant	Minor	Moderate	Major	Severe	Catastrophic		No appreciable changes to environment and/or highly localised event.	Change from normal conditions within environmental regulatory limits and environmental effects are within site boundaries.	Short-term and/or well-contained environmental effects. Minor remedial actions probably required.	Impacts external ecosystem and 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.	Incident DPE Notifiable (<24 hours) Condition A41	No	No	No	Yes	Yes	Yes	<p>Project Director</p> <p>Environmental Manager</p> <p>Community & Stakeholder Manager</p> <p>Engineers</p> <p>Site Supervisor</p>	<p>Records of incident notifications</p>
Environment	Insignificant	Minor	Moderate	Major	Severe	Catastrophic																		
	No appreciable changes to environment and/or highly localised event.	Change from normal conditions within environmental regulatory limits and environmental effects are within site boundaries.	Short-term and/or well-contained environmental effects. Minor remedial actions probably required.	Impacts external ecosystem and 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.																		
Incident DPE Notifiable (<24 hours) Condition A41	No	No	No	Yes	Yes	Yes																		

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 Date Published: 25/09/2019

Management System - Uncontrolled Document when Printed

Expectations	How we will meet the Expectations (minimum requirements)	Responsible Key Contributor	Deliverables
	<p>Initial Incident Notification (Internal)</p> <p>The Project Director, Senior Project Engineer and Environmental Manager are to be notified immediately of the following incidents:</p> <ul style="list-style-type: none"> ▪ All Level 1 and Level 2 environmental incidents, and PL1 and PL2. ▪ The Environmental Manager is also to be notified of any actual Class 3 environmental incident, procedural or legal breach. ▪ For Level 1 and Level 2 incidents and PL1 and PL2, the Project Director will immediately notify the Business Unit General Manager and the Business Unit Environment Manager. The Project Director will also notify the Business Unit General Manager of the need to activate the Project's Emergency Response Plan and the Group Crisis Management Plan if necessary. <p>Initial Incident Notification (External)</p> <p>Sydney Metro will immediately be notified of all environmental incidents as per the agreed contractual arrangements and in accordance with <i>Sydney Metro Environmental Incident Classification and Reporting Procedure</i> (SM ES-PW-303). The ER will also be notified immediately of the incident occurring by way of text message or phone call. DPE are required to be notified as soon as possible and in any event within 24 hours.</p> <p>Any incidents will be notified to the Secretary in accordance with the applicable Planning Approval requirements – CoA A41-A44. Sydney Metro will undertake the notification to DPE based on information from PSISD project.</p> <p>The EPA must be notified immediately of all pollution incidents that cause or threaten material harm to the environment. Harm to the environment is "material" if the effect (or potential effect) from an incident on the health or safety of humans or ecosystems is not trivial and or results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding \$10,000. Environmental incidents will be reported to</p>		

Expectations	How we will meet the Expectations (minimum requirements)	Responsible Key Contributor	Deliverables
	<p>regulators in accordance with the requirements of local, state and federal government regulations.</p> <p>Preserve the Incident Scene</p> <p>Scenes of environmental Level 1 and 2 incidents and PL1's are to be preserved until the incident investigation team has collected relevant data and evidence (see below).</p>		
<p>9.2 All incidents are entered and managed in Synergy</p>	<p>Incident Classification and Reporting</p> <p>Environmental incidents will be classified using the Incident Classification Matrix by the Environmental Manager in consultation with the Project Director.</p> <p>All environmental incidents, including community complaints, will be reported using the Synergy within three calendar days.</p> <p>Root causes will be identified and recorded in Synergy for all Class 1, 2 incidents and HPIs (and optionally for Class 3 incidents).</p> <p>All statutory notices received from regulators, including penalty notices and fines, will be entered as Environmental Legal Issue incidents upon receipt.</p>	<p>Environmental Manager</p> <p>Project Director</p>	<p>Incident records</p> <p>Root cause coding</p>
<p>9.3 Incident investigations are conducted appropriate to the type of incident</p>	<p>Project Incident Investigations</p> <p>All incidents will be investigated according to company procedures. The level of investigation needed will depend on the incident classification. Corrective actions, including those required to help prevent future incident occurrences, are a key outcome of incident investigations.</p> <p>Incident investigation reports are to be uploaded to Synergy.</p> <p>Statutory Authority Investigations</p> <p>Before any staff member is questioned by officers of a statutory authority they will endeavour to consult the Project Director to determine whether Legal Counsel is needed.</p> <p>Regulatory inspectors must be given appropriate assistance during their own investigations.</p>	<p>Project Director</p> <p>Environmental Manager</p> <p>Site Supervisor</p> <p>Engineers</p>	<p>Incident investigation reports</p>

Expectations	How we will meet the Expectations (minimum requirements)	Responsible Key Contributor	Deliverables
9.4 All personnel conducting incident investigations are trained to competently perform the task	<p>Incident Investigation Teams Competent and Trained</p> <p>The selection of the investigation team will be up to the Project Director and will depend upon the severity of the incident, and the availability of experienced personnel. However, the investigation team does need to have a mix of both Operational and HSE Staff.</p> <p>The following should be considered when selecting an investigation team:</p> <ul style="list-style-type: none"> ▪ Statutory requirements; ▪ CPB Contractors Corporate requirements; ▪ Technical specialists with an understanding of the work process; ▪ Administrative Support; ▪ Mix of skills and experience; and ▪ Potential conflict of interest for any proposed member. 	Project Director	
9.5 Corrective and preventive actions are taken after incidents and lessons are shared with other projects	<p>Corrective & Preventive Actions</p> <p>Following an incident, corrective and preventive actions will be identified, assigned to the appropriate person/s and closed out according to set time frames. Time frames are set to ensure damage incurred is rectified and any chance of recurrence is eliminated as soon as practicable.</p> <p>Synergy will be used to assign and track corrective actions. All corrective actions will include reference to the relevant incident record for ease of tracking.</p> <p>Prompt responses must be taken to appropriately manage and dispose of all contaminated waste arising from the incident.</p> <p>The principle may take such actions necessary to control or eliminate the adverse consequence of the incident by issuing an immediate stop work order if the incident involves:</p> <ul style="list-style-type: none"> ▪ A significant spill of contamination; 	Project Director Environmental Manager	Corrective action records on Synergy

Expectations	How we will meet the Expectations (minimum requirements)	Responsible Key Contributor	Deliverables
	<ul style="list-style-type: none"> Any incident or release of contamination which is believed may pose a danger to health, life or property; or <p>Any actual damage to the Environment or a significant risk of harm to the Environment.</p>		
	<p>HSE Alerts</p> <p>HSE Alerts will be submitted for all Class 1 and 2 incidents and HPis to the Project Director and Business Unit Environment Manager for distribution outside of the project team. HSE Alerts will also be raised for all other incident types at the discretion of the Environmental Manager, Project Director or Business Unit Environment Manager.</p>	<p>Environmental Manager</p> <p>Project Director</p>	<p>HSE Alerts</p>
<p>9.6 High potential and repeat incidents are regularly reviewed by the project management team</p>	<p>Each month the Environmental Manager will, as a minimum, identify trends in incidents (as a minimum, all Class 1 and 2 incidents and HPis) and trends in root causes to suggest the nature of preventative actions which are warranted. The Project Director will approve actions to address incident occurrences and incident and root cause trends. Actions will be managed using the Synergy.</p>	<p>Environmental Manager</p> <p>Project Director</p>	<p>Monthly project reports</p> <p>Corrective actions</p>

Element 10: Emergency Planning and Response

Expectations	How we will meet the Expectations (minimum requirements)	Responsible Key Contributor	Deliverables
10.1 Potential emergencies are identified using a formal risk assessment process	<p>Identifying Potential Emergencies</p> <p>Risk assessments conducted in accordance with Element 4 of the EMP are used to identify potential emergencies on the Project. Activities found to have an environmental consequence of 4 or 5 as per the definitions for environmental consequence contained within the CPB Contractors Risk Management Protocol will be considered potential emergencies.</p>	<p>Project Director Environmental Manager</p>	<p>Environmental Risk Register Principal Risk Assessment</p>
10.2 Emergency response plans and procedures are developed and regularly reviewed	<p>Emergency Response Plan</p> <p>An Emergency Response Plan that addresses all identified potential environmental emergencies with specific emergency procedures for each different potential emergency will be developed. The plan will address or include the following:</p> <ul style="list-style-type: none"> ▪ Nominated and trained emergency coordinator and emergency wardens; ▪ Explanation of communications to be performed during an emergency; ▪ Explanation of what a crisis is as compared to an emergency and what to do in the event of a crisis; ▪ The details of emergency services contacts; ▪ Emergency assembly locations; ▪ A detailed location map showing the site in relation to local public roads; ▪ A detailed site layout diagram; ▪ Information about personnel and facilities available to help emergency services; ▪ Specific emergency procedures for each potential emergency identified that aim to protect human health and environmental values, including assessment of resources required to respond to that emergency; and ▪ Post-emergency actions. 	<p>Project Director Environmental Manager H&S Manager</p>	<p>Emergency Response Plan and procedures</p>

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 Date Published: 25/09/2019

Management System - Uncontrolled Document when Printed

Expectations	How we will meet the Expectations (minimum requirements)	Responsible Key Contributor	Deliverables
	The Emergency Response Plan will be updated at least annually or when there are significant changes to project activities or in response to revised and new risk assessments.		
10.3 Adequate resources are provided to effectively implement emergency response plans and procedures	<p>Emergency Response Plans Adequately Resourced</p> <p>Resources required to implement the Emergency Response Plan will be available on the Project and be maintained.</p> <p>Necessary resources include but are not limited to:</p> <ul style="list-style-type: none"> ▪ An emergency coordinator and emergency wardens; ▪ Spill response kits; ▪ Firefighting equipment; ▪ Barricading; and ▪ Vehicles. 	<p>Project Director</p> <p>Environmental Manager</p> <p>H&S Manager</p>	Project resources for Emergency Response Plan and procedures
10.4 Environmental emergency response drills are conducted	<p>Environmental Emergency Response Drills</p> <p>Environmental emergency response drills will be conducted at least every six months. The emergency scenario of the drills will be rotated to avoid repetition and be relevant to the activities occurring at the time.</p> <p>Records will be kept of the results for all drills.</p> <p>Where testing and evaluation shows a deficiency in either emergency preparations or the Emergency Response Plan, appropriate corrective and preventive actions are taken and raised and managed using Synergy.</p>	<p>Project Director</p> <p>Environmental Manager</p> <p>H&S Manager</p>	<p>Emergency response drill records</p> <p>Corrective action records in Synergy</p>
10.5 Employees, contractors and visitors are given appropriate emergency response training.	<p>Emergency Training</p> <p>Emergency coordinators and wardens are trained to implement the emergency response plans. Specific training requirements will be identified and captured within the training matrix and will be delivered according to company procedures.</p> <p>Visitors are informed of requirements during the visitors' induction.</p>	<p>HR Manager</p> <p>Environmental Manager</p> <p>H&S Manager</p>	<p>Training matrix</p> <p>Training schedule</p>

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 Date Published: 25/09/2019

Management System - Uncontrolled Document when Printed

Expectations	How we will meet the Expectations (minimum requirements)	Responsible Key Contributor	Deliverables
	<p>General Workforce Training and Awareness</p> <p>All personnel and subcontractors will receive training to inform them of their roles and responsibilities in the event of an emergency. This training and awareness will be provided during Project induction.</p>		<p>Training and induction records</p>

Element 11: Document and Record Management

Expectations	How we will meet the Expectations (minimum requirements)	Responsibilities Key Contributor	Deliverables
<p>11.1 Current versions of all relevant documents and records are available and controlled.</p>	<p>The Project must ensure that all documents and records referred to and required to implement the EMP, including the plan are controlled and maintained according to CPB Contractors requirements. This includes but is not limited to all:</p> <ul style="list-style-type: none"> ■ Management plans & Procedures; ■ Knowledge and Tools; ■ Templates (e.g. audit template, training matrix); and ■ All electronic records saved in electronic databases such as Synergy, ChemAlert etc. <p>Document Types</p> <p>The types of records to be generated on the Project that are to be stored and maintained include:</p> <ul style="list-style-type: none"> ■ Environmental monitoring results - 30 years from the date of any incident or completion of the Project, whichever is later; ■ Complaints and enquiries received - 7 years from completion of the Project; ■ Modifications to site environmental documentation, such as CEMP, sub-plans and procedures- 7 years from completion of the Project; ■ Documentation as required by performance conditions, approvals, licences and legislation; 7 years from completion of the Project; ■ Notifications received by regulators - 30 years after the completion of the project; 	<p>Environmental Manager</p> <p>Project Director</p>	<p>Controlled and maintained documents and records</p>

Expectations	How we will meet the Expectations (minimum requirements)	Responsibilities Key Contributor	Deliverables
	<ul style="list-style-type: none"> ■ Audit reports, site inspections, reviews or remedial actions - 7 years from completion of the Project; ■ Completed inspections and observations - 30 years from the creation of the record; ■ Waste tracking certificates - 7 years from the creation of the record; ■ Training records - 7 years from the end of the employee's employment; ■ Incident reports - 30 years from the creation of the record; ■ Calibration records for monitoring equipment; ■ Monthly reports and Meeting minutes - 7 years from completion of the Project or from the date on which work was last performed on the Project; ■ Records as required under the National Greenhouse and Energy Reporting Act 2007 - 7 years from the creation of the record; and ■ HSE Alerts. <p>Any editing and access restrictions to environmental documents and records and who has authority to dispose of nominated documents and records comprise:</p> <p>Environmental Manager to authorise the disposal of any environmental documents or records.</p>		
11.2 Relevant documents and records will be maintained using corporate business applications and systems	<p>Relevant environmental documents and records generated on the Project will be stored and managed using Aconex with the following exceptions:</p> <ul style="list-style-type: none"> ■ Environmental monitoring data will be managed and stored using the Project drive; 	Project Director Environmental Manager	Controlled and maintained documents and records

Expectations	How we will meet the Expectations (minimum requirements)	Responsibilities Key Contributor	Deliverables
	<ul style="list-style-type: none"> ■ Whole of CPB Contractors environmental performance data will be managed and stored in JDE, including Water, Waste and Energy and Greenhouse Gases; ■ Incident reports and corrective actions will be stored and managed using Synergy; and ■ Risk registers will be retained in excel spreadsheet. 		

Element 12: Auditing, Review and Improvement

Expectations	How we will meet the Expectations (minimum requirements)	Responsible Key Contributor	Deliverables
12.1 Environmental performance trends are identified and corrective actions are implemented as required	<p>Performance Trends</p> <p>Environmental performance will be reviewed and reported at least monthly to identify trends. Performance will be assessed against both lead and lag measures and relative to specific targets agreed as per Section 2.5.3 of the EMP, and in the sub-plans in Part C. Action plans will be developed to improve performance as required, corrective and preventative actions will be managed using the Synergy – Action Plan Module.</p>	<p>Project Director</p> <p>Environmental Manager</p>	<p>Monthly reports</p> <p>Corrective & Preventative actions in Synergy – Action Plan Module</p>
12.2 A monthly environmental report is produced and distributed	<p>Monthly Reporting</p> <p>A monthly environment report will be prepared for the Project Director for inclusion in the monthly project report. This report will include the following:</p> <ul style="list-style-type: none"> ▪ Analysis of performance against project, business unit and corporate environmental targets as per Section 3 Part A of this EMP; ▪ Analysis of performance against targets set in the Environmental Sub-Plans, including monitoring results; ▪ Details of each environmental incident on the project for that period including actions taken and outstanding; ▪ Confirmation that the EMP is compliant with the CPB Contractors EMS by referring to the number and results of inspections, audits, observations and monitoring; ▪ Confirmation that the NGER procedure has been implemented during the month; and ▪ Any environmental innovations implemented on the project. 	<p>Environmental Manager</p>	<p>Monthly environment report</p>

Expectations	How we will meet the Expectations (minimum requirements)	Responsible Key Contributor	Deliverables
	<p>Environmental Management in Progress Report</p> <p>As per contract condition SWTC Appendix F2 section 4.2 Reporting and CI 4.2.7 Environmental Management, CPB must provide a monthly Progress Report to the Principal's Representative by the first Business Day of each calendar month including progress information to the 25th day of the preceding calendar month and in a dashboard format or as required by the Principal's Representative.</p> <p>The environmental section in this report will include the following:</p> <ul style="list-style-type: none"> ▪ Exclusive summary; ▪ Project performance against the environmental management requirements of the CEMP; ▪ The status of the CEMP including all sub-plans and environmental construction method statements; ▪ Management strategies for environmental compliance and to identify the need for, and to undertake, consistency reviews under the EP&A Act; ▪ Status of environmental obligations including those identified in the Contractor's compliance tracking program; ▪ Status of EPL's (in required); ▪ The Contractor's performance against environmental KPIs; ▪ Graphical representation of the monthly frequency of environmental issues and incidents each month for the previous 12 months, including an analysis of trends and what actions are being taken to improve performance; ▪ Details of environmental incidents or emergencies; ▪ Environmental inspection reports; 	<p>Environmental Manager</p>	<p>Monthly Progress Report</p>

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 **Date Published:** 25/09/2019

Management System - Uncontrolled Document when Printed

Expectations	How we will meet the Expectations (minimum requirements)	Responsible Key Contributor	Deliverables
	<ul style="list-style-type: none"> ■ The results, findings and any environmentally relevant actions of any internal or external audits carried out; and ■ Reports that include the number of employees that have received environmental training and the type of training they received. 		
	<p>The Monthly HSE Statistical Report in Synergy will be completed and approved by the Project Director. This includes reporting on the currency of the EMP, compliance with the EMP and issues and initiatives arising during the period.</p>	Project Director	Monthly HSE Statistical Report
12.3 Regular management reviews are conducted to determine the continuing suitability, adequacy and effectiveness of then Environmental Management System	<p>The Project must conduct formal management reviews to assess the adequacy of the EMS as part of its annual management system reviews. The outputs of the review will be incorporated into the EMP.</p> <p>That review must take into account the results of:</p> <ul style="list-style-type: none"> ■ Audits undertaken; ■ Communication, participation and consultation; ■ Relevant communication including complaints from external stakeholders; ■ The perform of the Project; ■ The extent to which the objectives and targets have been met; ■ The outcomes of incident investigations and any corrective actions; ■ Changes to legislation; and ■ Actions from previous management reviews and recommendations for improvement. <p>Following these reviews, updates may be required to made to the CEMP and/or Sub-Plans. Approval for these amendments is required from the ER and Sydney Metro if they are considered to be minor amendments (as per</p>	Project Director Project Leadership Group Environmental Manager	Management review report Actions in Synergy

Expectations	How we will meet the Expectations (minimum requirements)	Responsible Key Contributor	Deliverables
	CoA A24j). Amendments that are not considered to be minor will be resubmitted to DPE.		
12.4 Audits are undertaken to ensure compliance with the requirements of the EMP	<p>Compliance with Environmental Management Plan</p> <p>Regular audits and reviews will be conducted to confirm compliance with the EMP and associated Obligations.</p> <p>A schedule of internal audits and reviews will be developed and maintained, and may include:</p> <p>Project planning/Start Up reviews (conducted by Business Unit HSE Manager or delegate);</p> <ul style="list-style-type: none"> ▪ Project mobilisation audits (conducted by Business Unit HSE Manager or delegate); ▪ Subcontractor audits (for subcontractors performing high risk activities); ▪ High-risk activity audits; ▪ Environmental Management Plan audits (conducted by Business Unit Environment Manager or delegate); and ▪ Compliance and Legislative audits (conducted by BUEM or competent 3rd party). <p>The scope of these internal audits must include:</p> <ul style="list-style-type: none"> ▪ Compliance with any approval, permit or licence conditions; ▪ Compliance with the E&SMS, CEMP, SMP, sub-plans and procedures; ▪ Community consultation and complaint response; ▪ Environmental training records; and 	<p>Project Director</p> <p>Business Unit Environmental Management Representative</p> <p>Business Unit HSE Manager</p>	<p>Audit reports</p> <p>Corrective actions in Synergy</p>

Expectations	How we will meet the Expectations (minimum requirements)	Responsible Key Contributor	Deliverables
	<p>Environmental monitoring and inspection results.</p> <p>Action plans will be developed to improve performance as required. Necessary corrective actions will be managed using Synergy.</p>		
<p>12.5 All audits are undertaken by suitably qualified and experienced personnel</p>	<p>Auditor Competency</p> <p>Persons conducting audits and reviews will be suitably experienced and qualified. There are two levels of internal auditor that can be obtained, these being Auditor and Lead Auditor. A mix of general education, specific auditor training and work experience are considered in determining the level of auditor. Auditors must be approved by the Business Unit Environment Manager.</p> <p>Sydney Metro (or an independent environmental auditor) will also undertake periodic audits of the Principal Contractor's E&SMS and compliance with the environmental aspects of contract documentation, including the CEMF.</p>	<p>Business Unit Environmental Manager</p>	<p>Training records</p>
<p>12.6 Independent Audit CSSI Conditions</p>	<p>Sydney Metro are required under the contract and conditions of approval to prepare an Environmental Audit Program to be approved by the Secretary for independent annual environmental auditing in accordance with condition A37 and A38 of SSI7400.</p> <p>In accordance with the contract requirements, CPB will provide the SM with:</p> <ul style="list-style-type: none"> A. all the information, documents, details and data relating to the PSISDs Activities to enable the SM to comply with condition of approval A37, A39 and A40; B. participate in any activities necessary under the Environmental Audit Program. 	<p>Environmental Manager</p>	<p>Environmental Audit Program Environmental Audit Report</p>

Expectations	How we will meet the Expectations (minimum requirements)	Responsible Key Contributor	Deliverables
	<p>C. provide reasonable assistance required to enable the independent environmental audits to be carried out.</p>		

Part C: Environmental Sub-plans

This page is intentionally left blank

1. Soil, Water and Groundwater Management Sub-Plan

1.1 Scope

The purpose of this Construction Soil, Water and Groundwater Management Sub-Plan is to describe how CPB will minimize and manage impacts to soils, water quality and/or quantity that may be caused by the PSISD works. Activities conducted on the project that have the potential to impact soil and water quality and/or quantity are provided below. These have been extracted from the project risk assessments:

Table 1-1: Activities, Hazards and Risks

Project Activity	Environmental Hazard	Environmental Risk
Detailed excavation	Damage to watercourse/waterway Discharge of contaminated water Dust blowing from worksite Contamination Acid Sulfate Soils	Soil erosion and sedimentation Stormwater and/or receiving waters quality negatively impacted Air quality negatively impacted Impacts on aquatic fauna and flora Unexpected contamination, ASS or asbestos discovery
Vehicles entering / exiting project site (incl. deliveries)	Mud tracking onto public roads	Sediment and gravel on roads Sediment entering into stormwater systems and/or directly into receiving waters, causing pollution
Concreting	Discharge of contaminated water	Water and groundwater quality negatively impacted from pollutants washing into stormwater system and/or receiving waters Spills of excess or waste concrete
Storage and use of flammable and combustible liquids and soils	Spills Contamination	Soil contamination resulting from spills Water quality negatively impacted from pollutants washing into stormwater system and/or receiving waters
Dewatering	Discharge of contaminated water	Receiving water quality negatively impacted from turbid or saline water entering stormwater systems
General construction works	Flooding	Contamination of floodwater with construction waste, fuels, chemicals, sewage

		Potential for floodwaters to drain into works excavation
	Modifications to natural hydrology or water quality	Localised pollution of stormwater systems and/or receiving waters if appropriate mitigation or management measures are not adopted Very limited potential for groundwater drawdown
	Groundwater inflows	Potential (very limited) for changes to the groundwater system and influences on groundwater users Potential (very limited) for groundwater inflows during excavations to be greater than expected
	Material Stockpiles	Sediment laden runoff entering stormwater systems and/or directly into receiving waters, causing pollution.
	Sewage overflows from compound	Contaminated runoff entering stormwater systems and/or directly into receiving waters, causing pollution.
Clearing and grubbing	Increased sediment load in run-off waters	Water quality negatively impacted Impacts on aquatic fauna and flora
Dust suppression	Use of potable water	Unnecessary load on water resources contributing to resource availability.

It is noted that a Soil and Water Management Sub-Plan is not required under the SMC&S Staging Report, however CPB EMS requires one to be prepared. Groundwater Management has also been incorporated into this Sub-Plan.

1.2 Existing Environment

1.2.1 Soil Landscape

The project is located within the Sydney Basin, a large depositional geological feature that spans from Batemans Bay to the south, Newcastle to the north and Lithgow to the west. The Sydney 1:100,000 Soil Landscape Series Sheet 9130 (Soil Conservation of NSW, 1966) identified a number of soils underlying the SMC&S project area. Figure 18-1 from the SMC&S EIS, shows the PSISD project is

located primarily within the Lucas Heights soil landscape, with Table 18-2 indicating the Deep Creek soil landscape.

It is noted that the PSISD site has been modified by previous contractors prior to the commencement of PSISD scope of works, and as such, most of the constraints listed below in Table 1-2, would have been addressed prior to the commencement of PSISD works. Table 1-2 also outlines extent of PSISD civil scope that would require interaction with the pre-existing soil landscape.

Table 1-2 Soil units underlying the PSISD project area (Source: Table 18-2 SMC&S EIS)

Soil Unit	Characteristics	Constraints	PSISD scope interaction
Deep Creek Around Pitt Street and Central Stations	Deep (>200cm) podzols on well drained terraces, siliceous sands on current floodplain, and humus podzols in low lying areas	Flooding Extreme soil erosion hazard Sedimentation hazard Localised very low fertility Permanently high-water tables	No interaction with natural ground. Soils have been extensively modified by previous activities.
Lucas Heights Around Martin Place and Central Stations	Moderately deep (50-150cm), hard setting yellow podzolic soils on outer edges of crests	Stony soil Low soil fertility Low available water capacity	No interaction with natural ground.

1.2.2 Geology

The SMC&S EIS has described the geological context for PSISD construction site as consisting of four (4) regional geological units outlined in Table 1-3 below

Table 1-3 – Regional geology (Source: Table 17-2 SMC&S EIS)

Geological Unit	Description
Fill	Reclaimed areas generally adjacent to Sydney Harbour and some parklands
Residual soil	Derived from completely weathered siltstone and sandstone
Mittagong Formation	Interbedded shale, laminate and medium-grained quartz sandstone
Hawkesbury Sandstone	Medium to coarse-grained quartz sandstone

The PSISD project is unlikely to encounter all these geological units as there will be limited excavation required for the scope of works. Most of the sites would have already been pre-established by the TSE contractor.

Table 1-4 – Regional geology (Source: Table 5-1 Sydney Metro City & Southwest TSE Hydrogeological Interpretive Report)

Aquifer Zones	Pitt St
Transported Material	Fill
Residual soil	Hawkesbury Sandstone
Class IV & V Bedrocks	Hawkesbury Sandstone
Class II & I Bedrocks	Hawkesbury Sandstone
Major Structures	Martin Place Joint Swarm

Note: Blue shading indicates the hydrogeological unit or structure zone is saturated. Tan shading indicates saturated Hawkesbury Sandstone

1.2.3 Surface Water

All-natural watercourses in the catchment of the project have generally been replaced with constructed drainage systems (such as lined and unlined drainage channels, and sub-surface pit and pipe networks) that discharge into the downstream receiving environment of Sydney Harbour. Surface water is generally collected by developed stormwater networks, which consist of road kerb and guttering, lined and unlined drainage channels, and sub-surface pit and pipe networks. No watercourses will therefore be directly impacted or modified by the PSISD works.

Runoff is collected by the road drainage systems and drains north down Pitt Street, eventually discharges directly into Farm Cove (Circular Quay) area of Sydney Harbour. The drainage catchment area of Farm Cove (Circular Quay) is approximately 199.1 ha in size. Both the north and south project site footprints combined, represents an area less than 0.25% of the entire contributing catchment area of Farm Cove (Circular Quay). It is noted that the Pitt St South site is located right on the boundary between the Farm Cove (Circular Quay) and Darling Harbour catchments as can be seen in Figure 1-5. The discharge point for Pitt St South site is located on Bathurst St which lies in the Farm Cove (Circular Quay) catchment, therefore this sub-plan will focus on the Farm Cove (Circular Quay) catchment as the receiving environment from the project.

All drainage catchments across the project are highly urbanised, with large impervious surfaces created by roads, footpaths and buildings. These impervious surfaces are interspersed with pervious surfaces associated with parkland areas and other unsealed surfaces (such as vacant land and landscaped areas). As such, surface water quality is largely influenced by point source water pollution (e.g. from stormwater drains) and diffuse water pollution (e.g. from urban runoff that does not enter stormwater drains).

Table 21-4 from the SMC&S EIS states that the PSISD sites are located near the top of the City Area (Sydney) catchment. During high intensity rainfall events, flows would be carried by the surrounding roads and associated drainage networks and would not result in flooding in the vicinity of the Pitt Street Station sites. A review of the City of Sydney City Area Catchment Floodplain Risk Management

Plan (September 2016) shows the project areas are not located within a flood hazard risk area. It is therefore expected, the potential for flooding risks on the project site are considered negligible, therefore Flood or Stormwater Management Plans are not required in this instance.

As mentioned above, the Project sites represent a very small proportion (<0.25%) of the Farm Cove (Circular Quay) contributing catchment area with water from the project area discharging into Sydney Harbour. Figure 1-5 below outlines the catchment that the Project drains to, whilst highlighting that no natural waterways exist, with any water captured on-site proceeding through stormwater drains to Farm Cove (Circular Quay) catchment area. Specific Water Quality Objectives have been derived for the catchment in line with the NSW Water Quality Objectives. Catchment mapping classifies the project site as a waterway that is “affected by urban development”. The Environmental Values identified for the catchment are as follows:

- Aquatic ecosystems;
- Visual amenity;
- Secondary contact recreation; and
- Primary contact recreation in the longer term, 10 years or more.

Under the Water Quality Objectives for the watercourses so classified, the primary driver for turbidity is the maintenance of aquatic ecosystems. Ideally, turbidity should be between 6 and 50 NTU. Note that this does not set the limits for discharge for the project, however the overall targeted water quality within the waterways to be maintained.

The testing and discharge requirements identified within this sub-plan will be implemented consistent with the principles of the Australian and New Zealand Environment Conservation Council (ANZECC) guidelines to maintain the NSW Water Quality Objectives within the catchment, as well as being in accordance with the Sydney Metro Water Discharge and Reuse Procedure.

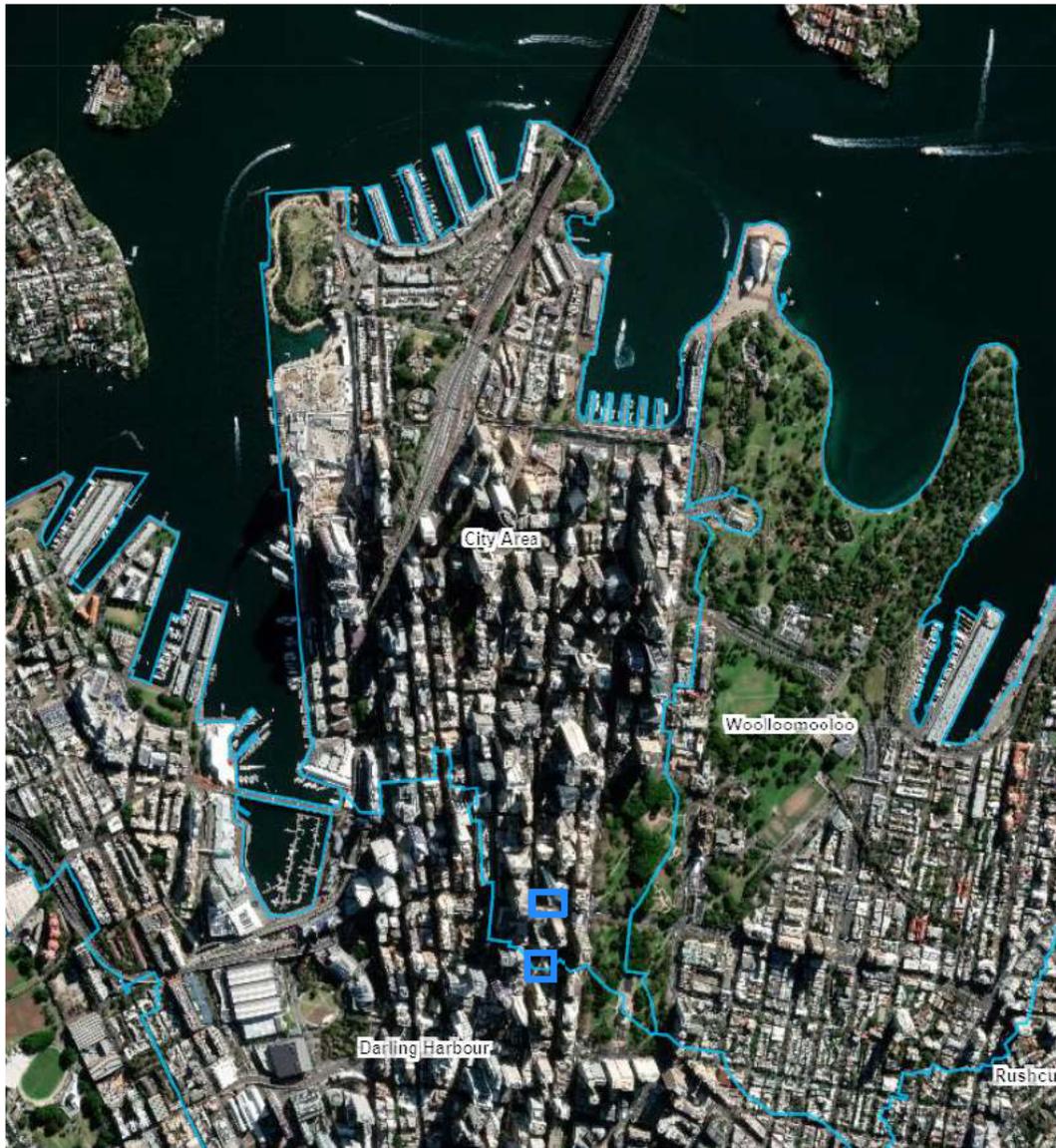


Figure 1-5: Surface Water Catchment Area with approximate Pitt St North and South site locations shown by the blue boxes (Source: City of Sydney GIS Maps)

1.2.4 Groundwater

Groundwater in Sydney is typically high in iron, may contain manganese and/or contaminants, has a relatively high salinity and slightly acidic pH as detailed below. The groundwater quality within Hawkesbury Sandstone is expected to be fresh to brackish with neutral pH and slightly elevated levels of iron and manganese. The concentration of dissolved metals and nutrients in the Hawkesbury Sandstone, including residual soils, is expected to be naturally very low. Organic compounds are not naturally associated with this geological unit.

The SMC&S EIS outlines the following results from groundwater quality testing for the Hawkesbury Sandstone:

- Salinity – ranges between 147 and 574 mg/L as Total Dissolved Solids

- pH - is near-neutral and ranges between 5.2 and 6.8.

Limited interaction between surface water and groundwater is expected as part of the PSISD project works. Wherever possible, all stormwater would be diverted around station excavations to prevent ingress into the station box and tunnels. It is noted that a 2.2m bund in the north site prevents any of this water from entering into the tunnels at this location. Stormwater that falls directly into the station box footprint will be captured and treated as outlined in section 1.5.1. The station adits and platform areas have been tanked as part of the previous contractors works, therefore no groundwater is expected to enter the project works from these areas.

Baseline groundwater level data is available from the Sydney Metro City & Southwest TSE Hydrogeological Interpretive Report produced by Pells Sullivan Meynink Engineering Consultants (Jan 2019). Baseline groundwater level data at a number of borehole locations are outlined in Table 1-6 below which has been extracted from the Sydney Metro City & Southwest TSE Hydrogeological Interpretive Report, Table C3-2.

Table 1-6 – Groundwater Levels

Borehole ID	Construction Date	Average GWL (m AHD)
R444 BH1	11/02/2014	16.8
SRT BH008	17/06/2015	3.1
SRT BH009	06/07/2015	13.72
JCG-BH-1114A	09/10/2017	12
CG-BH-1115	25/10/2019	5.48
CG-BH-1116	28/10/2017	5.2

Note: Locations of these boreholes have been circled in blue on Figure 1-10 below.

Groundwater monitoring at Pitt St indicates that groundwater levels within the Hawkesbury Sandstone vary from between +3m AHD at the southern part of the site to +13m AHD in the north. Groundwater drawdown impacts on existing groundwater levels are expected to be affected by 11 no. existing drained deep basements in proximity to the site and the drained Cross City Tunnel. The Eastern Suburbs railway passes to the west of Pitt St and is expected to have minimal influence on levels. Groundwater levels at the site generally show a very limited response to rainfall events which is not considered unusual given the area is dominated by hard standing areas and rainfall is largely expected to be diverted to drainage rather than recharging the aquifer. This interpretation of baseline

groundwater levels at Pitt St and the surrounding area are presented in Figure 1-8 below. All of the monitoring wells are screened within the Hawkesbury Sandstone Aquifer.

Available baseline data from the TSE contractors Groundwater Monitoring Report collected during the implementation of their Groundwater Management Plan was obtained by CPB. The report highlights that there are three bores located in the Pitt St station area, with two (2) of them still active as shown in Figure 1-10. For the duration of the monitoring period covered by this report, has shown consistent groundwater levels between 2-5m RL, which is below the predicted drawdown level of 14-18m. Sydney Metro City & Southwest TSE Hydrogeological Interpretive Report noted that the hydrogeology of the Pitt Street area was particularly complex, with inflow rates varying considerably along the length of the station structures. Inflows into Pitt Street were estimated to be somewhere in the vicinity of 15,000kl/year, noting that the volumes of discharge from the water treatment plants was estimated as telemetry was not available.

TSE have concluded that groundwater drawdown evidenced during the monitoring period associated with the tunnel excavation is temporary and is expected to recover following installation of tunnel segments. Figures 1-11 to 1-13 below illustrate the monitoring results that has been collected to date relevant to Pitt St from the TSE Contractors Groundwater Monitoring Report.

In order to evaluate the range of groundwater inflows expected during construction and operation, predictive numerical groundwater modelling has been undertaken for PSISD. The groundwater model has been calibrated against groundwater level data to a reasonable range of recharge and permeability values, within the range of site-specific testing data. Groundwater inflows were predicted using transient analysis for the period of construction and in steady state for the long-term inflow rate. Predicted transient groundwater inflow rates are outlined in Table 1-7 below which has been extracted from the Sydney Metro City & Southwest TSE Hydrogeological Interpretive Report, Table 6-6.

Table 1-7 – Predicted Groundwater Seepage Rates

Pitt St ISD	Seepage Rate (kL/day)		
	Peak	12 months after construction	Steady State
Cavern	27	0	0
South Shaft	10	6	6
North Shaft	7	7	7

There is very limited information available regarding groundwater inflow quality for Pitt St. Information obtained from the EIS are outlined in Table 1-8 below which were obtained whilst installing initial groundwater monitoring bores (SRT BH008 and SRT BH009) in 2015. More recent observations of

the excavation show that there are generally no observable flows of groundwater, just some seeps into the walls of the excavation that mostly evaporate before or soon after hitting the blinding slab on the ground.

Table 1-8 – Water Quality Parameters from EIS Groundwater Field Sheet

Borehole ID	Time / Volume	Temperature (°C)	Dissolved Oxygen (mg/L)	Electrical Conductivity (µS/cm)	pH	Redox (mV)
SRT BH008	5 mins	21.9	1.15	870	5.67	8
	10 mins	21.7	1.20	840	5.61	3
	15 mins	21.5	1.21	828	5.50	-4
	20 mins	21.4	1.22	820	5.49	-8
	25 mins	21.4	1.22	818	5.49	-12
SRT BH009	5 mins	21.9	1.22	504	5.60	38
	10 mins	21.6	1.26	483	5.54	30
	15 mins	21.5	1.29	460	5.45	26
	20 mins	21.4	1.30	455	5.44	22
	25 mins	21.4	1.30	450	5.43	18

The Sydney Metro City & Southwest TSE Hydrogeological Interpretive Report states that groundwater in the Hawkesbury Sandstone is generally one of two types, namely Type I or Type II. Type I groundwater typically dominated by sodium, calcium and bicarbonate, is oxidized to lightly reducing, of acidic pH (typically between 5.5-6.8 but can get as low as 4.0), moderate to high iron and manganese concentrations (up to 10mg/L). Type I is most common where the Hawkesbury Sandstone outcrops or has groundwater circulation zones (eg. In deep groundwater wells installed at Waterloo station site, beneath the central Sydney Business District and on the northern side of Sydney Harbour). Type II groundwater is often sodium-chloride dominant, comparatively high salinity, low oxidation-reduction potential and has comparatively high concentrations of dissolved iron and manganese. This is most common where the Hawkesbury Sandstone is confined beneath the Wianamatta Group (inc Ashfield Shale) and characterized by sluggish groundwater flow conditions, particularly at depth.

Groundwater quality data from boreholes constructed near Pitt St indicate that groundwater quality is generally fresh to brackish and slightly acidic. Initial groundwater inflow into the planned excavation of

Pitt St station box was expected to be from storage within the Hawkesbury Sandstone and is likely to be Type I groundwater.

The NSW Department of Primary Industries – Office of Water groundwater database was reviewed and has indicated that there are no registered groundwater works within the anticipated zone of drawdown from the station. A search of the National Atlas of Groundwater Dependent Ecosystems (BOM, 2015) did not identify any Groundwater Dependent Ecosystems within the study area. There are also no high priority groundwater dependent ecosystems in the vicinity of the station as listed in the Water Sharing Plan for the Sydney Basin Central Groundwater Source. No impacts are therefore expected at surrounding registered users.

The Sydney Metro City & Southwest TSE Hydrogeological Interpretive Report states no significant contamination issues are expected to influence the groundwater quality at Pitt St given that there are no known local Acid Sulfate Soils (ASS) and the site is located in a setting where significant local contaminant sources are unlikely.

1.2.5 Contamination

As detailed in the Contaminated Sites Register and Record of Notices under Section 58 of the *Contaminated Land Management Act 1997*, only one (1) registered site is within 500m of the PSISD Works area that has been notified to the EPA. No interaction with this site is required under the PSISD project scope of works. This site is detailed in Table 1-9 below.

Table 1-9 - Registered contamination site details

Suburb	Site Name	Site Address	Site Activity	Contamination Status	Location in Relation to the Project Area
Sydney	Interpro House (OSP 46581)	447 Kent Street	Other petroleum Activity	Regulation under <i>CLM Act 1997</i> not required	About 320m west of Pitt Street Station

The likelihood of encountering any further contaminated sites during the delivery of PSISD scope of works is low. Any contamination encountered would be managed under the unexpected finds procedure, as detailed in Section 2.7.

1.2.6 Acid Sulfate Soil

Acid Sulfate Soils (ASS) are naturally occurring sediments or soils that contain iron sulfides. Sulfuric acid is produced when the sulfide in soils is exposed to oxygen during excavation works or drainage. ASS are unlikely to be encountered in the construction of PSISD. Table 1-10 and Figure 1-6 below, both taken from the SMC&S EIS, shows an extremely low to low probability of ASS being found on site.

Table 1-10 – Probability for ASS to be present (Source: Table 18-3 SMC&S EIS)

Location	Probability for Acid Sulfate Soils
Barangaroo to Pitt Street	Extremely low
Pitt Street to Central Station	Low

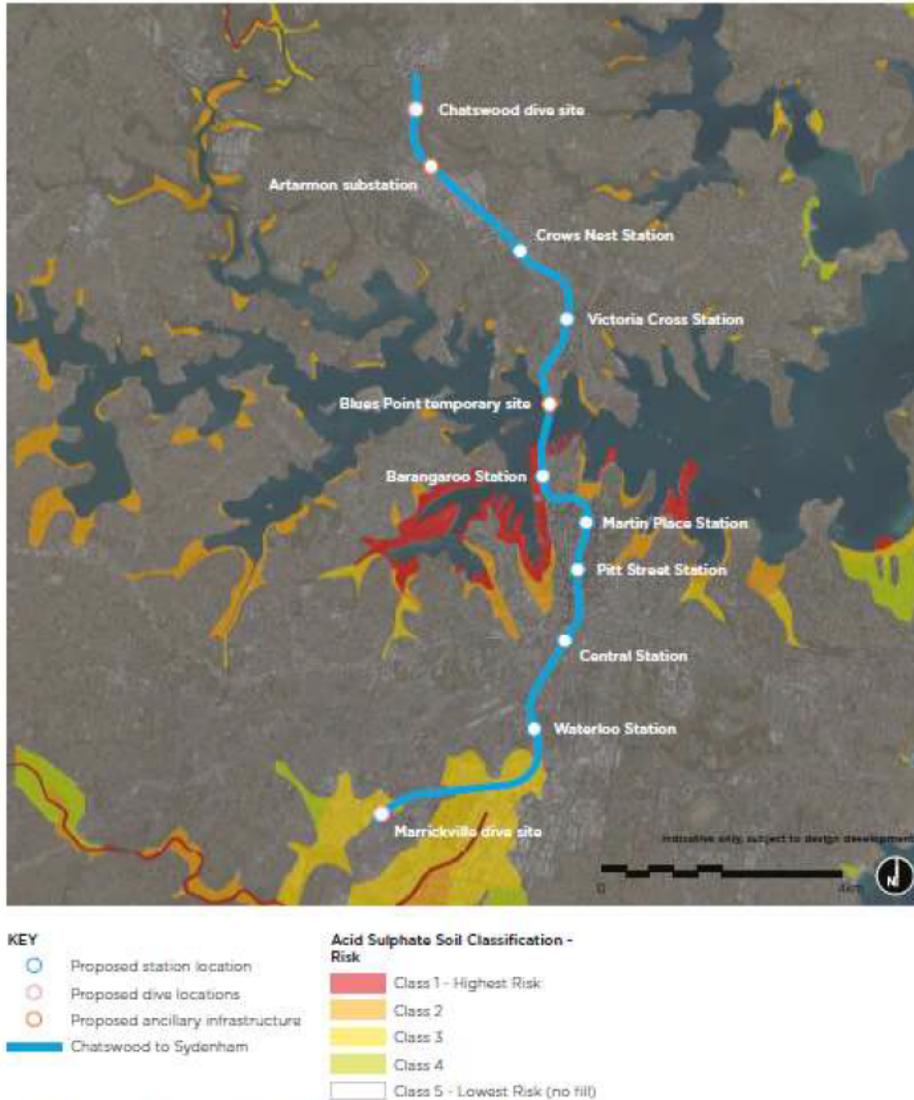


Figure 18-2 Acid sulfate soil classification risk along project alignment

Figure 1-6: Acid Sulfate Soil Classification Risk (Source: SMC&S EIS).

1.2.7 Other Site Specific Information

Bulk excavation of the station box has been completed by the TSE Interface Contractor. There is a limited amount of remaining earthworks to be completed as part of the project associated with the detailed excavation for footings, drainage and services, and landscaping works in the road

reserve/public domain. The only excavation works occurring outside of the station box is that associated with the civil/landscaping works. Implementation of the unexpected finds procedure will ensure that any unexpected contamination, asbestos, PASS etc are managed effectively during the project should unexpected conditions be encountered.

Based on preliminary discussions with the TSE contractor, CPB expect to receive evidence of compliance with conditions E61 and E63 from the TSE contractor. If this is not the case, then a strategy to address the requirements of conditions E61 and E63 will be developed, and this sub-plan will be revised accordingly.

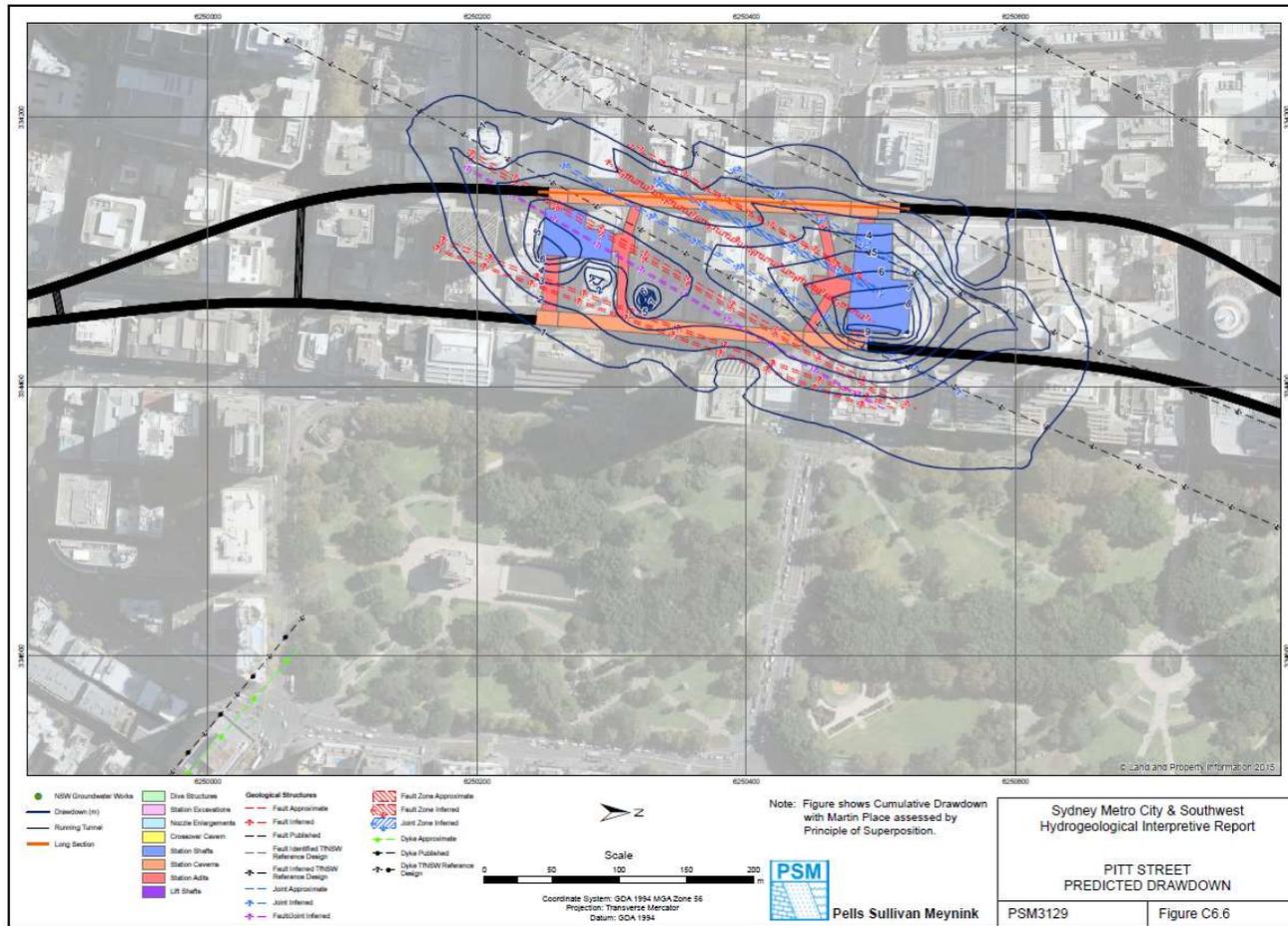


Figure 1-7: Predicted Drawdown for Pitt St (source Sydney Metro City and Southwest – TSE (DP-R-020) Hydrogeological Interpretive Report)

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 **Date Published:** 25/09/2019

Management System - Uncontrolled Document when Printed

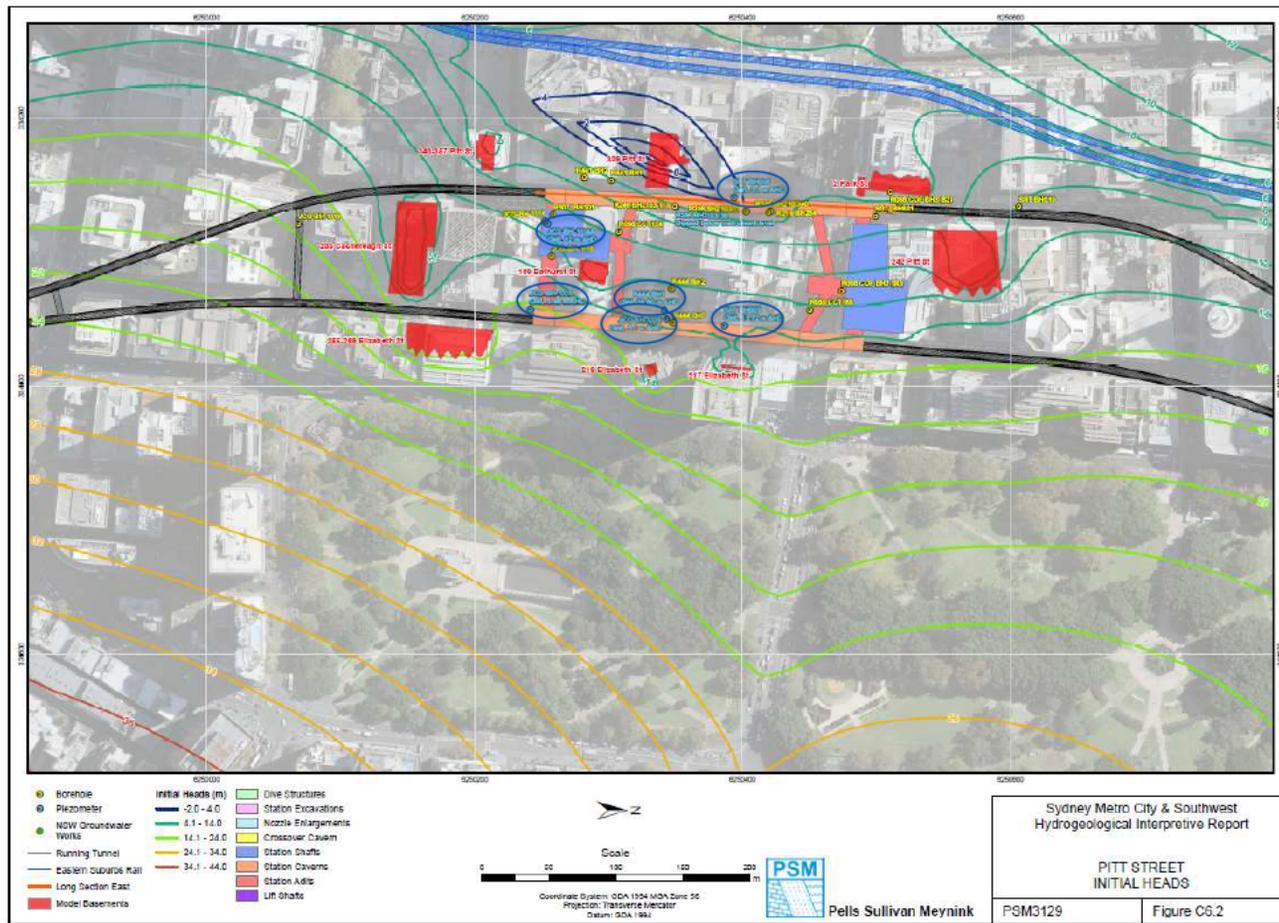


Figure 1-8: Initial Groundwater Heads (source Sydney Metro City and Southwest – TSE (DP-R-020) Hydrogeological Interpretive Report). Table 1-6 borehole locations are circled in blue.

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 Date Published: 25/09/2019

Management System - Uncontrolled Document when Printed

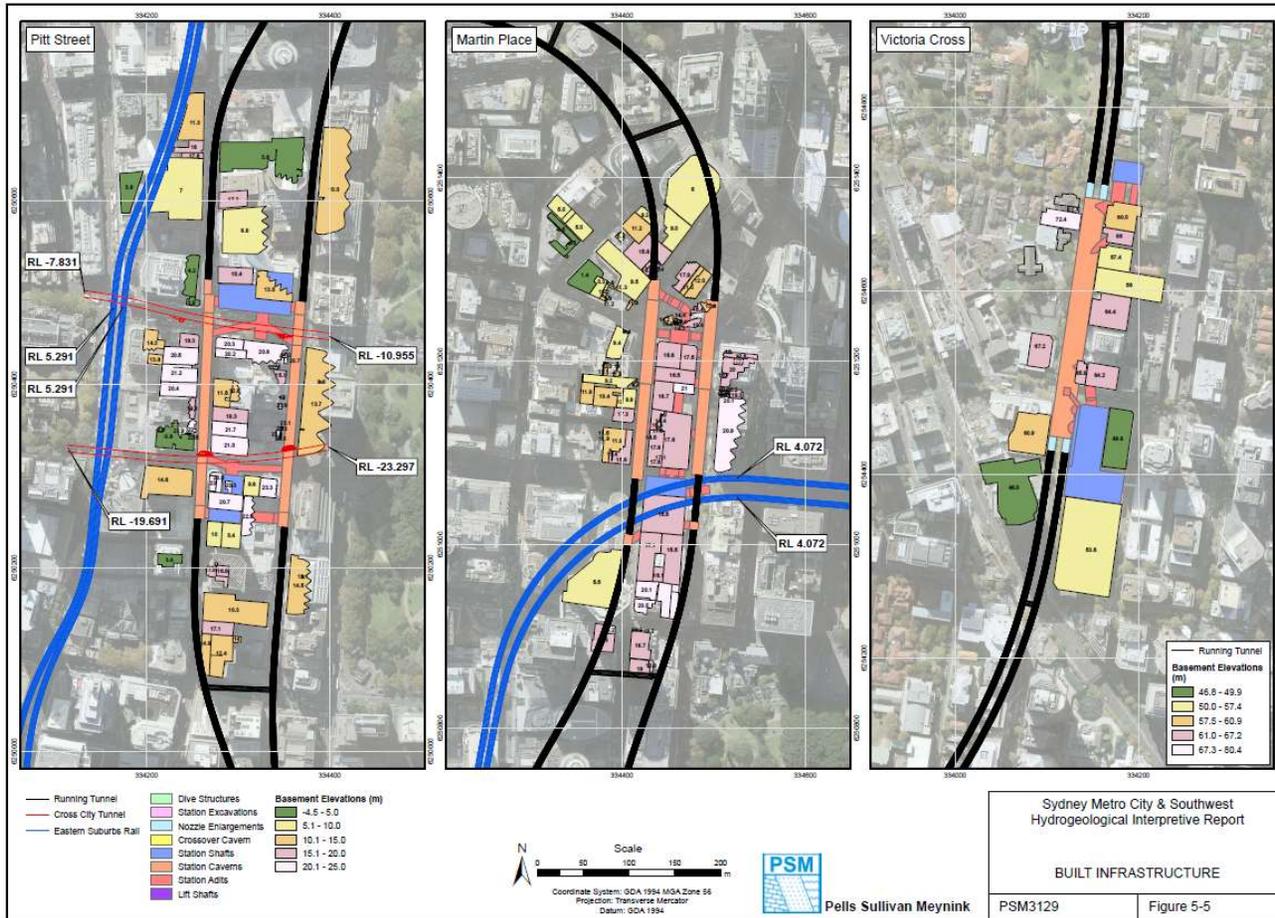


Figure 1-9: – Built Infrastructure surrounding Pitt St / Martin Place / Victoria Cross (source Sydney Metro City and Southwest – TSE (DP-R-020) Hydrogeological Interpretive Report).

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 **Date Published:** 25/09/2019

Management System - Uncontrolled Document when Printed

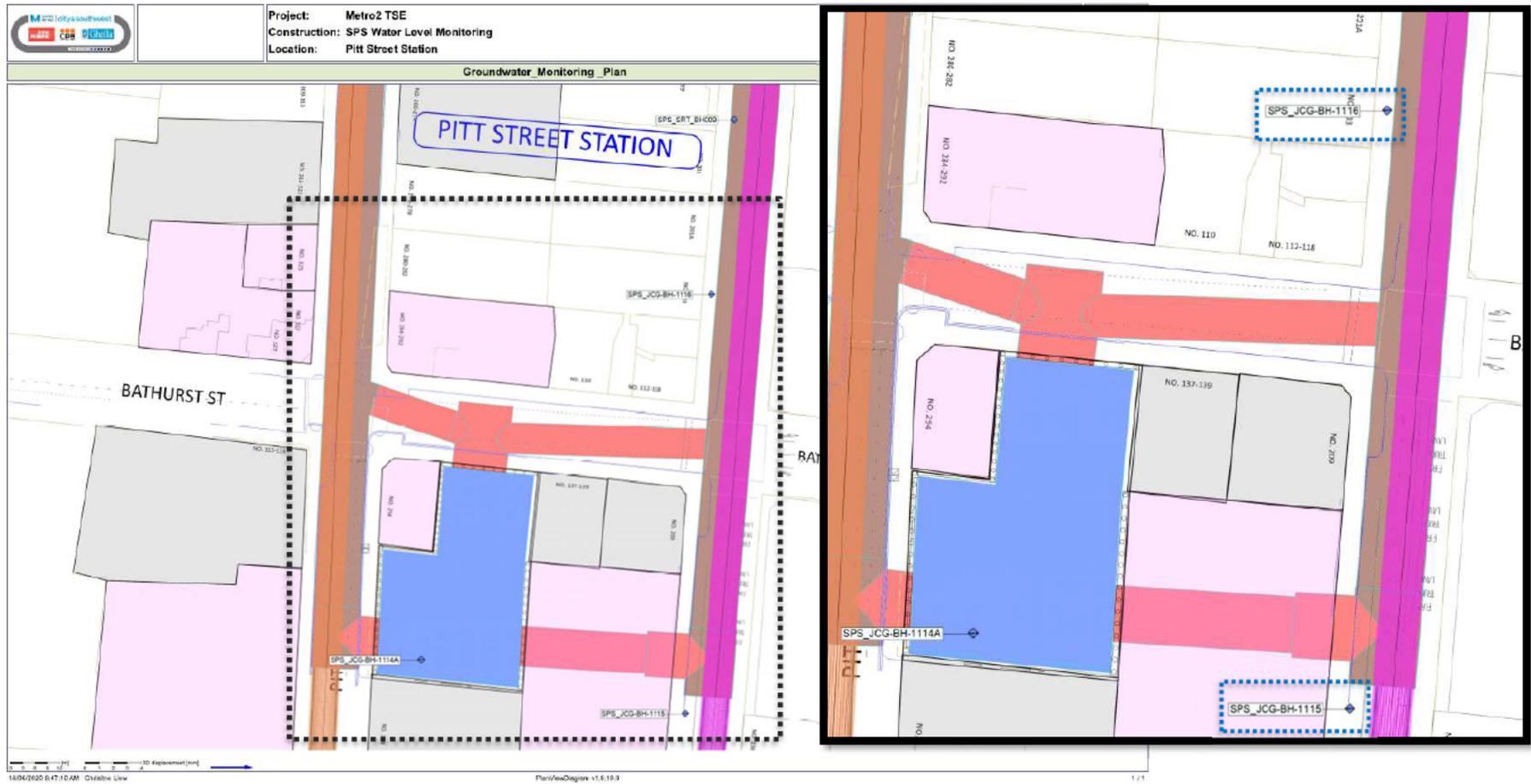


Figure 1-10: Groundwater Monitoring Bore Locations near Pitt St (Source: TSE Annual Groundwater Monitoring Report SMCSWTSG-JCG-TPW-EM-RPT-097433)

Title: N1070 Environmental Management Plan

ID: MSID-4-295 **Version:** 12.0 **Date Published:** 25/09/2019

Management System - Uncontrolled Document when Printed

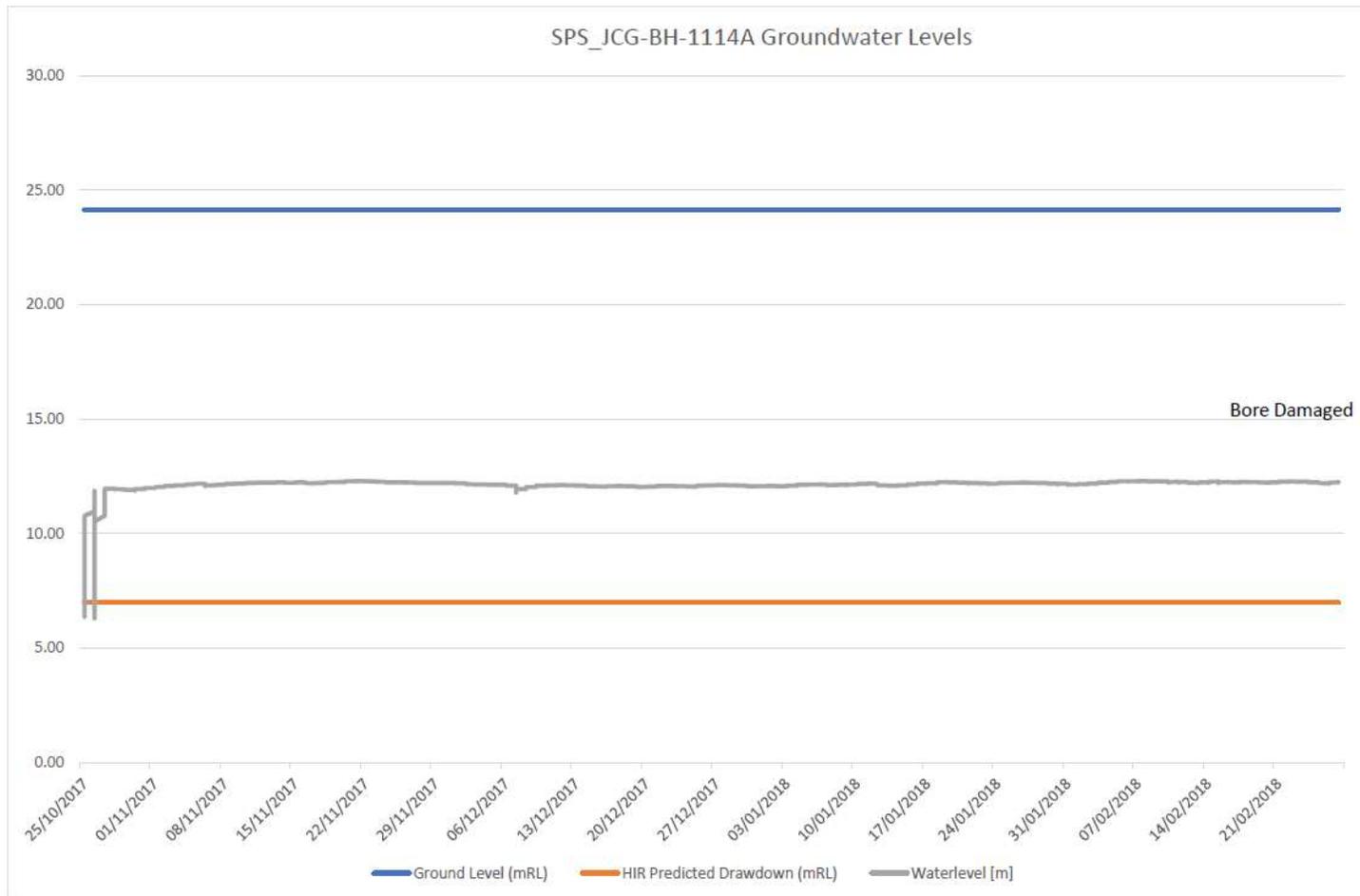


Figure 1-11: Groundwater Levels from Borehole JCG-BH-1114A (Source: TSE Annual Groundwater Monitoring Report SMCSWTSG-JCG-TPW-EM-RPT-097433)

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 Date Published: 25/09/2019

Management System - Uncontrolled Document when Printed

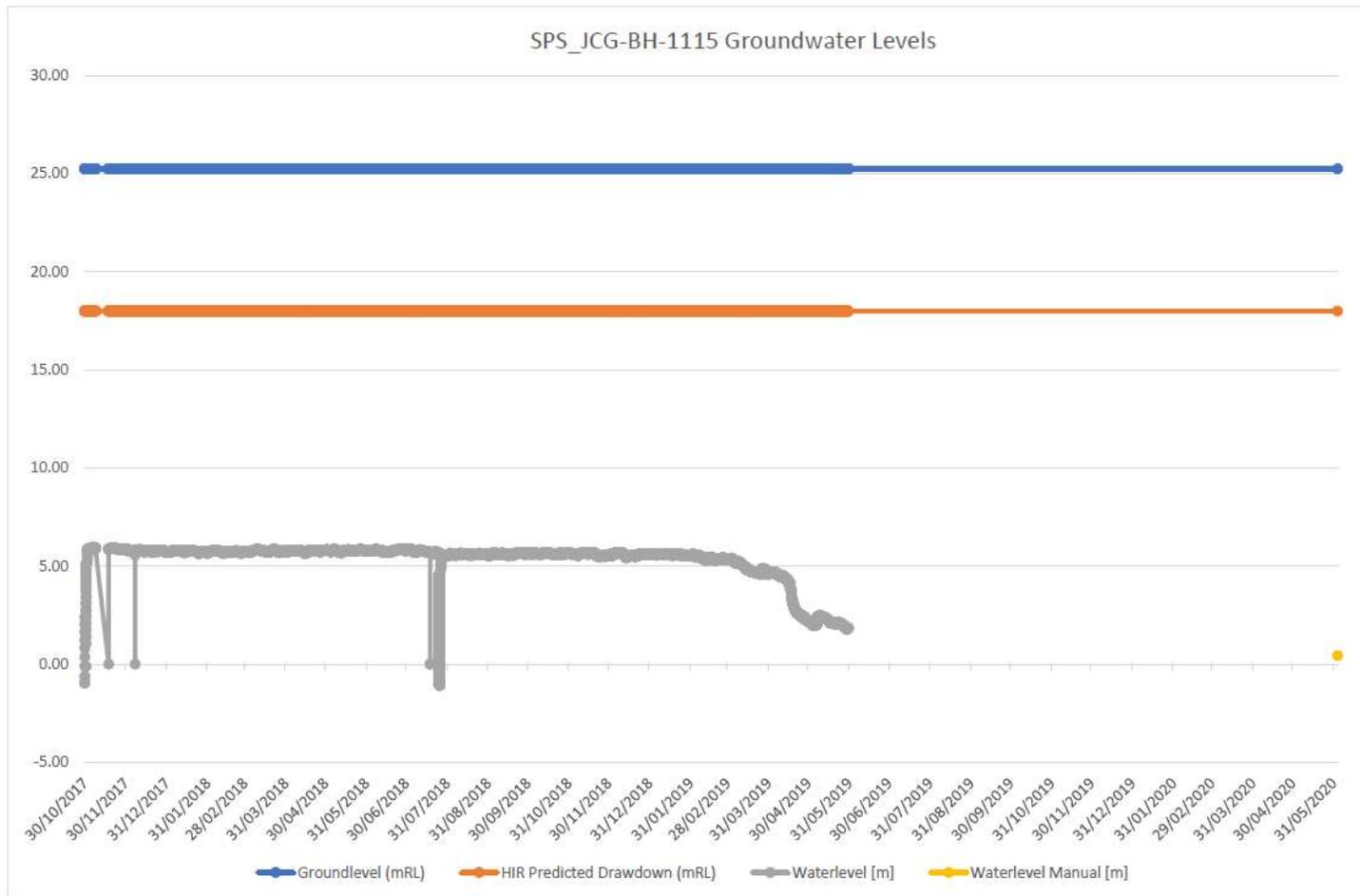


Figure 1-12: Groundwater Levels from Borehole JCG-BH-1115 (Source: TSE Annual Groundwater Monitoring Report SMCSWTSG-JCG-TPW-EM-RPT-097433)

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 **Date Published:** 25/09/2019

Management System - Uncontrolled Document when Printed

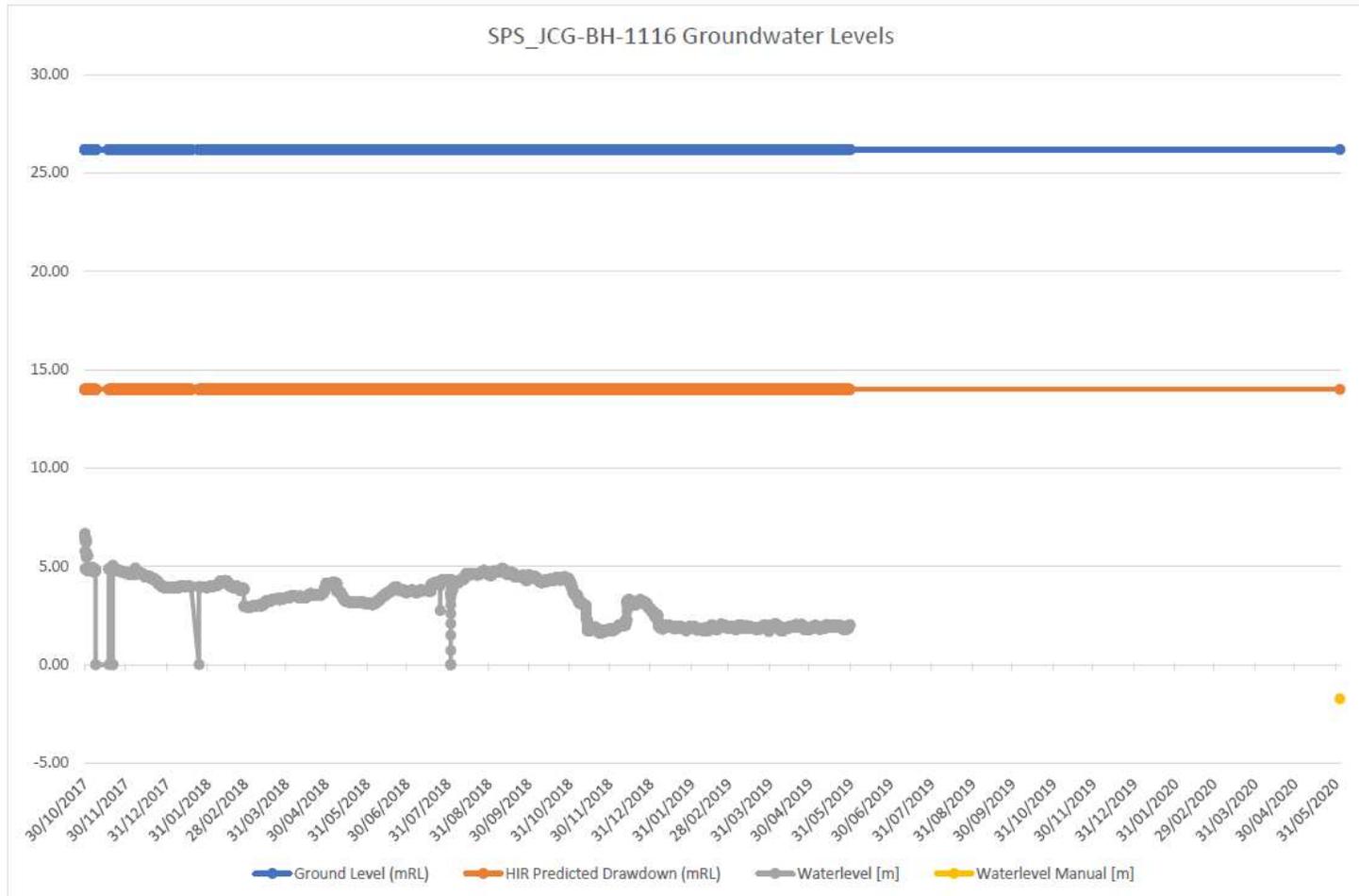


Figure 1-13: Groundwater Levels from Borehole JCG-BH-1116 (Source: TSE Annual Groundwater Monitoring Report SMCSWTSG-JCG-TPW-EM-RPT-097433)

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 Date Published: 25/09/2019

Management System - Uncontrolled Document when Printed

1.3 Project Compliance Requirements

1.3.1 Contract Clauses / Construction Environmental Management Framework (CEMF) / EIS Performance Outcomes

Specific contract clauses, Construction Environmental Management Framework (CEMF) references and the EIS Performance outcomes which set limits and/or govern impacts to soil, water and groundwater quality on the project are detailed below in Table 1-14 and Table 1-15. Appendix D2.3 of the CEMP includes all contractual information and CEMF requirements relating to this project.

Table 1-14: CEMF (2017) – Management of Soil, Water and Groundwater

CEMF Clause	Requirement	Schedule C1 SWTC- Appendix F3 Annexure 2	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
7.1a	The following groundwater management objectives will apply to the construction of the project:	The Contractor must comply with these requirements.	Part C Section 1.4	Project Director Environmental Manager	Prior to and during Construction
(i)	Reduce the potential for drawdown of surrounding groundwater resources;				
(ii)	Prevent the pollution of groundwater through appropriate controls;				
(iii)	Reduce the potential impacts on groundwater dependent ecosystems.				
7.2a	The following content may be provided within other sub plans such as the Soil and Water Management Plan and Flora and Fauna Management Plan.	The Contractor must comply with these requirements.	Part C Section 1	Environmental Manager	Prior to Construction
7.2b	Principal Contractors will develop and implement a Groundwater Management Plan for their scope of works. The Groundwater Management Plan will include as a minimum:	The Contractor must comply with these requirements.	Part C Part C Section 1	Environmental Manager	Prior to Construction
(i)	The groundwater mitigation measures as detailed in the environmental approval documentation;		Part C Section 1.3.2		
(ii)	The requirements of any applicable licence conditions;		Part C Section 1.3.2		

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 **Date Published:** 25/09/2019

Management System - Uncontrolled Document when Printed

CEMF Clause	Requirement	Schedule C1 SWTC- Appendix F3 Annexure 2	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing	
(iii)	Details of proposed extraction, use and disposal of groundwater, and measures to mitigate potential impacts to groundwater sources, incorporating monitoring, impact trigger definition and response actions for all groundwater sources potentially impacted by the SSI;		Part C Section 1.6.4			
(iv)	Evidence of consultation with the NSW Office of Water;		Part C Section 1.3.4	Environmental Manager		
(v)	The responsibilities of key project personnel with respect to the implementation of the plan;		Part C Section 1.5	Environmental Manager		
(vi)	Procedures for the treatment, testing and discharge of groundwater from the site;		Part C Section 1.6.4 Part D Appendix I	Environmental Manager		
(vii)	Compliance record generation and management; and		Part C Section 1.7	Environmental Manager		
(viii)	Details of groundwater monitoring if required.		Part C Section 1.6			
7.3a	Examples of groundwater mitigation measures include:		The Contractor must comply with these requirements.	Part C Section 1.5	Project Director Design Manager	Prior to and during construction
(i)	Implementing all feasible and reasonable measures to limit groundwater inflows to stations and crossovers; and			Part C Section 1.6		

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 **Date Published:** 25/09/2019

Management System - Uncontrolled Document when Printed

CEMF Clause	Requirement	Schedule C1 SWTC- Appendix F3 Annexure 2	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
(ii)	Undertaking groundwater monitoring during construction (levels and quality) in areas identified as 'likely' and 'potential' groundwater dependent ecosystems.			Environmental Manager	
15.1a	The following soil and water management objectives will apply to construction:	The Contractor must comply with these requirements.	Part C Section 1.4	Project Director Environmental Manager	During Construction
(i)	Minimise pollution of surface water through appropriate erosion and sediment control;				
(ii)	Maintain existing water quality of surrounding surface watercourses; and				
(iii)	Source construction water from non-potable sources, where feasible and reasonable.				
15.2a	Principal Contractors will develop and implement a Soil and Water Management Plan for their scope of works. The Soil and Water Management Plan will include as a minimum:	The Contractor must comply with these requirements. The Soil and Water Management Procedure must include	Part C Section 1	Environmental Manager	Prior to Construction
(i)	The surface water and flooding mitigation measures as detailed in the environmental approval documentation;		Part C Section 1.3.2	Environmental Manager	Prior to Construction

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 **Date Published:** 25/09/2019

Management System - Uncontrolled Document when Printed

CEMF Clause	Requirement	Schedule C1 SWTC- Appendix F3 Annexure 2	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
(ii)	Details of construction activities and their locations, which have the potential to impact on water courses, storage facilities, stormwater flows, and groundwater;	the Mains Water Consumption Target and the Non-Potable Water Consumption Target.	Part C Section 1.2	Environmental Manager	Prior to Construction
(iii)	Surface water and ground water impact assessment criteria consistent with the principles of the Australian and New Zealand Environment Conservation Council (ANZECC) guidelines;		Part C Section 1.5 Part C Section 1.6	Environmental Manager	Prior to Construction
(iv)	Management measures to be used to minimise surface and groundwater impacts, including identification of water treatment measures and discharge points, details of how spoil and fill material required by the SSI will be sourced, handled, stockpiled, reused and managed; erosion and sediment control measures; salinity control measures and the consideration of flood events;		Part C Section 1.5	Environmental Manager	Prior to Construction
(v)	A contingency plan, consistent with the Acid Sulphate Soils Manual (EPA 1998), to deal with the unexpected discovery of actual or potential acid sulphate soils, including procedures for the investigation, handling, treatment and management of such soils and water seepage;		Part D Appendix I	Environmental Manager	If required
(vi)	Management measures for contaminated material (soils, water and building materials) and a contingency plan to be implemented in the case of		Part C Section 1.5 Part D Appendix I	Environmental Manager	If required

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 **Date Published:** 25/09/2019

Management System - Uncontrolled Document when Printed

CEMF Clause	Requirement	Schedule C1 SWTC- Appendix F3 Annexure 2	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
	unanticipated discovery of contaminated material, including asbestos, during construction;				
(vii)	A description of how the effectiveness of these actions and measures would be monitored during the proposed works, clearly indicating how often this monitoring would be undertaken, the locations where monitoring would take place, how the results of the monitoring would be recorded and reported, and, if any exceedance of the criteria is detected how any non-compliance can be rectified;		Part C Section 1.6	Environmental Manager	Prior to Construction
(viii)	The requirements of any applicable EPL conditions;		Not Applicable	-	-
(ix)	The responsibilities of key project personnel with respect to the implementation of the plan;		Part C Section 1.5	Environmental Manager	Prior to Construction
(x)	Procedures for the development and implementation of progressive erosion and sediment control plans;		Part C Section 1.5	Environmental Manager	Prior to Construction
(xi)	Identification of locations where site specific Stormwater and Flooding Management Plans are required; and		Part C Section 1.2.3	Environmental Manager	Prior to Construction
(xii)	Compliance record generation and management.		Part C Section 1.7	Environmental Manager	Prior to Construction

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 **Date Published:** 25/09/2019

Management System - Uncontrolled Document when Printed

CEMF Clause	Requirement	Schedule C1 SWTC- Appendix F3 Annexure 2	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
15.2b	Principal Contractors will develop and implement Progressive Erosion and Sediment Control Plans (ESCPs) for all active worksites in accordance with Managing Urban Stormwater: Soils & Construction Volume 1 (Landcom, 2004) (known as the “Blue Book”). The ESCPs will be approved by the Contractor’s Environmental Manager (or delegate) prior to any works commencing (including vegetation clearing) on a particular site. Copies of the approved ESCP will be held by the relevant Contractor personnel including the Engineer and the Site Foreman.	The Contractor must comply with these requirements. The soil and Water Management Procedure must include the Mains Water Consumption Target and the Non-Potable Water Consumption Target.	Part C Section 1.5	Environmental Manager	Prior to and during construction
15.2c	ESCPs will detail all required erosion and sediment control measures for the particular site at the particular point in time and be progressively updated to reflect the current site conditions. Any amendments to the ESCP will be approved by the Contractor’s Environmental Manager (or delegate).	The Contractor must comply with these requirements. The soil and Water Management Procedure must include the Mains Water Consumption Target and the Non-Potable Water Consumption Target.	Part C Section 1.5	Environmental Manager	Prior to and during construction
15.2d	Principal Contractors will develop and implement Stormwater and Flooding Management Plans for the relevant construction sites. These plans will identify the appropriate design standard for flood mitigation based on the	The Contractor must comply with these requirements. The soil	Part C Section 1.2.3 Appendix A Emergency Response Plan	Health and Safety Manager	Prior to and during construction

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 **Date Published:** 25/09/2019

Management System - Uncontrolled Document when Printed

CEMF Clause	Requirement	Schedule C1 SWTC- Appendix F3 Annexure 2	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
	duration of construction, proposed activities and flood risks. The plan will develop procedures to ensure that threats to human safety and damage to infrastructure are not exacerbated during the construction period.	and Water Management Procedure must include the Mains Water Consumption Target and the Non-Potable Water Consumption Target.	(SMCSWSPS-CPB-ALL-HS-PLN-000002)		
15.2e	Principal Contractors will undertake the following soil and water monitoring as a minimum:	The Contractor must comply with these requirements. The soil and Water Management Procedure must include the Mains Water Consumption Target and the Non-Potable Water Consumption Target.			
(i)	Weekly inspections of the erosion and sediment control measures. Issues identified would be rectified as soon as practicable;		Part C Section 1.6.4 Part D Appendix E	Environmental Manager	Weekly during construction
(ii)	Additional inspections will be undertaken following significant rainfall events (greater than 20 mm in 24 hours); and		Part C Section 1.6.4	Environmental Manager	Following significant rainfall events
(iii)	All water will be tested (and treated if required) prior to discharge from the site in order to determine compliance with the parameters of the EPL. No water will be discharged from the site without written approval of the Contractor's Environmental Manager (or delegate). This is to form a HOLD POINT.		Part C Section 1.6.4 Part D Appendix I	Environmental Manager	
15.2f	The following compliance records will be kept by the Principal Contractors:		Part C Section 1.7		

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 **Date Published:** 25/09/2019

Management System - Uncontrolled Document when Printed

CEMF Clause	Requirement	Schedule C1 SWTC- Appendix F3 Annexure 2	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
(i)	Copies of current ESCPs for all active construction sites;	The Contractor must comply with these requirements. The soil and Water Management Procedure must include the Mains Water Consumption Target and the Non-Potable Water Consumption Target.	Part B Element 11	Environmental Manager	During Construction
(ii)	Records of soil and water inspections undertaken;		Part C Section 1.6.4	Environmental Manager	
(iii)	Records of testing of any water prior to discharge; and		Part C Section 1.6.4	Environmental Manager	Prior to discharge
(iv)	Records of the release of the hold point to discharge water from the construction site to the receiving environment.		Part B Element 11	Environmental Manager	During Construction
15.2g	The following water resources management objectives will apply to the construction of the project:	The Contractor must comply with these requirements.			
(i)	Minimise demand for, and use of potable water;		Part C Section 1.4		
(ii)	Maximise opportunities for water re-use from captured stormwater, wastewater and groundwater;		Part C Section 1.4 Section 10.4 Sustainability Management Plan [SMCSWSPS-CPB-ALL-SU-PLN-000001]	Project Director Environmental Manager Sustainability Manager	During Construction

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 **Date Published:** 25/09/2019

Management System - Uncontrolled Document when Printed

CEMF Clause	Requirement	Schedule C1 SWTC- Appendix F3 Annexure 2	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
(iii)	Examples of measures to minimize potable water consumption include: -Water efficient controls, fixtures and fittings in temporary facilities; -Collecting, treating and reusing water generated in operations, concrete batching and casting facility processes; -Using recycled water or treated water from onsite sources in the formulation of concrete; -Harvesting and reusing rainwater from roofs of temporary facilities; -Using water from recycled water networks; -Collecting, treating and reusing groundwater and stormwater; -Using water efficient construction methods and equipment; and -Providing designated sealed areas for equipment wash down.		Part C Section 1.4 Part C Section 1.5 Section 10.4 Sustainability Management Plan [SMCSWSPS-CPB-ALL-SU-PLN-000001]	Project Director Environmental Manager Sustainability Manager	During Construction
15.3a	Examples of surface water and flooding mitigation measures include:	The Contractor must comply with these requirements.	Part C Section 1.5		During Construction
(i)	Clean water will be diverted around disturbed site areas, stockpiles and contaminated areas;		Part C Section 1.5	Supervisor Environmental Manager	Throughout construction
(ii)	Control measures will be installed downstream of works, stockpiles and other disturbed areas;		Part C Section 1.5	Supervisor Environmental Manager	Throughout construction

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 **Date Published:** 25/09/2019

Management System - Uncontrolled Document when Printed

CEMF Clause	Requirement	Schedule C1 SWTC- Appendix F3 Annexure 2	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
(iii)	Exposed surfaces will be minimized, and stabilized / revegetated as soon feasible and reasonable upon completion of construction;		Part C Section 1.5	Supervisor Environmental Manager	Throughout construction
(iv)	Dangerous good and hazardous materials storage will be within bunded areas with a capacity of 110 per cent of the maximum single stored volume; and		Part C Section 1.5	Supervisor Environmental Manager	Throughout construction
(v)	Spill kits will be provided at the batch plants, storage areas and main work sites.		Part C Section 1.5	Supervisor Environmental Manager	Throughout construction

Table 1-15: EIS Environmental Performance Outcomes –Soil, Water and Groundwater

EIS Aspect	Environmental Performance Outcome	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
Groundwater	<ul style="list-style-type: none"> ▪ The project would make good any impacts on groundwater users ▪ The project would avoid any damage to buildings from settlement 	Section 1.5	Project Director Design Manager Environmental Manager	During Construction

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 **Date Published:** 25/09/2019

Management System - Uncontrolled Document when Printed

EIS Aspect	Environmental Performance Outcome	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
Soils, Contamination and water quality	<ul style="list-style-type: none"> ▪ Erosion and sediment controls during construction would be implemented in accordance with <i>Managing Urban Stormwater: Soils and Construction Volume 1</i> (Landcom, 2004) and <i>Managing Urban Stormwater: Soils and Construction Volume 2</i> (Department of Environment and Climate Change, 2008a) ▪ There would be no impacts on aquatic environments associated with the disturbance of acid sulfate soils during construction ▪ Any contamination on project sites would be remediated to suit future land use ▪ The project would protect or contribute to achieving the Water Quality Objectives, during construction and operation ▪ Construction water quality discharge would comply with the requirements of an environment protection licence issued to the project ▪ Operation water quality discharge would comply with a discharge criteria determined in consultation with the NSW Environment Protection Authority 	Section 1.5 Section 1.5.1	Environmental Manager Supervisor Senior Project Engineer	During Construction Operational water discharge is not applicable to this plan or any construction component of this project

1.3.2 Conditions of Project Environmental Approvals

Project specific environmental CoA's and Revised Environmental Mitigation Measures (REMMs) applicable to Pitt Street that specifically address the management of soil, water and groundwater are included in Table 1-16 and Table 1-17 below. Appendix D2.1 of the CEMP contains all conditions of approval information relevant to this project.

Table 1-16: Conditions of Approval – Management of Soil, Water and Groundwater

SSI 7400 Condition Number	Requirement	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
C3	The following CEMP sub-plans must be prepared in consultation with the relevant government agencies identified for each CEMP sub-plan and be consistent with the CEMF and CEMP referred to in Condition C1. (d) Soil and Water – DPI Water, Relevant Council(s), OEH, SES, NSW Fire and Rescue (e) Groundwater – DPI Water	Part C Section 1.3.4 Part D Appendix I	Environmental Manager	Prior to construction
C4	The CEMP sub-plans must state how: (a) the environmental performance outcomes identified in the EIS as amended by the documents listed in A1 will be achieved; (b) the mitigation measures identified in the EIS as amended by documents listed in A1 will be implemented; (c) the relevant terms of this approval will be complied with; and (d) issues requiring management during construction, as identified through ongoing environmental risk analysis, will be managed.	Part C Table 1-15 Part C Section 1.3 Part C Section 1.4 Part C Section 1.5 Part C Section 1.6	Environmental Manager	Prior to construction

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 **Date Published:** 25/09/2019

Management System - Uncontrolled Document when Printed

SSI 7400 Condition Number	Requirement	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
C5	The CEMP sub-plans must be developed in consultation with relevant government agencies. Where an agency(ies) request(s) is not included, the Proponent must provide the Secretary justification as to why. Details of all information requested by an agency to be included in a CEMP sub-plan as a result of consultation and copies of all correspondence from those agencies, must be provided with the relevant CEMP sub-plan.	Part C Section 1.3.4 Part D Appendix I	Environmental Manager	Prior to construction
C8	Construction must not commence until the CEMP and all CEMP sub-plans have been approved by the Secretary. The CEMP and CEMP sub-plans, as approved by the Secretary, including any minor amendments approved by the ER (or AA in regards to the Noise and Vibration sub-plan), must be implemented for the duration of construction. Where the CSSI is being staged, construction of that stage is not to commence until the relevant CEMP and sub-plans have been approved by the Secretary.	Part C Section 1 Part C Section 3.2	Project Director Environmental Manager	Prior to and during construction
C9	The following Construction Monitoring Programs must be prepared in consultation with the relevant government agencies identified for each Construction Monitoring Program to compare actual performance of construction of the CSSI against predicted performance. © Water Quality – EPA and Relevant Council(s) (d) Groundwater – DPI Water	Part C Section 1.6	Environmental Manager	Prior to and during construction
C10	Each Construction Monitoring Program must provide: (a) details of baseline data available; (b) details of baseline data to be obtained and when;	Part C Section 1.6	Environmental Manager	Prior to and during construction

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 **Date Published:** 25/09/2019

Management System - Uncontrolled Document when Printed

SSI 7400 Condition Number	Requirement	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
	(c) details of all monitoring of the project to be undertaken; (d) the parameters of the project to be monitored; © the frequency of monitoring to be undertaken; (f) the location of monitoring; (g) the reporting of monitoring results; (h) procedures to identify and implement additional mitigation measures where results of monitoring are unsatisfactory; and (i) any consultation to be undertaken in relation to the monitoring programs.			
C12	The Construction Monitoring Programs must be developed in consultation with relevant government agencies as identified in Condition C9 of this approval and must include, to the written satisfaction of the Secretary, information requested by an agency to be included in a Construction Monitoring Programs during such consultation. Details of all information requested by an agency including copies of all correspondence from those agencies, must be provided with the relevant Construction Monitoring Program.	Part C Section 1.6	Environmental Manager	Prior to construction (With Sub Plan approval)
C13	The Construction Monitoring Programs must be endorsed by the ER (or AA in regards to the Noise and Vibration Construction Monitoring Program) and then submitted to the Secretary for approval at least one (1) month before commencement of construction or within another timeframe agreed with the Secretary.	Part C Section 1.6.1	Environmental Manager	One (1) month prior to commencement of construction

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 **Date Published:** 25/09/2019

Management System - Uncontrolled Document when Printed

SSI 7400 Condition Number	Requirement	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
C14	Construction must not commence until the Secretary has approved all of the required Construction Monitoring Programs, and all relevant baseline data for the specific construction activity has been collected.	Part C Section 1.6.3	Environmental Manager	Prior to construction
C15	The Construction Monitoring Programs, as approved by the Secretary including any minor amendments approved by the ER (or AA in regards to the Noise and Vibration Construction Monitoring Program), must be implemented for the duration of construction and for any longer period set out in the monitoring program or specified by the Secretary, whichever is the greater.	Part C Section 1.6.1	Environmental Manager	Prior to construction
C16	The results of the Construction Monitoring Programs must be submitted to the Secretary for information, and relevant regulatory agencies, for information in the form of a Construction Monitoring Report at the frequency identified in the relevant Construction Monitoring Program.	Part C Section 1.6.4	Environmental Manager	During Construction
E4	Dangerous goods, as defined by the Australian Dangerous Goods Code, must be stored and handled strictly in accordance with: (a) all relevant Australian Standards; (b) for liquids, a minimum bund volume requirement of 110% of the volume of the largest single stored volume within the bund; (c) Storing and Handling Liquids: Environmental Protection – Participants Manual (Department of Environment and Climate Change, May 2007); and	Part C Section 1.5	Site Supervisor Project Manager Environmental Manager	During Construction

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 **Date Published:** 25/09/2019

Management System - Uncontrolled Document when Printed

SSI 7400 Condition Number	Requirement	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
	<p>(d) the Environmental Compliance Report: Liquid Chemical Storage, Handling and Spill Management – Part B Review of Best Practice and Regulation (Department of Environment and Conservation (NSW), 2005).</p> <p>In the event of an inconsistency between the requirements listed from (a) to (d) above, the most stringent requirement shall prevail to the extent of the inconsistency.</p>			
E65	All reasonably practicable erosion and sediment controls must be installed and appropriately maintained to minimize any water pollution. When implementing such controls, any relevant guidance in the Managing Urban Stormwater Series must be considered.	Part C Section 1.5	Project Manager Environmental Manager	During Construction
E69	An Unexpected Contaminated Land and Asbestos Finds Procedure must be prepared and must be followed should unexpected contaminated land or asbestos be excavated or otherwise discovered during construction.	Part C Section 1.5	Environmental Manager	Prior to and during construction
E70	The Unexpected Contaminated Land and Asbestos Finds Procedure must be implemented throughout construction	Part C Section 1.5	Project Manager Environmental Manager	During Construction
E107	The CSSI must be constructed and operated so as to maintain the NSW Water Quality Objectives where they are being achieved as at the date of this approval, and contribute towards achievement of the NSW Water Quality Objectives over time where they are not	Part C Section 1.5.1 Part C Section 1.6.4	Environmental Manager	During Construction

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 **Date Published:** 25/09/2019

Management System - Uncontrolled Document when Printed

SSI 7400 Condition Number	Requirement	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
	being achieved as at the date of this approval, unless an EPL in force in respect of the CSSI contains different requirements in relation to the NSW Water Quality Objectives, in which case those requirements must be complied with.			
E108	Drainage feature crossings (permanent and temporary watercourse crossings and stream diversions) and drainage swales and depressions must be undertaken in accordance with relevant guidelines and designed by a suitably qualified and experienced person	There are no drainage feature crossings (permanent and temporary watercourse crossings and stream diversions), drainage swales and depression as part of the project.	N/A	N/A

Table 1-17: Revised Environmental Mitigation Measures Applicable to Pitt St – Management of Soil, Water and Groundwater

SSI 7400 REMM Number	Requirement	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
SCW3	Erosion and sediment control measures would be implemented in accordance with Managing Urban Stormwater: Soils and Construction Volume 1 (Landcom, 2004) and Managing Urban Stormwater: Soils and Construction Volume 2 (Department of Environment and Climate Change, 2008). Measures would be designed as a minimum for the 80 th percentile; 5-day rainfall event.	Part C Section 1.5	Project Manager Environmental Manager	During Construction

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 **Date Published:** 25/09/2019

Management System - Uncontrolled Document when Printed

SSI 7400 REMM Number	Requirement	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
SCW4	Discharges from the construction water treatment plants would be monitored to ensure compliance with the discharge criteria in an environment protection licence issued to the project.	Part C Section 1.6	Project Manager Environmental Manager	During discharges
FH9	<p>Design of the project would be reviewed to, where feasible and reasonable, not worsen existing flooding characteristics up to and including the 100 year annual recurrence interval event in the vicinity of the project. Detailed flood modelling would consider:</p> <ul style="list-style-type: none"> • Potential changes to flood prone land and flood levels • Potential changes to overland flow paths • Redistribution of surface runoff as a result of project infrastructure • Behaviour of existing stormwater runoff • Potential changes required to flood evacuation routes, flood warning systems and signage. <p>Flood modelling to support detailed design would be carried out in accordance with the following guidelines:</p> <ul style="list-style-type: none"> • Floodplain Development Manual (NSW Government, 2005b) • Floodplain Risk Management Guideline: Practical Consideration of Climate Change (DECC, 2007b) • Floodplain Risk Management Guide: Incorporating Sea Level Rise Benchmarks in Flood Risk Assessments (DECCW, 2010c) 	<p>Civil Design Report Stage 3 (SMCSWSPS-AUR-ALL-CE-REP-000002)</p> <p>Part C</p>	<p>Section 5.8 Section 8.1</p> <p>Section 1.5</p>	During Design

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 **Date Published:** 25/09/2019

Management System - Uncontrolled Document when Printed

SSI 7400 REMM Number	Requirement	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
	<ul style="list-style-type: none"> • New guideline and changes to section 117 direction and EP&A Regulation on flood prone land, Planning Circular PS 07-003 (NSW Department of Planning, 2007). <p>Flood modelling and consideration of mitigation measures would be carried out in consultation with the relevant local councils, the Office of Environment and Heritage and the State Emergency Services.</p> <p>Not worsen is defined as:</p> <ul style="list-style-type: none"> • A maximum increase flood levels of 50mm in a 100 year Average Recurrence Interval flood event • A maximum increase in time of inundation of one hour in a 100 year Average Recurrence Interval flood event • No increase in the potential for soil erosion and scouring from any increase in flow velocity in a 100 year Average Recurrence Interval flood event. 			
FH10	<p>During detailed design, project infrastructure would be designed to meet the following criteria, where feasible and reasonable:</p> <ul style="list-style-type: none"> • Locate station and service entrances to underground stations above the greater of the 100 year annual recurrence interval flood level plus 500mm or the probable maximum flood level 	<p>Civil Design Report Stage 3 [SMCSWSPS-AUR-STA-CE-REP-000001]</p> <p>Part C</p>	<p>Table 2-1</p> <p>Section 1.5</p>	<p>During Design</p>

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 **Date Published:** 25/09/2019

Management System - Uncontrolled Document when Printed

SSI 7400 REMM Number	Requirement	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
	<ul style="list-style-type: none"> • Provide site surface grading and drainage collection systems at the Chatswood and Marrickville dive structures to manage the risk of local catchment and overland flooding for events up to and including the probable maximum flood event • Locate aboveground rail system facilities (such as traction power supply sub stations) at least above the 100 year annual recurrence interval flood level plus 500mm • Protect facilities that are identified as being critical to emergency response operations from the probable maximum flood level. 			
GWG1	<p>A detailed geotechnical model for the project would be developed and progressively updated during design and construction. The detailed geotechnical model would include:</p> <ul style="list-style-type: none"> • Assessment of the potential for damage to structures, services, basements and other sub-surface elements through settlement or strain • Predicted changes to groundwater levels, including at nearby water supply works. <p>Where building damage risk is rated as moderate or higher (as per the CIRIA 1996 risk-based criteria), a structural assessment of the affected buildings / structures would be carried out and specific measures implemented to address the risk of damage.</p> <p>With each progressive update of the geotechnical model the potential for exceedance of the following target changes to groundwater levels would be reviewed:</p> <ul style="list-style-type: none"> • Less than 2.0 metres – general target • Less than 4.0 metres – where deep building foundations present 	Not Applicable to Pitt St ISD as evidenced in Appendix A of the SMCSW Chatswood to Sydenham Staging Report (Revision 6.0 Date 2 July 2019)	-	-

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 Date Published: 25/09/2019

Management System - Uncontrolled Document when Printed

SSI 7400 REMM Number	Requirement	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
	<ul style="list-style-type: none"> • Less than 1.0 metre – residual soils • Less than 0.5 metre – residual soils (Blues Point) (fill / Aeolian sand). <p>Where a significant exceedance of target changes to groundwater levels are predicted at surrounding land uses and nearby water supply works, an appropriate groundwater monitoring program would be developed and implemented. The program would aim to confirm no adverse impacts on groundwater levels or to appropriately manage any impacts. Monitoring at any specific location would be subject to the status of the water supply work and agreement with the landowner.</p> <p>The geotechnical model and groundwater monitoring program would be developed in consultation with the Department of Primary Industries (Water).</p>			
GWG2	Condition surveys of buildings and structures in the vicinity of the tunnel and excavations would be carried out prior to the commencement of excavation at each site.	Not Applicable to Pitt St ISD as evidenced in Appendix A of the SMCSW Chatswood to Sydenham Staging Report (Revision 6.0 Date 2 July 2019)	-	-

1.3.3 Specific Conditions of Local, State and Commonwealth Legislation

The POEO Act defines waters as the whole or any part of:

- Any river, stream, lake, lagoon, swamp, wetlands, unconfined surface water, natural or artificial watercourse, dam or tidal waters (including the sea), or
- Any water stored in artificial works, any water in water mains, water pipes or water channels, or any underground or artesian water.

Section 120 of the POEO Act states that it is illegal to pollute waters. Under the Act, ‘water pollution’ includes introducing litter, sediment, oil, grease, wash water, debris, and flammable liquids such as paint etc. into waters or placing such material where it is likely to be washed or blown into waters or the stormwater system or percolate into groundwater. All practicable steps should be taken to minimise the risk of pollution of waters.

Conditions of local, NSW and Commonwealth legislation that apply specific criteria to the management of water quality on the project include:

- Water Management Act, 2000;
- Water Act 1912 – Protect groundwater-dependent ecosystems;
- Contaminated Land Management Act 1997 – EPA; and
- Contaminated Land Management Act, 1997 – Duty to report contamination.

Refer to the Appendix D1 of this CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001) for details of relevant legislation.

1.3.4 Agency Consultation

Agencies to be consulted for this Sub-Plan, incorporating the Water Quality Monitoring Program, are as detailed in the table below:

Table 1-18: Agency Consultation

Subject	Agency Consultation
Soil, Water and Groundwater Management Sub-Plan	<ul style="list-style-type: none"> • DPI Water • Relevant Councils (City of Sydney) • Office of Environment and Heritage (OEH) • State Emergency Services (SES) • NSW Fire and Rescue
Water Quality Monitoring Program	<ul style="list-style-type: none"> • EPA • DPI Water • Relevant Councils (City of Sydney)

CPB has engaged with the above agencies in developing and finalising this Sub-Plan. Following finalisation, all the agencies will be provided with a copy of this Sub-Plan.

This sub-plan will be submitted to the Planning Secretary at least one month before commencement of construction, be approved prior to commencement of works and be implemented for the duration. All comments received from agencies and CPBs response to these comments are included in Appendix I.

1.4 Project Objectives

CPB's objectives for management of soil, surface water and groundwater during delivery of PSISD works are aligned with the CEMF which states that the following management objectives will apply to construction:

- Reduce the potential for drawdown of surrounding groundwater resources
- Prevent the pollution of groundwater through appropriate controls
- Reduce the potential impacts on groundwater dependent ecosystems
- Minimise pollution of surface water through appropriate erosion and sediment control
- Maintain existing water quality of surrounding surface watercourses
- Source construction water from non-potable sources, where feasible and reasonable.

Based on the requirements defined in Part C Section 1.1, the findings of project risk management processes and the potential impacts on the community, the following objectives have been set for managing water quality on the project. Any deviance from the targets will result in Project Management immediately implementing corrective actions:

Table 1-19 Project Objectives for Soil, Water and Groundwater

Metric/Measure	Objective	Timeframe	Accountability
Incidents of environmental harm as a result of discharge off site	Zero	At all times	Project Director
Number of enforcement notices / penalties issued by regulators and/or client (related to soil, surface water or groundwater)	Zero	At all times	Project Director
No complaints from the Regulators as a result of the works undertaken (related with soil, surface water or groundwater)	Zero Complaints	At all times	Project Director
Water efficiency initiatives identified (<i>Water Balance Study identified 8.61% potable water reduction using reuse water</i>)	Reduce potable water usage by 10% (Stretch target) during construction	Over Total Duration of Project	Project Director
Water use monitored	100 % of water use activities metered	At all times	Project Director

1.5 Controls Used to Manage Soil, Water and Groundwater

Controls that are adequate to minimise water use, protect groundwater resources, to ensure compliance, and to reduce risk to the lowest acceptable rating achievable are implemented before any relevant works commence. Elimination of the hazard is the first preference of control, followed by engineering, then administrative controls.

The following procedures have also been developed to support soil, water and groundwater management processes during construction (refer to Appendix H):

- Water Management Procedure (SMCSWSPS-CPB-ALL-EM-PRO-000007)
- Spill Management (SMCSWSPS-CPB-ALL-EM-PRO-000004)
- Unexpected Finds Soil Contamination and Asbestos (SMCSWSPS-CPB-ALL-EM-PRO-000006)
- Erosion and Sediment Control Management (SMCSWSPS-CPB-ALL-EM-PRO-000002)
- Spoil Classification Reuse and Recycling (SMCSWSPS-CPB-ALL-EM-PRO-000005)

Options investigated for discharge of construction water included discharge via a Sydney Water Trade Waste Agreement or discharge to stormwater via City of Sydney Council approval. The Trade Waste Agreement was rejected by Sydney Water and an application for discharge to stormwater is currently under review by City of Sydney Council with early consultation being positive. Pre-treatment (eg. pH adjustment, suspended solids removal) will be required prior to discharge. CPB will ensure it complies with the requirements of the approval obtained for the discharge of water from the project site.

With specific reference to REMMs condition FH10, the design for the PSISD, as outlined in Table 2-1 of the Civil – Design Report (SMCSWSPS-AUR-STA-CE-REP-000001), has incorporated the design criteria as specified in this condition where feasible and reasonable. The station entrances design has incorporated the 1% AEP (100-year ARI) plus 500mm requirement. Protection of critical facilities against the probable maximum flood (PMF) level has also been incorporated into the design of the PSISD.

With specific reference to REMMs condition FH9, as part of the PSISD project design, the project designers have undertaken a Flooding Impact Assessment Report (Reference SWCSWSPS-AUR-ALL-CE-REP-000002). Conclusions from the assessment report are summarized below.

Pitt St North

The designer has concluded, based on the results of the assessment, that no major increases in the peak flood levels are predicted as a result of the proposed northern development in a 1% AEP (100-year ARI) design event. However, minor increases in flood levels of less than 100mm are predicted as a result of the proposed northern development in a localized area in Park Street, near Park Street/Pitt Street intersection. This is considered acceptable based on the following:

- Increases in flood levels are localised
- Only minor increases of < 0.5m/s in peak overland flow velocities are predicted in Park St
- No increase in flood hazard classification from “Low” is predicted.

- No increase in the time of inundation of greater than 1 hours is anticipated.

Pitt St South

The designer has concluded, based on the results of the assessment, that no notable increases in the peak flood depth are predicted as a result of the southern development in design events up to and including 1% AEP design event. Only minor increases in overland flow velocities of up to 0.2 m/s are predicted in a limited area in Bathurst Street as a result of the proposed southern development in a 1% AEP design event. No increase in the flood hazard classification from “Low” or increase in time of inundation is predicted as a result of the proposed southern development in design events up to and including 1% AEP design event.

Controls used on this project will include the following:

Table 1-20 Controls to Manage Water Quality

Control	Accountability
Prior to the commencement of works, a site-specific Erosion and Sediment Control Plan (ESCP) would be prepared in accordance with the 'Blue Book' and updated throughout Construction so it remains relevant to the activities. The ESCP measures would be implemented prior to the commencement of works and maintained throughout Construction. ESCPs will be updated as works progress to ensure they are always relevant to on-ground activities. Any updates to the ESCP are to be approved by the Environmental Manager (or delegate).	Senior Project Engineer Engineer Environmental Manager
Prior to the commencement of works, a Discharge Impact Assessment shall be prepared to assess the impacts of proposed construction-phase project discharge limits against the NSW Water Quality Objectives (WQOs) in accordance with condition E107.	Environmental Manager
Building condition surveys to be undertaken in accordance with section 7.2 of CNVMP prior to commencement of construction and at the completion of construction in accordance with E59.	Environmental Manager
Erosion and sediment controls in accordance with Appendix F must be installed prior to or immediately upon any disturbance to vegetation or soil. These controls must remain in place until revegetation, stabilisation or hardscaping has occurred.	Environmental Manager Engineer
Clean water approaching the site from external catchments beyond the construction worksites will be managed via clean water drains and diversion methods to minimise run-on into the site and excavation areas.	Site Supervisor Engineer Environmental Manager
Stabilised access, rumble grids, wash bays or similar must be established for the entries site and exits to site to minimize mud on public roads. Any tracked material will be cleaned from site egress points as soon as possible.	Engineer Site Supervisor Environmental Manager

All materials must be stockpiled away from water flow paths and waterways. Sediment controls (eg. sediment fence) are to be installed along the lower edge of all stockpiles	Site Supervisor Project Engineer
Exposed areas will be temporarily stabilised during Construction (prior to final stabilisation) wherever practicable.	Site Supervisor Engineer Environmental Manager
All erosion and sediment controls will be inspected at least weekly, before a site closure of two days or more, and after rainfall exceeding 10 mm in 24 hours (if safe to do so). Maintenance will be carried out as required prior to the next forecast rainfall event.	Environmental Manager
Sediment laden water (dirty water) captured onsite must be preferentially reused eg: dust control.	Engineer Site Supervisor
Water discharged from the site is in strict accordance with the site's dewatering procedure (SMCSWSPS-CPB-ALL-EM-PRO-000007 Appendix H), which is approved by the Environmental Manager. No transfer/discharge of water will be made without a Permit to Dewater approved by the Environmental Manager.	Environmental Manager Site Supervisor Engineer
An adequate number of concrete washout facilities must be maintained at all times. The washout facilities will be isolated from surface water flows using bunds to prevent contamination of clean surface waters. They will be lined to prevent contamination of soil and groundwater.	Engineer Senior Project Engineer Site Supervisor
All fuels, chemicals and hazardous liquids would be stored away from drainage lines, within an impervious bunded area in accordance with Australian Standards (AS1940), SDS, EPA Guidelines and the <i>Chemical Storage and Spill Response Guidelines</i> (TfNSW, 2018e).	Engineer Senior Project Engineer Site Supervisor
All chemical storage facilities will be designed and constructed in accordance with: all relevant Australian Standards <ul style="list-style-type: none"> – for liquids, a minimum bund volume requirement of 110% of the volume of the largest single stored volume within the bund – Storing and Handling Liquids: Environmental Protection - Participants Manual – Environmental Compliance Report: Liquid Chemical Storage, Handling and Spill Management - Part B Review of Best Practice and Regulation – storage locations for non-liquids must be identified, away from stormwater drains, easily accessible for maintenance and spill clean-up in the event of a rupture – bunding maintenance must be undertaken to ensure capacity is maintained In the event of an inconsistency between the requirements the most stringent requirement will prevail to the extent of the inconsistency.	Engineer Senior Project Engineer Site Supervisor

Spill response material / spill kits are to be available at various locations on site (eg. storage and compound areas) for use in spill response. All fuel trucks / service vehicles are to carry appropriate spill response material / kits. Spill kit locations are to be shown on SEPs.	Engineer Senior Project Engineer Site Supervisor
Refuelling must not occur within 30m of a stormwater inlet (without appropriate controls in place).	Supervisor
Metering of water use for construction water consumption and reporting monthly in Synergy.	Environmental Manager
Opportunities to minimise the use of high-quality water will be continually sought and adopted as appropriate. These may include use of water efficient fixtures/fittings in ablution facilities, reuse of collected rainwater during construction and incorporation of water efficient construction methodologies.	Engineer Senior Project Engineer Site Supervisor
Where possible, install permanent drainage / waterproofing as early as possible in the construction program to limit groundwater inflows into the project works areas.	Engineer Senior Project Engineer Site Supervisor
Vehicles and machinery would be properly maintained and routinely inspected to minimise the risk of fuel/oil leaks. Construction plant, vehicles and equipment would also be refuelled offsite, or in a designated refuelling area.	Senior Project Engineer Site Supervisor Environmental Manager
In the event of a pollution incident, works would cease in the immediate vicinity and the Contractor would immediately notify the Sydney Metro Project Director and Sydney Metro Environment and Planning Manager.	Senior Project Engineer Site Supervisor Environmental Manager
The body of any vehicle or trailer used to transport excavation spoil must be covered before leaving the premises to prevent any spillage or escape of any dust, waste of spoil.	Site Supervisors
All refueling points, including refueling trucks, will carry hydrocarbon spill kits.	Site Manager

1.5.1 Water Treatment and Discharge

Groundwater, rainwater and all construction generated water at both north and south station boxes will be collected by a water clarification system where initial solids can be removed, pH and turbidity can be adjusted, and monitoring can be completed prior to a controlled discharge. No water is being accepted by the project from the Line Wide contractor works.

It is expected, based on information that is available, previous contractor's experiences and observations made during recent site inspections, that the majority of the water requiring treatment

and discharge will either be rainwater that falls directly on the station box or process water. Limited volumes of groundwater are expected to be encountered by the project and within the station platforms and adits given they are tanked.

Given the limited catchment area contribution by the project to the receiving environment (<0.25%), and also the potential volumes of water expected to be discharged from the project sites when compared to that which is experienced within the receiving environment of Sydney Harbour (up to 6,000 kL/s at the peak of an ebb tide (SIMS Sydney Harbour – A systematic review of the science 2014)) a risk-based approach has been adopted which is consistent with the ANZECC 2000 guidelines. The discharge criteria presented in Table 1-22 also reflect other Sydney Metro contractor Environmental Protection Licences (eg. TSE, Central Station). Additional control sampling of receiving waters has been completed prior to initial discharge as part of the discharge impact assessment prepared by Property Risk Australia (Ref: PRJ000525_PittSt_SydMetro_WDIA001_2020_11_20_V3). From this risk-based assessment, regular sampling of discharge water will be conducted incorporating the results from the discharge impact assessment and quality of the receiving waters, and the quantity of water being discharged.

Once collected water has received the primary treatment it will be tested for pH and turbidity to achieve the required discharge water quality criteria specified in Table 1-22, and held in a storage tank. Following the achievement of acceptable water quality discharge criteria (based on monitoring results against the criteria in Table 1-20), water will be pumped from the storage facility on site via a fixed pipe through the construction hoarding and will be connected directly to stormwater at the North site and via a flexible pipe from the hoarding to the stormwater kerb-side drain at the South site. Protection to this flexible pipe will be provided so that this does not pose a safety risk/hazard to pedestrians in accordance with any City of Sydney requirements. The location of the pits to be used are detailed in Figure 1-21 below:

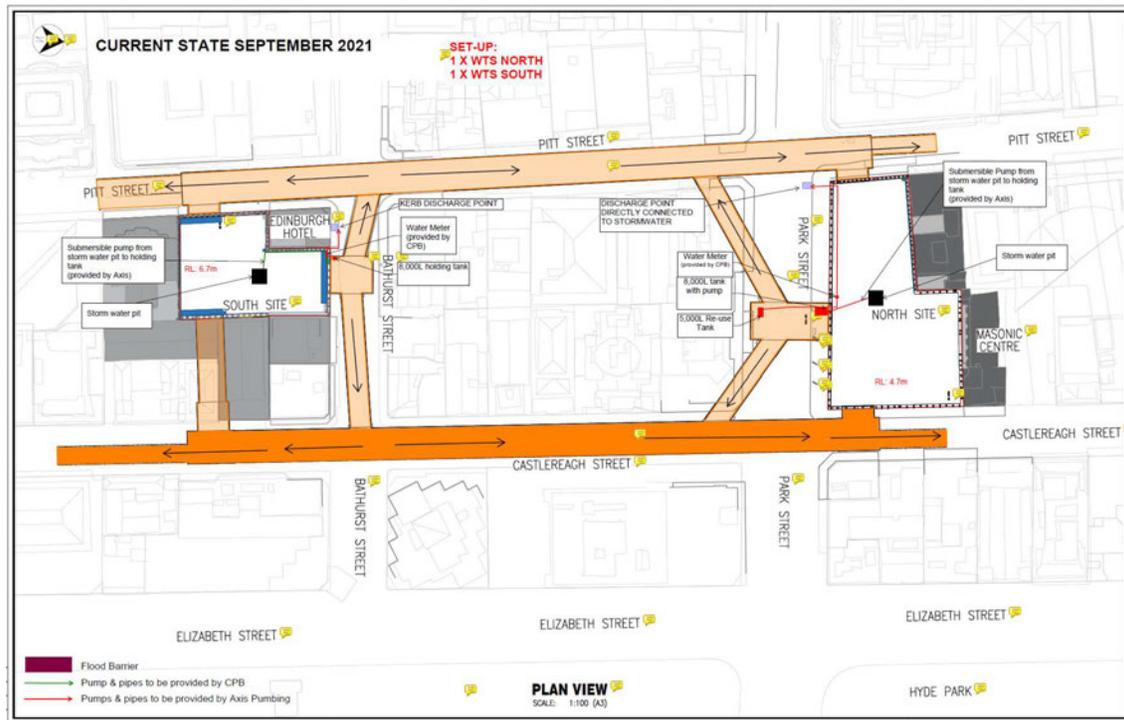


Figure 1-21: Water Treatment and Discharge Locations for PSISD.

CPB will monitor site water prior to any discharge from site as outlined below in section 1.6. This will ensure that any water discharged is compliant with Table 1-22 and CoA E107 in achieving the NSW Water Quality Objectives and would not be impacting on the water quality within the relevant catchments. Water will be discharged off site in accordance with the Discharge Management Protocol of the Discharge Impact Assessment. Discharge constitutes a hold point under section 3.2 of the CEMP Part A. All stormwater and groundwater ingress into the station box will be pumped through the treatment process as outlined above. The water from the clarification system is discharged into the approved City of Sydney Council’s stormwater network.

Water that does not meet discharge criteria would be recirculated within the treatment process until it meets criteria and then can be discharged. If after several attempts to improve the quality the water quality does not meet the discharge criteria, then the water would be transported off-site to a licenced facility that could accept liquid waste.

1.6 Monitoring Program

It is the accountability of the Environmental Manager to ensure all monitoring is performed according to these requirements for the duration of construction or for any longer period specified by the Secretary.

1.6.1 Monitoring Overview

CPB will monitor the effectiveness of measures for managing soil, surface water and groundwater impacts during delivery of the PSISD Works. This will be achieved through implementation of a Water

Quality Monitoring Program (WQMP) as detailed in this section, and regular inspections of control measures and their effectiveness

As noted above in Section 1.2.4, limited interaction with groundwater is expected. The adits and station platform areas are tanked, so no groundwater is expected to enter these areas. There are no groundwater users in the zone of drawdown from the station and there are no high priority groundwater dependent ecosystems. Therefore no formal groundwater level monitoring is proposed.

Given the limited volumes of groundwater previously observed and expected to be encountered during the delivery of the project (as discussed in section 1.2.4), no formal monitoring of groundwater quality is proposed. Any groundwater that is encountered will be treated and discharged in accordance with section 1.5.1.

As part of the development of the discharge impact assessment for the project, a review of all existing and available water quality information on the receiving environment has been undertaken. This information has been used to assess any potential impacts from the project on Farm Cove (Circular Quay).

Given all discharges will be via City of Sydney stormwater assets, which has a number of other non-related inputs entering into it and ultimately discharging into Farm Cove (Circular Quay), and as noted in the Staging Report, *negligible impact to surface water is anticipated* during the delivery of PSISD scope, no further formal monitoring of receiving waters (adjacent creeks or watercourses) will be undertaken as part of the construction of this project.

Drawdown of groundwater levels has the potential to lead to settlement due to changes in effective stresses in the ground. Since drawdown is anticipated to be within the fractured bedrock of the Hawkesbury Sandstones, the impact of settlement due to drawdown is anticipated to be negligible given the class of bedrock in which the drawdown is predicted to occur (Class II/Class I Sandstone). Settlement monitoring of the buildings adjacent to the PSISD sites, as conducted by the TSE Contractor, will continue to be undertaken during construction to monitor for any movement or settlement.

The WQMP has been prepared under condition C8-15 (CSSI 7400) in consultation with EPA and relevant Councils and has been incorporated into this Sub-Plan as per condition C17 of CSSI 7400.

The Secretary's approval and ER endorsement of this monitoring program will be sought as part of seeking approval and endorsement of this Sub-Plan.

The monitoring program will be in place and implemented prior to any discharge off site and for the duration of the PSISD Works

Results of the WQMP will be submitted to the Secretary and relevant regulatory agencies for information in the form of a Construction Monitoring Report, which will be prepared on a three-monthly basis from the commencement of construction in accordance with condition C16 of CSSI 7400.

The WQMP addresses PSISD construction phase monitoring until handover to Sydney Metro. It is noted that monitoring being done by follow-on contractors will be detailed in their respective management plans and is outside the scope of the PSISD Works.

1.6.2 Purpose, objective and scope

As discussed in Sections 1.2.3, no watercourses will be directly impacted or modified by CPB's works. There is expected to be minimal impacts to groundwater as a result of the project. Treated construction water may be discharged into existing stormwater systems.

CPB's focus in relation to water quality management during construction is on prevention of pollution – minimising the risk of polluted, sediment-laden or contaminated water leaving the premises, by implementing a comprehensive management and monitoring regime on site.

1.6.3 Available baseline data

Preconstruction monitoring data that has been obtained from monitoring points of the TSE principal contractor, has been incorporated into this sub-plan at the time of writing. Any further data as it becomes available from the TSE contractor will be incorporated into the sub-plan in subsequent revisions.

1.6.4 Construction Water Quality Monitoring

Water quality will be monitored to ensure discharge from the construction impact area is in accordance with regulatory guidelines and conditions of approval (ANZECC and NSW Water Quality Objectives), conclusions from the Discharge Impact Assessment, and to identify potential non-compliances before they occur.

Water quality monitoring will be undertaken for controlled discharges offsite to stormwater drainage to ensure compliance with discharge criteria defined in Table 1-22. Monitoring and analysis of data will be carried out by a competent person. Evidence of competence must be retained.

Table 1-22 – Water Quality criteria for discharge

Parameter	Percentile Concentration Limit	Sample Method & Frequency	Units	Discharge Criteria
pH	100	Probe/ grab sample Prior to discharge	pH	6.5-8.5
Total Suspended Solids (TSS)*	100	Probe/ grab sample Prior to discharge	mg/L	<50
Oil and Grease	100	Visual Prior to discharge	None visual	None visual
Copper	50	Grab Sample	mg/L	0.0013

Parameter	Percentile Concentration Limit	Sample Method & Frequency	Units	Discharge Criteria
		Monthly		
Copper	100	Grab Sample Monthly	mg/L	0.005
Zinc	50	Grab Sample Monthly	mg/L	0.015
Zinc	100	Grab Sample Monthly	mg/L	0.043

* TSS correlation with Turbidity (NTU) established an equivalent NTU of 53mg/L based on Discharge Impact Assessment by PRA.

The Discharge Impact Assessment established a correlation between TSS and turbidity (NTU) of TSS 50mg/L = NTU 53mg/L. For all field results the NTU measurements will be used to demonstrate that TSS is below the site discharge criteria. To ensure the ongoing accuracy of the correlation between NTU and TSS, monthly grab samples will be used check the correlation.

Control sampling of receiving waters was completed prior to initial discharge as part of a Discharge Impact Assessment. Regular sampling of discharge water will be conducted incorporating the results of the discharge impact assessment and quality of the receiving waters, and the quantity of water being discharged.

Results of water quality monitoring will be compiled in a Construction Monitoring Report, as defined under condition C16 (CSSI 7400) and will be prepared on a three-monthly basis and submitted to the Secretary for information.

It is the accountability of the Environment Manager to ensure all monitoring is performed according to these requirements.

Monitoring, inspections and analysis of data will be carried out by a competent person. Evidence of competence must be retained.

Daily monitoring of weather conditions and forecasts will be undertaken to assist with managing risks using available online resources (eg. Bureau of Meteorology).

Weekly erosion and sediment inspections will be undertaken, and any issues identified will be rectified as soon as possible. Additional inspections will take place prior to and after significant rainfall events of 10mm in 24 hours. Rainfall and weather monitoring will be conducted using data from the Sydney Observatory Hill weather station, accessed via the Bureau of Meteorology website (<http://www.bom.gov.au>).

The quantity of water used from potable or other sources is reported on a monthly basis in Synergy.

1.6.5 Monitoring Frequency and Location

Water quality monitoring will be conducted for controlled discharges offsite to ensure that discharges from construction impact areas are in accordance with the water quality criteria. The frequency of offsite discharges and associated monitoring will be dependent upon rainfall events and degree of surface and groundwater inflows into tunnels and excavations.

Table 1-23 – Monitoring Locations

Location	Source of Offsite Discharge	Schedule
Pitt St Station North	Existing stormwater pipe connection under Park St	Daily during discharge between site hours 7am to 6pm
Pitt St Station South	Existing kerbside drainage along Bathurst St	Daily during discharge between site hours 7am to 6pm

In the event that discharges are required outside of these abovementioned hours, then Out of Hours Works Approval shall be obtained prior to the commencement of such works.

1.6.6 Adaptive Management

Water quality monitoring in any particular area/zone could be extended if potential impacts attributable to the PSISD Works are identified. Work methods and management practices will be assessed and revised or adapted when necessary. Potential mitigation measures could include (but not be limited to):

If water quality monitoring results identify an exceedance of the criteria ('Stage 2 Exceedance' of the Discharge Management Protocol) appropriate additional mitigation measures will be identified and implemented. These measures may include:

- Treatment of water as per Water Management Procedure (SMCSWSPS-CPB-ALL-EM-PRO-000007)
- Additional water treatment measures (e.g. settlement tanks, membrane filters)
- Additional water quality monitoring (ie. more frequent or extended)
- Inspection of work site to identify possible sources of excess sediment or other contaminants
- Inspection of ESC and other environmental controls for condition, suitability, effectiveness and compliance with the applicable SEP and ESCP
- Repair, replace or reinstate any deficient ESC measures
- Implement additional or enhanced ESC controls where necessary, which may include:
 - Enhanced use of soil stabilisers to minimise erosion
 - Stabilisation of exposed ground and drainage channels by means of geofabric, crushed rock or hydroseeding
 - Water velocity control measures such as rock check dams or earth bunds
 - Additional sediment-trapping devices, such as double-layer barriers at drainage points

- Stabilisation of vehicle and pedestrian routes with crushed rock, roadbase or spray seal
- Review construction practices and amend where necessary, such as management of stockpiles, ceasing activities during rain events, access road maintenance
- Investigation and advice from subject-matter experts such as and soil conservationist
- Review and update SEP and ESCP to include any additional or enhanced control measures
- Additional training and/or awareness for CPB staff and sub-contractors

In the event that consecutive sampling events identify the discharge criteria are not being met this will trigger Stage 3 of the Discharge Management Protocol requiring discharge to stop which will be reported as a non-compliance to Sydney Metro and the ER in accordance with requirements of *Sydney Metro Environmental Incident Classification and Reporting Procedure* (SM ES-PW-303) as specified in Element 3.5.

In the event that during the construction of PSISD that the volume of groundwater inflows far exceeds the expected/estimated inflow volumes or becomes unmanageable, a review shall be undertaken on groundwater management and monitoring. This may result in an update to this sub-plan.

1.7 Compliance Record Generation and Management

The details of record keeping and documentation in relation to soil, water and groundwater can be found in Element 11 of the CEMP.

1.8 Roles and Responsibilities

The Project team's organisational structure and overall roles and responsibilities are outlined in Section 4 and Appendix C of the CEMP.

2. Spoil Management Sub-Plan

2.1 Purpose

The purpose of the Spoil Management Sub-Plan (this Sub-Plan) is to describe how CPB Contractors will manage spoil throughout the delivery of the Sydney Metro City & Southwest Pitt Street Station Development.

This Sub-Plan has been prepared to address the requirements of relevant Minister for Planning's Conditions of Approval (CoA), including CSSI 7400, the Revised Environmental Mitigation Measures (REMMs), applicable legislation, the Environmental Impact Statements (EIS), contractual requirements including Schedule C1 Scope of Works and Technical Criteria (SWTC), the Sydney Metro Construction Environment Management Framework (CEMF). Further details about the above-mentioned compliance requirements are provided in section 2.3 and in the Construction Environmental Management Plan (SMCSWSPS-CPB-ALL-EM-PLN-000001).

2.2 Scope

This Sub-Plan addresses the management of spoil on the project and the management of impacts on the environment and/or community. An aspect specific spoil classification reuse and recycling procedure [SMCSWSPS-CPB-ALL-EM-PRO-000005] has been developed to supplement this sub-plan to manage spoil identification and management during construction. This procedure is contained in Appendix H.

Activities conducted on the project that have the potential to impact on spoil are provided below.

These have been extracted from project risk assessments:

Table 2-1: Activities, Hazards and Risks

Project Activity (Aspect)	Environmental Hazard	Environmental Impact
Detailed Excavation (for footings, drainage and services) and Landscaping works	Generation of spoil material	Excessive waste directed to landfill Contamination of material Pollution from incorrectly stored spoil stockpiles Mud tracking onto roads Dust or sediment from unmanaged spoil

Bulk excavation has been completed by the TSE Interface Contractor. Limited volumes of spoil, when compared to that of TSE, will be generated by the project from a number of construction activities on site including:

- Detailed excavation for footings.
- Detailed excavation for drainage and services.
- Landscaping works in the road reserve / public domain

It is estimated that approximately 2,000m³ of spoil will be generated from these above-mentioned works across both project sites. It is expected that this material will predominantly be VENM or ENM.

2.3 Project Compliance Requirements

2.3.1 Contract Clauses / Construction Environmental Management Framework (CEMF)

Specific contract clauses and Construction Environmental Management Framework (CEMF) references which set limits and/or govern impacts to soil, water and groundwater quality on the project are detailed below in Table 2-2. Appendix D2.3 of the CEMP includes all contractual information and CEMF requirements relating to this project.

Table 2-2: CEMF (2017) – Management of Spoil

CEMF Clause	Requirement	Schedule C1 SWTC- Appendix F3 Annexure 2	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
6.1a	The following spoil management objectives will apply to the construction of the project:	The Contractor must comply with these requirements.	Part C Section 2.4	Project Director Environmental Manager	Prior to and during construction
(i)	Minimise spoil generation where possible;				
(ii)	The project will mandate 100% reuse or recycling (on or off-site) of usable spoil;				
(iii)	The project will mandate 100% reuse or recycling (on or off-site) of usable spoil;				
(iv)	Spoil will be managed with consideration to minimising adverse traffic and transport related issues;				
(v)	Spoil will be managed to avoid contamination of land or water;				
(vi)	Spoil will be managed with consideration of the impacts on residents and other sensitive receivers; and				
(vii)	Site contamination will be effectively managed to limit the potential risk to human health and the environment.				
6.2a	Principal Contractors will develop and implement a Spoil Management Plan for their scope of works. The Spoil Management Plan will include as a minimum:				

CEMF Clause	Requirement	Schedule C1 SWTC- Appendix F3 Annexure 2	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
(i)	The spoil mitigation measures as detailed in the environmental approval documentation;	The Contractor must comply with these requirements.	Part C Section 2.3 Part C Section 2.4 Part C Section 2.5 Part C Section 2.6 Part C Section 2.7 Part C Section 2.8	Environmental Manager	Prior to construction
(ii)	The responsibilities of key project personnel with respect to the implementation of the plan;		Part C Section 2.12	Environmental Manager	Prior to construction
(iii)	Procedures and methodologies for the haulage and disposal locations, storage and stockpiling arrangements, including those for virgin excavated natural material, contaminated and unsuitable material;		Part C Section 2.6	Environmental Manager	Prior to construction
(iv)	Procedures for the testing, excavation, classification, handling and reuse of spoil;		Part C Section 2.6 Appendix I (CEMP)	Environmental Manager	Prior to construction
(v)	measures that will be implemented to both reduce spoil quantities and maximise the beneficial reuse of spoil which will be generated during the performance of the TSE Contractor's Activities, including how spoil generation is minimised through the design development process;		Not Applicable	Environmental Manager	Prior to construction

CEMF Clause	Requirement	Schedule C1 SWTC- Appendix F3 Annexure 2	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
(vi)	Details, links or references to where traffic movements in relation to spoil are described, and measures that will be implemented to minimise traffic and noise impacts associated with haulage and disposal of spoil;		Part C Section 2.9	Environmental Manager	Prior to construction
(vii)	quantities for reuse of spoil within the Construction Site, for beneficial reuse of spoil off site and for spoil disposal;		Part C Section 2.2	Environmental Manager	Prior to construction
(viii)	Processes and procedures for the management of the environmental and social impacts of spoil transfer and reuse;		Part C Section 2.9 Appendix I (CEMP)	Environmental Manager	Prior to construction
(ix)	A register of spoil receipt sites that includes the site or project name, location, capacity, site owner and which tier the site is classified as under the spoil reuse hierarchy;		Part C Section 2.10	Environmental Manager	Prior to construction
(x)	Spoil management monitoring requirements; and		Part C Section 2.9	Environmental Manager	Prior to construction
(xi)	Compliance record generation and management.		Part C Section 2.11	Environmental Manager	Prior to construction
6.2b	Spoil management measures will be included in regular inspections undertaken by the Contractor, and compliance records will be retained. These will include:	The Contractor must comply with these requirements.			
(i)	Records detailing the beneficial re-use of spoil either within the project or at off-site locations; and		Part C Section 2.10	Environmental Manager	During Construction

CEMF Clause	Requirement	Schedule C1 SWTC- Appendix F3 Annexure 2	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
(ii)	Waste docket for any spoil disposed of to landfill sites.		Part C Section 2.6 Part C Section 2.10	Supervisor Environmental Manager	During Construction
6.3a	Examples of spoil mitigation measures include:	The Contractor must comply with these requirements.			
(i)	Implementing the spoil re-use hierarchy;		Part C Section 2.5.1	Environmental Manager	During Construction
(ii)	Handling spoil to minimise potential for air or water pollution; and		Part C Section 2.5.2	Supervisor Environmental Manager	During Construction
(iii)	Minimise traffic impacts associated with spoil removal.		Part C Section 2.9	Supervisor Environmental Manager	During Construction

2.3.2 Conditions of Project Environmental Approvals

Project specific environmental CoA's and Revised Environmental Mitigation Measures (REMMs) applicable to Pitt Street that specifically address spoil management are included in Table 2-3 and Table 2-4 below. Appendix D2.1 of the CEMP contains all conditions of approval information relevant to this project.

Table 2-3: Conditions of Approval – Management of Spoil

SSI 7400 Condition Number	Requirement	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
C4	The CEMP sub-plans must state how: (a) the environmental performance outcomes identified in the EIS as amended by the documents listed in A1 will be achieved; (b) the mitigation measures identified in the EIS as amended by documents listed in A1 will be implemented; (c) the relevant terms of this approval will be complied with; and (d) issues requiring management during construction, as identified through ongoing environmental risk analysis, will be managed.	Part C Section 2.3 Part C Section 2.4 Part C Section 2.5 Part C Section 2.6 Part C Section 2.7 Part C Section 2.8	Environmental Manager	Prior to construction
C8	Construction must not commence until the CEMP and all CEMP sub-plans have been approved by the Secretary. The CEMP and CEMP sub-plans, as approved by the Secretary, including any minor amendments approved by the ER (or AA in regards to the Noise and Vibration sub-plan), must be implemented for the duration of construction. Where the CSSI is being staged, construction of that stage is not to commence until the relevant CEMP and sub-plans have been approved by the Secretary.	Part A Section 1 CEMP Part A Section 3.2 CEMP	Project Director Environmental Manager	Prior to construction

Table 2-4: Revised Environmental Mitigation Measures Applicable to Pitt St – Management of Spoil

SSI 7400 REMM Number	Requirement	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
WM2	100 per cent of spoil that can be reused would be beneficially reused in accordance with the project spoil reuse hierarchy.	Part C Section 2.4		During Construction

2.3.3 Agency Consultation

No Agencies were required by the Conditions of Approval to be consulted during the development of this sub-plan.

2.4 Objectives and Targets

CPB's objectives for management of spoil during delivery of PSISD works are aligned with the CEMF which states that the following management objectives will apply to construction:

- Minimise spoil generation where possible;
- The project will mandate 100% reuse or recycling (on or off-site) of usable spoil;
- The project will mandate 100% reuse or recycling (on or off-site) of usable spoil;
- Spoil will be managed with consideration to minimising adverse traffic and transport related issues;
- Spoil will be managed to avoid contamination of land or water;
- Spoil will be managed with consideration of the impacts on residents and other sensitive receivers; and
- Site contamination will be effectively managed to limit the potential risk to human health and the environment.

Based on the requirements defined at Section 2.1 above, the findings of project risk management processes and the potential impacts on the community, the following targets have been set to manage spoil during the delivery of the project. Any deviance from the targets will result in Project Management immediately implementing corrective actions:

Table 2-5: Project Objectives

Metric/Measure	Objective	Timeframe	Accountability
Number of spoil related incidents	Zero	At all times	Project Director
Number of actions taken by regulators and/or client	Zero	At all times	Project Director
Beneficially reuse of reusable spoil	100%	Construction	Project Director

2.5 Spoil Reuse Opportunities

2.5.1 Reuse Hierarchy

The spoil reuse hierarchy adopted for PSISD is as listed below. The target for spoil recycling or reuse on the project is 100%.

1. Reuse within the project – reuse as construction material as fill or for landscaping and urban design
2. Environmental works (off site) – reuse for restoration works on identified environmental initiatives.
3. Reuse on other development projects – reuse as construction material on projects within a viable distance of the site and with the appropriate approvals in place to accept the material.

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 Date Published: 25/09/2019

Management System - Uncontrolled Document when Printed

4. Offsite land restoration - reuse to fill disused facilities, e.g. mines and quarries, to enable either future development or ecological rehabilitation

5. Landfill Management – reuse to cap completed landfill cells or as material for daily capping.

Spoil would be reused on site in accordance with the National Environment Protection Council (NEPC) - National Environment Protection (Assessment of Site Contamination) Amended Measure No.1 2013 (NEPAM, 2013). These investigation levels are derived from toxicity of substances and estimated exposure of humans to the soil under various land use scenarios.

2.5.2 Reducing Excess Spoil During the Design Phase

The design review process has been used to:

- Minimise the quantity of material requiring excavation to accommodate the design footprints
- Identify the location of spoil suitable for reuse on site
- Identify opportunities to maximise reuse of site-won spoil
- Maximise the quantity of spoil available for reuse on site
- Identify areas of contamination that may be avoided or require additional management measures
- Identify opportunities and locations for reuse of spoil off site.

The current calculations show that approximately 2,000m³ of spoil is expected to be generated through the project scope of works.

2.6 Identification of Spoil

There are very limited opportunities for spoil reuse on site. Where spoil is proposed to be taken off site, classification of spoil will be undertaken in accordance with the Waste Classification Guidelines, Part 1: Classifying Waste (NSW EPA, November 2014) and the Spoil Classification Reuse and Recycling procedure [SMCSWSPS-CPB-ALL-EM-PRO-000005] in Appendix H. Procedures for sampling, testing and analysis of spoil will be as per the guidelines, and any applicable general exemption under the Protection of the Environment Operations (Waste) Regulation 2014. The spoil typology will be classified as follows:

- Virgin Excavated Natural Material (VENM) – VENM may require additional analysis to determine specific characteristics prior to acceptance for use at some sites. Specific analysis parameters will be determined in consultation with the intended receiver prior to removal from site
- Excavated natural material (ENM) – Material that does not meet the definition of VENM will be assessed in accordance with the General Exemption 'Excavated natural material exemption 2012'
- Waste material as defined in clause 49 of Schedule 1 of the Protection of the Environment Operations Act 1997 (POEO Act):
 - Special waste
 - Liquid waste

- Hazardous waste
- Restricted solid waste
- General solid waste (putrescible)
- General solid waste (non-putrescible)

Any material that has not been previously classified and is unexpectedly encountered during excavation will be managed in accordance with the Unexpected Finds Soil Contamination and Asbestos Procedure and the Waste Classification Guidelines noted above.

2.7 Spoil Material Treatment

CPB Contractors will utilise a number of strategies for managing spoil on the project with a view to minimise the amount of spoil material generated. The Spoil Classification Reuse and Recycling Procedure (SMCSWSPS-CPB-ALL-EM-PRO-000005) is to be implemented. Methods include:

- Waste avoidance:
 - Minimise excavation activities – reduce earthworks for drainage and services.
- Treatment and re-use on site: Where possible. This in turn will:
 - Reduce the associated materials handling and transport issues
 - Reduce fuel use.

Waste removed from the worksite will be appropriately tracked from 'cradle to grave' using waste tracking dockets where required. Spoil reused on site will be tracked via a Material Tracking Form.

2.8 Management of Contaminated Material

CPB expect to receive a Site Contamination Report / Site Audit Statement from TSE as part of the handover documentation in accordance with conditions E66 to E68. If any contaminated material encountered on the Site will be treated in accordance with Unexpected Finds Soil Contamination and Asbestos procedure (SMCSWSPS-CPB-ALL-EM-PRO-000006) contained in Appendix H.

2.9 Stockpiling and Transportation of Spoil

Different types of spoil will be segregated as far as practicable and stored separately to prevent mixing and cross-contamination.

All stockpiles will be managed in accordance with the requirements of the 'Blue Book' to prevent erosion and minimise the potential for pollution. Water based organic polymers or geofabric may be used for short term control of risks associated with erosion and pollution.

Stockpiling locations for each worksite will be selected and developed in accordance with the Site Environment Plans (SEPs) and the ESCPs.

Where practical, contaminated material will be removed directly to a licensed facility.

CPB will ensure all spoil and fill are suitable for their proposed end use, based on the relevant EPA guidelines and exemptions.

Haulage routes associated with the movement of waste and spoil are described in the site specific Construction Traffic Management Plan.

The following conditions apply to managing haulage of spoil material off site:

- Truck loads would be covered, and tailgates secured prior to trucks leaving the worksite to prevent spreading of waste, dust or contamination
- Road surfaces subject to the tracking of material by vehicles leaving the premises are monitored and cleaned as required

2.10 Monitoring

CPB will regularly review the worksites to ensure compliance with this Sub-Plan. A regular inspection program that covers spoil management will be conducted as follows:

- Details of daily inspections undertaken by the Site Supervisor will be logged in their respective site diaries.
- Weekly inspection of onsite spoil management processes will be undertaken. Weekly inspections will be documented on the Environmental Inspection Checklist.

All waste / spoil removed from the worksite will be appropriately tracked from 'cradle to grave' using waste tracking docket where required. A register of spoil receipt sites will be maintained on site with details including location, owner, site/project name etc. Spoil reused on site will be tracked via a Material Tracking Form.

2.11 Compliance Record Generation and Management

The details of record keeping and documentation in relation to spoil can be found in Element 11 of the CEMP.

2.12 Roles and Responsibilities

The Project team's organisational structure and overall roles and responsibilities are outlined in Section 4 and Appendix C of the CEMP.

2.13 Consultation

Consultation records relevant to this sub-plan are contained in Appendix I.

3. Heritage Management Sub-Plan

Per SWTC App B1.8 Section 3.3 (a)

Construction Heritage Management Plan (CHMP)

Pitt Street Station Development

Project number:	N01070
Document number:	SMCSWSPS-CPB-ALL-HE-PLN-000001
Teambinder Ref:	SMCSWSPU-CPB-SPS-HE-PLN-007164
Revision date:	18/04/2023
Revision:	2

Document Approval

Rev.	Date	Prepared by	Reviewed by	Approved by	Remarks
A	16/07/2020	A. Zvirzdinas	T. Yourell R. Harvey	C. Blanchard	INITIAL ISSUE
B	25/09/2020	A. Zvirzdinas	R. Harvey	C. Kerpiniotis	UPDATED ISSUE
C	27/10/2020	A. Zvirzdinas	R. Harvey	C. Kerpiniotis	UPDATED ISSUE
0	25/11/2020	A. Zvirzdinas	R. Harvey	C. Kerpiniotis	UPDATED ISSUE
1	07/09/2022	A Brajlilh	E Eveleigh	A Zvirzdinas	UPDATED ISSUE
2	18/04/2023	A Brajlilh	E Eveleigh	S Knight	UPDATED ISSUE
Signature:					

Details of Revision Amendments

Document Control

The Project Director is responsible for ensuring that this Sub-Plan is reviewed and approved. The Environmental Manager is responsible for updating this Sub-Plan to reflect changes to Environmental legal and other requirements, as required.

Amendments

Any revisions or amendments must be approved by the Project Director and/or client before being distributed / implemented.

Minor amendments to the Heritage Management Sub-Plan will be submitted to the Environmental Representative (ER) and Sydney Metro for review and approval. Minor amendments would generally include changes to systems or processes.

Where the change will have the potential to result in an additional environmental or community impact that the ER cannot approve, then the plan would be submitted to DPI&E for review and approval.

Where necessary amendments to this Sub-Plan will also be provided to relevant stakeholders for review and comment and/or forwarded for approval.

Any revisions or amendments shall be approved by the Project Director and/or client before being distributed, communicated and implemented.

Revision Details

Revision	Details
A	Initial issue
B	Updated Issue to address Sydney Metro / ER review comments
C	Updated Issue to address further Sydney Metro / ER review comments
0	Updated Issue to address further comment from Sydney Metro and comments from DPIE review to Tables 1-1 and 6-2; Sections 2.2, 5, and 6.2; and Appendix C1
1	Annual issue review to include for Excavation Director
2	Unchanged update for Project Director signature

Term or Abbreviation	Definition
AARD	Archaeological Assessment Research Design Report
Aboriginal	Within NSW, it is preferred to use the term Aboriginal as this reflects the overwhelming majority of the community residents in NSW, with no implied limitation on this applying to persons from the Torres Strait Islands.
AHIP	Aboriginal Heritage Impact Permit
AHIMS	Archaeological Heritage Information Management Service
CEMF	Construction Environmental Management Framework
CEMP	Construction Environmental Management Plan
CMS	CPB Management System
Compliance audit	Verification of how implementation is proceeding with respect to a CEMP (which incorporates the relevant Approval conditions)
CoA	Conditions of Approval
CPB	CPB Contractors Pty Ltd
CSSI	Critical State Significant Infrastructure
Ecologically Sustainable Development	Using, conserving and enhancing the community's resources so that the ecological processes on which life depends are maintained and the total quality of life now and in the future, can be increased (Council of Australian Governments, 1992)
Environmental aspect or hazard	Defined by AS/NZS ISO 14001 as an element of an organisation's activities, products or services that can interact with the environment. The term 'hazard' is used throughout this EMP and has the same meaning as 'aspect' for the purposes of compliance with ISO14001 requirements.
Environmental impact	Defined by AS/NZS ISO 14001 as any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organisation's environmental aspects.
Environmental incident	An unexpected event that has, or has the potential to, cause harm to the environment and requires some action to minimise the impact or restore the environment.
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
EMS	Environmental Management System

Term or Abbreviation	Definition
Environmental objective	Defined by AS/NZS ISO 14001 as an overall environmental goal, consistent with the environmental policy, that an organisation sets itself to achieve.
Environmental policy	Statement by an organisation of its intention and principles for environmental performance.
EPA	Environment Protection Authority
EP&A Act	Environmental Planning and Assessment Act 1979
EPL	Environmental Protection Licence
Environmental risk register	Lists relevant environmental aspects and impacts associated with the project.
Environmental target	Defined by AS/NZS ISO 14001 as a detailed performance requirement, applicable to the organisation or parts thereof, that arises from the environmental objectives and that needs to be set and met in order to achieve those objectives.
Heritage NSW	Formerly Office of Environment and Heritage, NSW Government Department responsible for indigenous and non-indigenous heritage matters.
HIA	Heritage Impact Assessment
HIS	Heritage Interpretation Strategy
Hold point	A verification point that prevents work from commencing prior to approval from the client or other appointed authority.
Non-compliance	Failure to comply with the requirements of the Project approval or any applicable licence, permit or legal requirements
Non-conformance	Failure to conform to the requirements of Project system documentation including this CEMP or supporting documentation
OEH	Office of Environment and Heritage
'Project' / 'PSISD'	Pitt Street Integrated Station Development
SEP	Site Environmental Plan(s)
SMCSW	Sydney Metro City & Southwest

Contents

- 1. CHMP Compliance Matrix7**
- 2. Construction Heritage Management Plan (CHMP) Overview9**
 - 2.1 Scope9
 - 2.2 Background9
 - 2.3 Staging15
 - 2.4 Project Objectives15
- 3. Roles and Responsibilities17**
 - 3.1 Project Team17
 - 3.2 Specialist Consultants17
- 4. Project Compliance Requirements19**
- 5. Aspects and Impacts28**
- 6. Heritage Management29**
 - 6.1 Controls Used to Manage Heritage29
 - 6.2 Unexpected Finds30
 - 6.3 Heritage Protection31
 - 6.4 Heritage Interpretation and Design34
 - 6.5 Archival Recording34
 - 6.6 Archaeological Excavation35
 - 6.7 Final Heritage Report35
- Part B: Implementation Plan 36**
- 7. Elements and Expectations36**
 - Element 1: Training37
 - Element 2: Monitoring, Compliance, Records and Reporting38
 - Element 3: Auditing, Review and Improvement39
 - Element 4: Project Specific Requirements40
- 8. References50**

1. CHMP Compliance Matrix

Table 1-1: CoA Compliance Matrix

Conditions of Approval (CoA) SSI 7400		
Condition	Requirement	Reference
C3	The following CEMP sub-plans must be prepared in consultation with the relevant government agencies identified for each CEMP sub-plan and be consistent with the CEMF and CEMP referred to in Condition C1: (g) Heritage	This CHMP Appendix C2 - Consultation
C4	The CEMP sub-plans must state how:	
a)	the environmental performance outcomes identified in the EIS as amended by the documents listed in A1 will be achieved;	Section 2.2 and 2.4 Section 6.4
b)	the mitigation measures identified in the EIS as amended by documents listed in A1 will be implemented;	Section 6 Element 4
c)	the relevant terms of this approval will be complied with; and	Element 4
d)	issues requiring management during construction, as identified through ongoing environmental risk analysis, will be managed.	Section 5 and 6
C5	The CEMP sub-plans must be developed in consultation with relevant government agencies. Where an agency(ies) request(s) is not included, the Proponent must provide the Secretary justification as to why. Details of all information requested by an agency to be included in a CEMP sub-plan as a result of consultation and copies of all correspondence from those agencies, must be provided with the relevant CEMP sub-plan.	Section 4.1.4 Appendix C2 - Consultation
C6	Any of the CEMP sub-plans may be submitted to the Secretary along with, or subsequent to, the submission of the CEMP but in any event, no later than one (1) month before commencement of construction.	Section 4.1.4
C8	Construction must not commence until the CEMP and all CEMP sub-plans have been approved by the Secretary. The CEMP and CEMP sub-plans, as approved by the Secretary, including any minor amendments approved by the ER, must be implemented for the duration of construction. Where the CSSI is being staged, construction of that stage is not to commence until the relevant CEMP and sub-plans have been approved by the Secretary.	Section 4.1.4
E10	The Proponent must not destroy, modify or otherwise physically affect any Heritage item not identified in documents referred to in Condition A1.	Compliance with this CHMP and CSSI conditions. Section 6.1

Table 1-2: SWTC Compliance Matrix

SWTC Appendix B1.8 - Heritage Management and Conservation		
Clause	Requirement	Reference
3.3	Construction Heritage Management Plan	-
3.3(a)	The Contractor must prepare a Construction Heritage Management Plan (CHMP), as required by the Planning Approval and SWTC, to guide the identification, retention, protection, conservation, salvage and reuse of heritage elements throughout the Project Works and the Contractor's Activities.	This CHMP
3.3(b)	The CHMP must set out both the methodology and critical stages within the Contractor's Activities for the identification, retention, protection, conservation, salvage and reuse of heritage elements.	<p>Not Applicable</p> <p>Identification, retention, protection, conservation and salvage of heritage items has been completed by the TSE Contractor.</p> <p>Despite reuse opportunities being identified in the Attachments to SWTC Appendix B1.8, the Design Review Panel did not endorse the reuse of the salvaged sandstone blocks within the Works.</p>

2. Construction Heritage Management Plan (CHMP) Overview

2.1 Scope

This Construction Heritage Management Plan (CHMP) addresses Heritage management on the project, and the management of potential impacts to the environment and/or community.

The Pitt Street Integrated Station Development (PSISD) scope follows the excavation of the station caverns and shafts by the preceding Tunnel Station Excavation (TSE) Contractor, and is limited to constructing the Station structure and fitout within a completed excavation profile.

Given the scope of work completed by the TSE Contractor, and the works to be completed by the Station Contractor, it is unlikely that further assessment of Heritage impacts are required.

Activities conducted on the project that have the potential to impact heritage values are listed below.

Table 2-1: Activities, Hazards and Risks

Project Activity (Aspect)	Environmental Hazard	Environmental Impact
Unexpected Finds	Unknown or undiscovered heritage items	Disturbance or destruction of previously undiscovered historic or Aboriginal heritage artefacts, which may require additional archival recording
Modifications to Design and Construction Methodology	Unapproved works or working outside scope of approval	Change to the construction footprint resulting in impacts to areas not previously assessed to be affected
Known Heritage Areas	Changes to the heritage setting	Permanent or temporary alteration to the curtilage or heritage setting of an identified area

2.2 Background

The PSISD works have the potential to impact heritage during the design and construction of the works directly and indirectly. These potential impacts will require management and mitigation in accordance with relevant state legislation and government policies.

This CHMP is based on the comprehensive assessment and analysis work performed for the EIS that cover the PSISD works. Heritage Impact Assessments for Aboriginal and Non-Aboriginal Heritage were undertaken in May 2016 by Artefact Heritage as part of Sydney Metro & Southwest (Chatswood to Sydenham) project EIS.

The Aboriginal heritage assessment found that there is low to moderate risk of disturbance to Aboriginal Cultural Heritage. There are no Aboriginal sites or places known recorded to be present within the construction area, however test excavations were recommended in areas where the natural 'A' soil horizons (topsoil / sand) still exists.

The Non-Aboriginal assessment determined that the PSISD project area has a low to moderate potential as having Non-Aboriginal archaeological potential of local and state significance. There are 14 local heritage items and 3 State heritage items in the area of Pitt Street Metro precinct as shown in Figure 2. The date range for these buildings is between 1840s and 1930s.

The proposed northern Metro entry is directly adjacent to the following heritage items which are shown on the Precinct Plan (Figure 3):

- Item No. I1931 - National building Pitt Street, adjacent to the site.
- Item No. I1699 - Masonic Club, Castlereagh Street, partially within the buffer zone
- Item No. I1750 - State heritage Great Synagogue, partially within the buffer zone.
- Item No. I1933 - Criterion Hotel on Pitt and Park Streets.

The proposed southern Metro entry is directly adjacent to the following heritage items which are shown on the Precinct Plan (Figure 3):

- Item No. I1940 - Edinburgh Castle Hotel (294–294B Pitt Street)
- Item No. I1703 - Metropolitan Fire Brigade building
- Item No. I1672 - former Sydney Water building refurbishment.
- Item No. I1939 - former Speedwell House

Sydney Metro have established a Design Review Panel (DRP) in accordance with condition E100 to refine design objectives and advice. A Heritage Working Group (HWG) has also been established by Sydney Metro which includes Sydney Metro's Senior Heritage Advisor. CPB are invited to attend the HWG meetings as required.

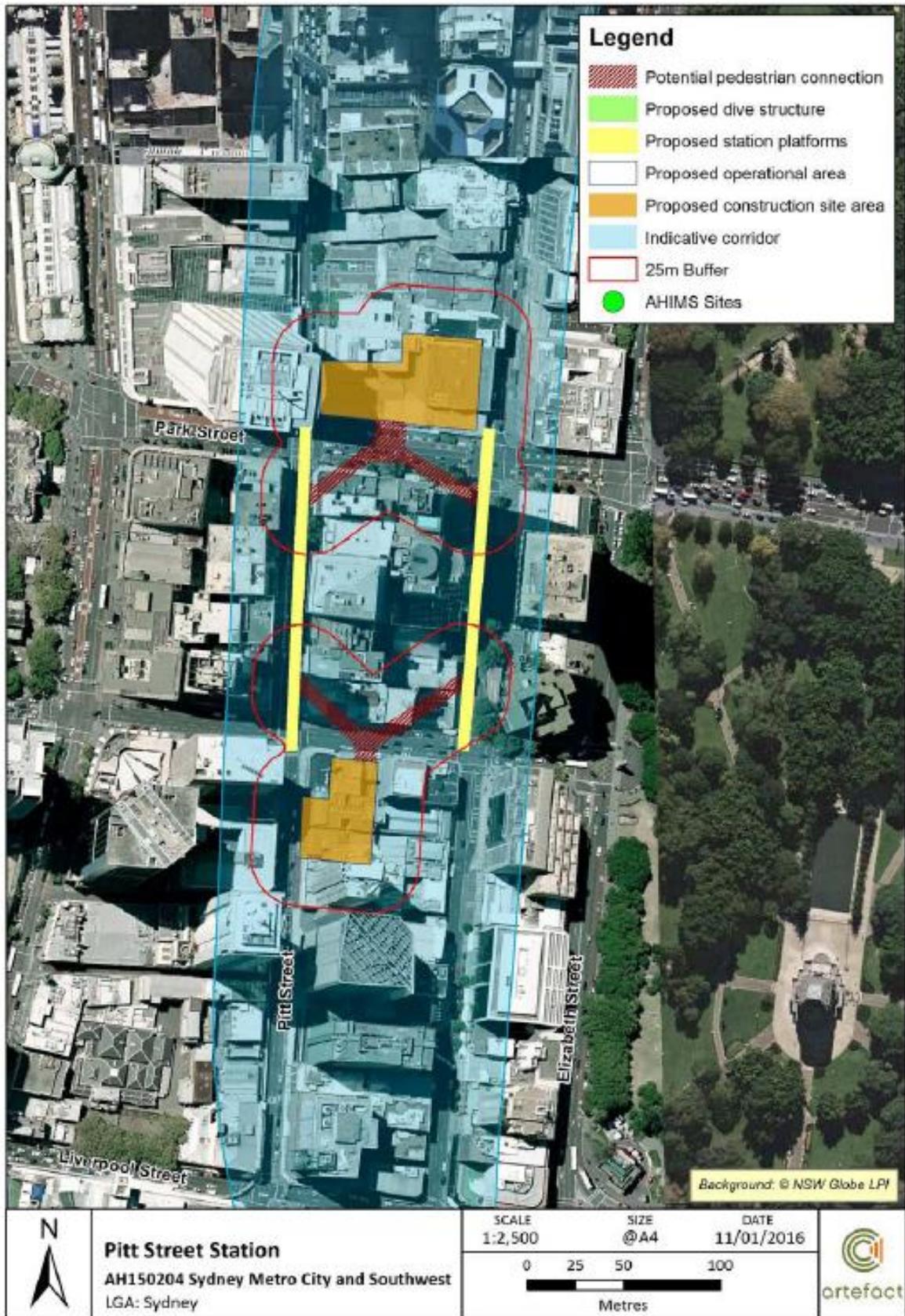


Figure 1 - Aboriginal Heritage setting around PSISD (Source SMCSW EIS)

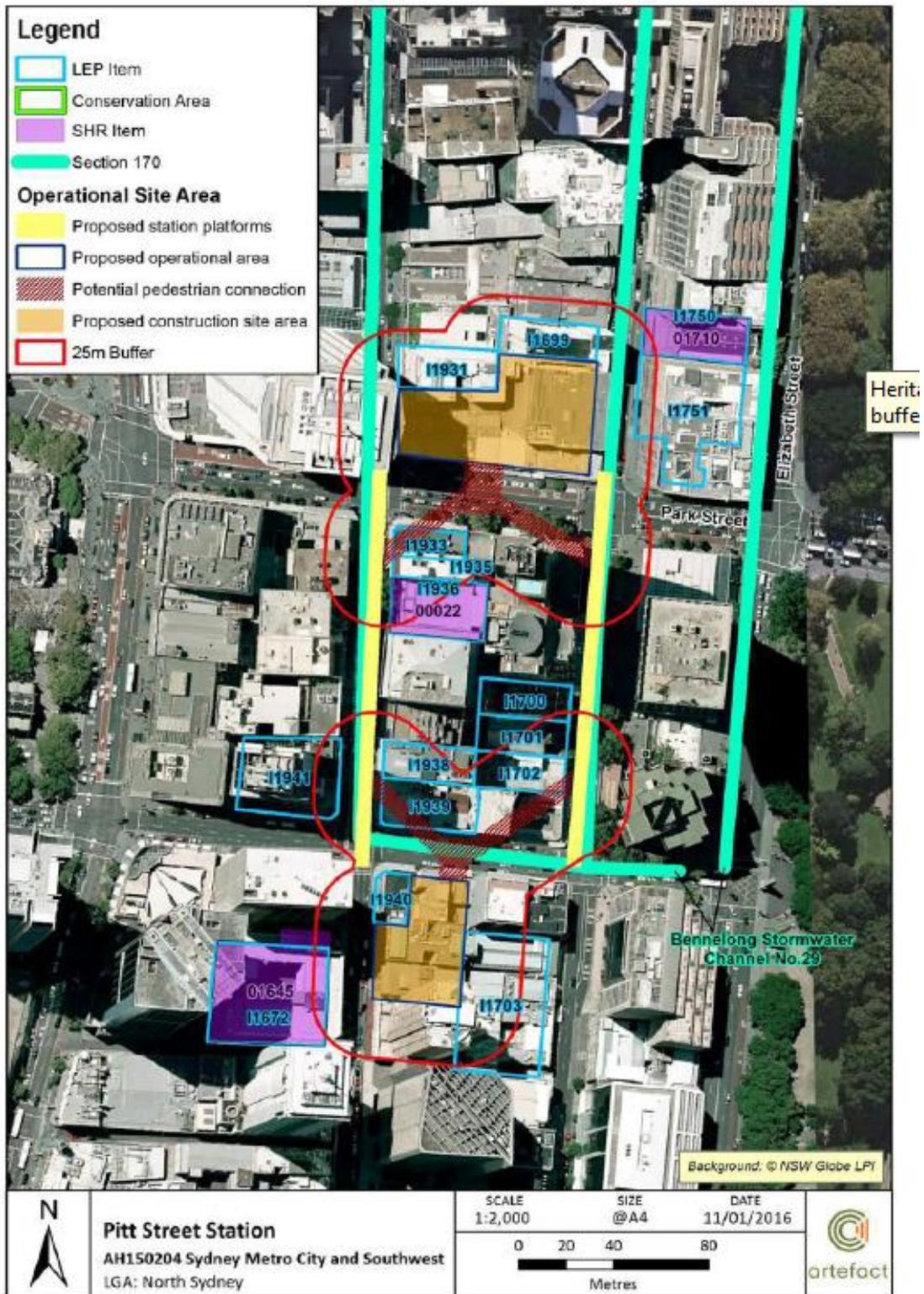


Figure 2 – Heritage setting around PSISD (Source SMCSW EIS)

LEGEND

-  Scope of Metro Public Domain Works
-  State Heritage Item
-  Local Heritage Item
-  Station and OSD Site
-  Station Entry
-  Over Station Development Entry



Figure 3 - Precinct Plan - Adjacent Heritage Items (Source: Section 3.6 Pitt Street Station Final Preliminary Design NWRLSRP-MET-SPS-AT-REP-000011.D.01.INF)

- Item No. I1931 - National building Pitt Street
- Item No. I1699 - Masonic Club, Castlereagh Street
- Item No. I1750 - State heritage Great Synagogue
- Item No. I1933 - Criterion Hotel
- Item No. I1940 - Edinburgh Castle Hotel
- Item No. I1703 - Metropolitan Fire Brigade building
- Item No. I1672 - former Sydney Water Building refurbishment.
- Item No. I1939 - former Speedwell House

Local Context and Character

There are 13 local heritage items and 3 State heritage items in the area of Pitt Street Metro precinct. The date range for these buildings is between 1840s and 1930s.

The proposed northern Metro entry is directly adjacent to the following heritage items which are shown on the plan opposite:

- Item No. I1931 on Precinct Plan is the National building Pitt Street, adjacent to the construction area.
- Item Nos I1699 is the Masonic Club, Castlereagh Street, which is partially within the buffer zone
- Item No. I1750 is the State heritage Great Synagogue with dual frontages Castlereagh and Elizabeth Streets partially within the buffer zone.
- Item No. I1933 is the Criterion Hotel on Pitt and Park Streets.

The proposed southern Metro entry is directly adjacent to the following heritage items which are shown on the following plan:

- Item No. I1940 on Precinct Plan is the Edinburgh Castle Hotel (294–294B Pitt Street)
- Item No. I1703 is the Metropolitan Fire Brigade building
- Item No. I1672 is the Former Sydney Water building refurbishment.
- Item No. I1939 is the former Speedwell House

Heritage Interpretation

Heritage interpretation is being compiled to reflect extant buildings along with earlier stories of the place. Earlier developments on this block and potential archaeological finds, if surviving, relate to mid to late 19th century residences, shops and small-scale industrial workshops.

To summarise the heritage characteristics in relation to Metro design principles:

- Sandstone is a dominant material and colour in this CBD context, see next point.
- Colour palettes range through sandstones to pink, cream and green. Use of glass for Metro will reflect these colours.
- Heritage design includes regular vertical alignments of rectangular windows in varying building heights. This leaves scope for Metro either to replicate or add new shapes to create interest in the streetscape.
- Decorations are Classical (arches, columns, cornices) restrained and elegant. they reflect 19th and early 20th century dates. At this stage, there is limited external decoration in the station built form other than the proposed colonnade which will address the Park Street frontage.

** Refer to Heritage Report for more information

Heritage Design Management

The following specific heritage management issues are noted. No physical impact but views and vistas involve careful design. The impacts on heritage items in the vicinity of the new Metro will involve issues of relative scale, material and view lines. This necessitates sympathetic design of the new station facades to mitigate these impacts. New development should be sympathetic to adjacent heritage items in terms of setbacks, height, form, materials and articulation.



Heritage Item I1940: Edinburgh Hotel + Heritage Management at southern entry.

LEGEND

- Scope of Metro Public Domain Works
- State Heritage Item
- Local Heritage Item
- Station and OSD Site
- ▲ Station Entry
- ▲ Over Station Development Entry

(Source: Section 3.6 Pitt Street Station Final Preliminary Design NWRLSRP-MET-SPS-AT-REP-000011.D.01.INF)

2.2.1 TSE Excavation Findings

The preceding TSE Contractor was responsible for the management of Heritage items during the excavation activities and as such has obtained clearance certificates for these works which signify heritage has been cleared in the area of excavation. These works have been completed prior to commencement of the Station construction works.

The TSE Contractor found during the archaeological excavation at the Pitt St North Station site, approximately 24 large sandstone blocks hand cut by a stone mason and believed to have been part of a row of three (3) semi-detached houses built in 1848 and demolished in the 1870's. This discovery was assessed as having local heritage significance and represent a diminishing aspect of Sydney's history. Two (2) adjacent cellars constructed of sandstone blocks and bricks were also uncovered and assessed as having local heritage significance and again represent a diminishing aspect of Sydney's history. These cellars are part of a 19th century building located at 254 Pitt St and date back to somewhere between 1845-1865 and were filled during building refurbishments conducted in 1909. Further information on these finds is contained in Memos 2 and 3 in Appendix C3.

There are no further major excavation works to be conducted outside the footprint of the existing excavation, other than for utilities connections in the footpath/road reserve.

2.3 Staging

In order to address the staged nature of Sydney Metro City & Southwest (SMCSW) project, Sydney Metro has developed the Chatswood to Sydenham Staging Report (July 2019) which defines the Conditions of Approval (CoA), Revised Environmental Management Mitigation Measures (REMM's) and the Construction Environmental Management Framework (CEMF) requirements that this project must address to deliver works between Chatswood and Sydenham under CSSI 7400.

The Staging Report “turns on or off” whether each condition or requirement is “applicable”, “not applicable” or “partially applicable” to the Pitt Street Station Integrated Station Development (PSISD). If a requirement is applicable or partially applicable, it is included in the Element 4 table of Project Specific Requirements and addressed in this Sub-Plan.

The EIS assessments addressed all potential project impacts at all Project stages, including impacts during tunnel and station excavation and construction, being completed by other contractors. These activities will be in varying stages of completion at each worksite, by the time PSISD Works commence (in accordance with the Staging Reports).

2.4 Project Objectives

CPB Contractors' management of heritage during the delivery of the project works are aligned with the EIS Performance Outcomes, CEMF and SWTC requirements, which state that the following heritage management objectives will apply:

- Embed significant heritage values through any architectural design, education or physical interpretation
- Minimise impacts on items or places of heritage value
- Avoid accidental impacts on heritage items
- Maximise worker's awareness of indigenous and non-indigenous heritage.
- Avoid all adverse impacts on the adjacent heritage buildings, elements, fabric, spaces and vistas that contribute to the overall heritage significance of the Station's location within the Sydney CBD;
- Maximise the retention and legibility of those heritage buildings, structures, fabric, spaces and vistas that are insignificant and or contribute to the overall significance of the Precinct and the Station's location within the Sydney CBD;
- Protect all heritage buildings, structures, fabric and moveable heritage items proposed to be retained, against damage during the Contractor's Activities;
- Be sympathetic to heritage items and where feasible and reasonable, avoid or minimize impacts to Aboriginal and non-Aboriginal heritage items and archaeology.
- Where appropriate reuse any retained heritage elements for original or new uses as part of the viable ongoing function of the Station;
- Design new buildings and other elements of the Project Works to complement existing heritage buildings, elements, fabric, spaces and vistas, and avoid outcomes that compromise the significance of these heritage items;
- The design of the project would reflect the input of an independent heritage architect, relevant stakeholders and the design review panel
- Interpret the history and cultural value of any heritage items uncovered during the excavation and construction of the Station within the design for their future users; and
- Retain and conserve, wherever possible, elements of heritage significance so that functional relationships can be understood and interpreted.

Based on the requirements defined in the Environmental Obligations Register, the findings of project risk management processes and the potential impacts to the community, the following objectives have

been set. Any deviance from the objectives will result in the Project Director and Environmental Manager immediately implementing corrective actions:

Table 2-2: Heritage Objectives for PSISD

Metric/Measure	Objective	Timeframe	Accountability
Incidents of damage to heritage items, places or values	Zero Incidents	Throughout Construction	Project Director
No complaints from the Regulators or traditional owners as a result of the works undertaken	Zero Complaints	Throughout Construction	Project Director
Incorporate heritage specialist input/advice into the design review process, and development of the Heritage Interpretation Plan (HIP) presented to the Heritage Working Group.	Incorporate, maintain or enhance existing heritage values	During Design	Design Manager

3. Roles and Responsibilities

3.1 Project Team

The roles and responsibilities of the key project personnel with respect to heritage are detailed in Table 3-1 below.

Table 3-1: Key Roles and Responsibilities

Role	Authority and Responsibility
Project Director	<ul style="list-style-type: none"> Managing the delivery of the PSISD Works including overseeing heritage management Act as the Contractor's Representative
Environmental Manager	<ul style="list-style-type: none"> Oversee the preparation, approval and implementation of this Sub-Plan Oversee the overall implementation of all heritage management initiatives including coordinating the projects response to complaints regarding heritage impacts Manage the ongoing compliance with conditions of approval Manage 'Unexpected Finds Procure' implementation (as applicable)
Stakeholder and Community Manager	<ul style="list-style-type: none"> Manage notifications and consultation for heritage Liaise with the Environment Manager in responding to resolving complaints regarding heritage impacts
Commercial Manager	<ul style="list-style-type: none"> Ensure that relevant heritage management requirements are considered in procuring materials and services
Engineering Manager	<ul style="list-style-type: none"> Ensure that relevant heritage management requirements are addressed and incorporated in design development
Area Manager	<ul style="list-style-type: none"> Manage construction in relation to heritage management for their work activity in conjunction with the Environment Manager Implement and ensure compliance with this Sub-Plan
Site Manager	<ul style="list-style-type: none"> Construction delivery in relation to environmental management and compliance in conjunction with the Environment Manager Authority to direct personnel and/or subcontractors to carry out actions to avoid or minimise unintended environmental impacts Implement and ensure compliance with this Sub-Plan
Project Engineers Site Engineers Supervisors	<ul style="list-style-type: none"> Implement and monitor onsite environmental management and compliance measures, including all required mitigation measures, across all sites in conjunction with Environmental Manager Undertake site inspections, provide support to report on environmental performance Assist the Area Managers and Site Managers in implementing this Sub-Plan

Further information on roles and responsibilities, including those for the Environmental Representative (ER), Sydney Metro (SM) and the Independent Certifier (IC) are contained within section 4 and Appendix C of the CEMP (SWCSWSPS-CPB-ALL-EM-PLN-000001).

3.2 Specialist Consultants

The Specialist Heritage consultant will be suitably qualified and experienced. The project will use the following specialist to manage compliance with Heritage management as required under the Contract:

- Graham Brooks - GBA Heritage 1/71 York St, Sydney NSW 2000, T (02) 9299 8600.
- Lian Ramage – AMBS Ecology & Heritage. Unit 14/1 Hordern Place Camperdown NSW 2050 M

4. Project Compliance Requirements

4.1.1 Contract Clauses

Specific contract clauses and references which set limits and/or govern impacts to heritage on the project are included in Table 4-1 below:

Table 4-1: Contractual requirements relating to heritage for PSISD

Contract Document Reference	Contract Clause / Reference	Limit/Requirement	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
Contract No: 506	5.6 Artefacts	<p>a. (Property of the Principal) As between the Principal and the PS Contractor, any Artefacts found on, in or under the surface of the Construction Site are and will remain the property of the Principal.</p> <p>b. (Discovery) The PS Contractor must, upon the discovery of an Artefact:</p> <ul style="list-style-type: none"> i. notify the Principal within 2 Business Days; ii. ensure that the Artefact is managed in accordance with the requirements of the Planning Approval and comply with all Laws and the Directions of Authorities and the Principal relating to the discovery and handling of the Artefact; and iii. continue to perform the PS Contractor's Activities, except to the extent otherwise directed by the Principal's Representative or an Authority, ordered by a court or tribunal or required by Law. 	<p>Section 6.2</p> <p>Appendix C1</p>	<p>Project Director</p> <p>Environmental Manager</p>	<p>If required during construction</p>
	SWTC B1.8	2.1 Heritage Objectives	<p>a. The heritage objectives for the Project Works are to:</p> <ul style="list-style-type: none"> i. avoid all adverse impacts on the adjacent heritage buildings, elements, fabric, spaces and vistas that contribute to the overall heritage significance of the Station's location within the Sydney CBD; ii. maximise the retention and legibility of those heritage buildings, structures, fabric, spaces and vistas that are insignificant and or contribute to the overall significance of the Precinct and the Station's location within the Sydney CBD; 	<p>Section 2.4</p>	<p>Project Director</p> <p>Environmental Manager</p>

Contract Document Reference	Contract Clause / Reference	Limit/Requirement	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
		<ul style="list-style-type: none"> iii. protect all heritage buildings, structures, fabric and moveable heritage items proposed to be retained, against damage during the Contractor's Activities; iv. where appropriate reuse any retained heritage elements for original or new uses as part of the viable ongoing function of the Station; v. design new buildings and other elements of the Project Works to complement existing heritage buildings, elements, fabric, spaces and vistas, and avoid outcomes that compromise the significance of these heritage items; vi. interpret the history and cultural value of any heritage items uncovered during the excavation and construction of the Station within the design for their future users; and vii. retain and conserve, wherever possible, elements of heritage significance so that functional relationships can be understood and interpreted. 			
SWTC B1.8	2.2 Heritage scope	<ul style="list-style-type: none"> a. The heritage scope must build upon heritage interpretation and salvage work carried out by the TSE Contractor. b. In order to achieve the range of heritage objectives and to achieve an outcome that minimises the adverse impacts on heritage buildings, elements, fabric, spaces and vistas, the Contractor must submit the following as part of the Design Stage 3 Design Documentation: 	Design Documentation submitted to Sydney Metro	Design Manager Heritage Consultants	During Design

Contract Document Reference	Contract Clause / Reference	Limit/Requirement	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
		<ul style="list-style-type: none"> i. a summary tracking register providing evidence of compliance with all heritage consent conditions within the Planning Approvals; ii. a 'Heritage Impact Assessment (HIA)' which: <ul style="list-style-type: none"> A. demonstrates identification, retention and appropriate conservation of all heritage buildings, fabric, elements, spaces and vistas proposed to be retained; B. evidences the trend (either positive or negative) of heritage impacts and provides an assessment of impacts for major elements and cumulative impacts, including mitigation measures; and C. addresses measures for protection against accidental damage of all heritage buildings, elements, fabric and moveable heritage items that are to be retained. iii. identification of salvage and reuse of significant elements, fabric and moveable heritage items for interpretive purposes; and iv. a comprehensive Heritage Interpretation Plan (HIP) to convey the history and cultural value of the heritage elements to future users. The HIP must evidence development of the local themes, stories and devices in the project design for each stage. The HIP must be consistent with, and incorporate the outputs of, the TSE Contractor's HIP. 			

Contract Document Reference	Contract Clause / Reference	Limit/Requirement	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
SWTC B1.8	3.2 Experienced heritage specialists	<p>a. Experienced heritage professionals must be appointed by the Contractor to guide the design, documentation and implementation of the Project Works. The appointments must include, as a minimum:</p> <ul style="list-style-type: none"> i. a heritage architect with at least 10 years' demonstrated experience in working with design teams on projects involving major redevelopment of heritage places; ii. a heritage interpretation specialist with at least 10 years' demonstrated iii. a materials conservator with at least 5 years' demonstrated experience. <p>b. The heritage specialists must, as a minimum:</p> <ul style="list-style-type: none"> i. supervise conservation work, protection and removal of significant fabric, reuse of retained heritage buildings and elements, archival recording and interpretation; ii. contribute to the design of new buildings and other elements where these interface with retained heritage buildings, elements, spaces and vistas that are to be retained or interpreted; iii. prepare, and oversee the implementation of the Heritage Management Plan described in section 3.3; and iv. prepare and implement a Heritage Interpretation Plan. 	Section 3.2	Design Manager Environmental Manager	Prior to and during construction

Contract Document Reference	Contract Clause / Reference	Limit/Requirement	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
SWTC B1.8	3.3 Construction Heritage Management Plan	<p>a. The Contractor must prepare a Construction Heritage Management Plan (CHMP), as required by the Planning Approval and SWTC, to guide the identification, retention, protection, conservation, salvage and reuse of heritage elements throughout the Project Works and the Contractor's Activities.</p> <p>b. The CHMP must set out both the methodology and critical stages within the Contractor's Activities for the identification, retention, protection, conservation, salvage and reuse of heritage elements.</p>	<p>Implementation of this plan</p> <p>Section 6</p>	<p>Environmental Manager</p> <p>Design Manager</p>	Prior to construction
SWTC B1.8	3.4 Protection of retained heritage elements	<p>a. Prior to the commencement of construction of the Project Works, detailed measures must be prepared for the protection of all significant heritage buildings, structures and fabric proposed for retention with the potential to be damaged by construction of the Project Works.</p>	<p>Section 6 and section 6.3</p> <p>Section 7.2 of Construction Noise and Vibration Management Plan (SMCSWSPS-CPB-ALL-EM-PLN-000004)</p>	Environmental Manager	Prior to construction
SWTC B1.8	3.5 Salvage and recycling of heritage fabric	<p>a. Salvage and recycling of significant heritage elements and fabric must be undertaken in accordance with the Sydney Metro Chatswood to Central; Metro Heritage Salvage and Storage Policy.</p> <p>b. The Contractor must undertake salvage of significant heritage elements and fabric that are required to be removed during the Contractor's Activities.</p>	Heritage Interpretation Plan	<p>Design Manager</p> <p>Heritage Consultants</p>	During design

Contract Document Reference	Contract Clause / Reference	Limit/Requirement	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
SWTC B1.8		<p>c. The Contractor must incorporate into the Project Works items salvaged by the TSE Contractor, consistent with the TSE Contractor's HIP.</p> <p>d. The Contractor must collect, protect and transport all salvaged stored items from the Principal's storage facility at 87 -103 Epsom Rd Roseberry NSW 2018.</p>			
	<p>3.7 Protection of retained heritage elements and adjacent heritage building</p>	<p>a. The Contractor must take particular care to avoid impact and vibration damage to the retained significant buildings and elements that could be susceptible to damage from construction works.</p> <p>b. The methodology used by the Contractor for demolition and construction of new structures must avoid vibration that could cause damage to retained significant heritage elements.</p> <p>c. The Contractor must erect hoardings or screens to protect retained significant buildings or elements susceptible to damage.</p> <p>d. The new canopy contemporary elements must express the contextual place of the Project Works while being compatible with the existing heritage fabric and broader Precinct context.</p>	<p>Section 7.2 CNVMP Visual Amenity Sub-Plan (CEMP Part C Section 5)</p>	<p>Environmental Manager Area Managers</p>	<p>Prior to and during construction</p>

4.1.2 Conditions of Project Environmental Approvals

Conditions of project environmental approvals that specifically address the management of heritage are addressed in the table under Element 4, in Part B of this CHMP.

4.1.3 Specific Conditions of Local, State and Commonwealth Legislation

Conditions of local, State and Commonwealth legislation that apply specific criteria to the management of heritage on the project are included in Table 4-2 below:

Table 4-2: Legislative Requirements

Document Reference	Relevant Condition	Limit/Requirement
<i>Environmental Planning and Assessment Act 1979</i>	Planning Approval granted under Part 5.1 of the <i>Environmental Planning and Assessment Act 1979</i> . Approval of reports, studies and plans as required by the Project Planning Approvals.	The approval conditions and obligations are incorporated into this CHMP. Any further environmental approvals will be applied for if required.
<i>Heritage Act 1977</i>	The <i>Heritage Act 1977</i> makes provisions for the conservation of NSW's Non-Aboriginal environmental heritage. Section 146 requires that the Heritage Council be notified if a relic is uncovered, where it is reasonable to believe that the Heritage Council is unaware of the location of the relic.	Heritage impact in accordance with the <i>Heritage Act 1977</i> is assessed under Part 5.1 of the <i>EP&A Act</i> , therefore permits are not required. This CHMP identifies areas of potential impact and mitigation measures. The Heritage Council would be notified in writing (by Sydney Metro) of relics uncovered during construction, in accordance with the requirements of section 146.
	<i>National Parks and Wildlife Act 1974</i>	The relevance of this Act is firstly in respect to the protection and preservation of Aboriginal artefacts. Under section 89A, discovery of material on site suspected as being of Aboriginal origin must be reported and protected pending the assessment and direction by the Client's Representative Section 90

4.1.4 Stakeholder consultation

Planning Approval consultation obligations, in line with the Staging Reports, are outlined in Table 4-3 below. As defined in the referred table, agencies to be consulted for the development of this Sub-Plan, incorporating the Unexpected Heritage Finds and Human Remains Procedure, include the Heritage Council (or delegate) and relevant Council(s).

The City of Sydney Council is the relevant local Council potentially affected by the PS works. This CHMP will be submitted to the Planning Secretary at least one month before commencement of construction, be approved prior to commencement of works, and be implemented for the duration. In accordance with condition C8 of the planning approval, construction must not commence until the CEMP and all CEMP sub-plans have been approved by the Secretary.

All comments received from agencies and the response to these comments are included in Appendix C2.

Table 4-3: Sub-Plan agencies consultation according with Staging Reports

Plan	SSI	Contractors Internal Review & Approval	Sydney Metro Review	Government Agency / Stakeholder Consultation	ER Review & Endorsement prior to Implementation	ER Review & Endorsement prior to Secretary Submission	RMS Review & Approval	Secretary Review & Approval	Approval Authority for Minor/Administrative Updates
Heritage Management Sub-Plan	7400	✓	✓	✓	-	✓	-	✓	ER

CPB Contractors has engaged with the above agencies in developing and finalising this CHMP including the Heritage Working Group consisting of CPB and Sydney Metro's Senior Heritage Advisor. Following finalisation, all the agencies were provided a copy of this CHMP.

The required date for the CEMP is specified in SWTC Appendix F2 Section 2.2 Table 1:

7	Construction Environmental Management Plan	In accordance with the Planning Approval	In accordance with the Planning Approval
---	--	--	--

Planning Approval Clauses C6 and C7 state (NB: unchanged by MODs):

- C6 Any of the CEMP sub-plans may be submitted to the Secretary along with, or subsequent to, the submission of the CEMP but in any event, no later than one (1) month before commencement of construction.
- C7 The CEMP must be endorsed by the ER and then submitted to the Secretary for approval no later than one (1) month before the commencement of construction or within another timeframe agreed with the Secretary.

Commencement of construction for PSISD is scheduled to commence in Quarter 1 2021.

5. Aspects and Impacts

The key aspects and potential impacts in relation to overall management of heritage during the PSISD works are listed in Table 5-1 below.

Table 5-1 Environmental Aspects and associated impacts

Environmental Hazards (Aspect)	Associated Impacts (Risk)
Excavation Works	Removal of archaeological sub surface deposits that could potentially contain historic and Aboriginal artefactual material or relics resulting in complete or partial destruction of sites
Modification to Design and Construction Methodology	Change to the construction footprint resulting in impacts to areas not previously assessed to be affected
Station Construction	Damage to known heritage buildings surrounding the PSISD project from vibration (generated during construction activities) or settlement. These heritage buildings include Edinburgh Castle Hotel, Masonic Club (Castlereagh Boutique Hotel), The National Building or the Metropolitan Fire Brigade Building. Damage to surrounding heritage buildings from construction activities, construction machinery, or as a result of an incident. Discovery of unexpected heritage finds.

Section 5.2 of the projects CEMP (SWCSWSPS-CPB-ALL-EM-PLN-000001) outlines the projects aspects and impacts and links to the development of various sub-plans to manage the various risks. Each of the Sub-plans listed in section 5.2 of the project's CEMP, of which this CHMP is included, are regularly reviewed during construction as the project risks are reviewed and change. The Environmental Risk Register (Appendix G of CEMP) has been used to develop the required control mitigation measures for each of the sub-plans. Ongoing review and update of the project risks throughout construction is undertaken in accordance with Element 4.7 and Appendix E of the CEMP (SWCSWSPS-CPB-ALL-EM-PLN-000001).

6. Heritage Management

6.1 Controls Used to Manage Heritage

Controls that are adequate to manage Heritage and to reduce risk to the lowest acceptable rating achievable are implemented before any relevant works commence. Elimination of the hazard is the first preference of control, followed by engineering, then administrative controls. It is noted that condition E10 of SSI7400 requires that *The Proponent must not destroy, modify or otherwise physically affect any Heritage item not identified in documents referred to in Condition A1.* Condition E23 also requires *The Proponent must take all reasonable steps so as not to harm, modify or otherwise impact any Aboriginal object associated with the CSSI except as authorised by this approval.*

Due to project staging, initial ground disturbance has been completed by the TSE Contractor prior to commencement of works on the Pitt Street Station. As such, many of the heritage mitigation measures to be implemented during the pre-construction and construction phases are largely administrative in nature for the PSISD project and are listed in the table below:

Table 6-1: Controls used to manage Heritage on PSISD

Control	Accountability
Pre-Construction	
All Personnel will undertake a Site Induction which includes Aboriginal and Non-Aboriginal Heritage. Specific training will be provided to persons likely to impact on heritage items or values.	Project Director
Aboriginal stakeholder consultation is to continue as required in accordance with the DPIE Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010.	Stakeholder and Community Relations Manager
The project design will minimise adverse impacts to heritage buildings, elements, fabric, spaces and vistas that contribute to the overall heritage significance of the Pitt St station area.	Design Manager
Construction Area Plan and Work pack includes requirements for the management of heritage	Project Director
Building Dilapidation surveys to be completed on surrounding buildings, including heritage.	Project Director
Site Establishment	
When CPB gain access to the site, any known heritage items in the vicinity will be shown on the SEPs and protection measures such as physical delineation/flagging, screens or hoarding and sign posted as No-go zones would be implemented. These areas will be communicated to the relevant workforce. These 'No-go' zones must be observed at all times unless a Permit to Enter No-go Zone has been authorised.	Project Director
Earthworks / Excavation	
Ground disturbance must not take place until a Land Disturbance Permit has been authorised.	Project Director
Use less vibration emitting construction methodologies wherever reasonable and feasible. For example, vibratory rollers can, where practicable, be operated in a static mode (ie with the vibratory mode switched off) to reduce vibration impact.	Site Supervisors
In the event that a potential burial site or potential human skeletal material is exposed during construction, the Sydney Metro Exhumation Management Plan will be implemented.	Environmental Manager

Title: Pitt Street CHMP

ID: MSID-4-295 Version: 11 Date Published: 23/06/2016

Management System - Uncontrolled Document when Printed

Control	Accountability
In the event that unexpected archaeological remains, relics, or potential heritage items are discovered during construction, all works in the immediate area will cease, and the Unexpected Finds Heritage and Human Remains procedure [SMCSWSPS-CPB-ALL-HE-PRO-00002] (Appendix C1) will be implemented.	Site Supervisors Environmental Manager
General Construction	
During pre-work briefings, employees will be made aware of the unexpected finds procedures and obligations under the National Parks and Wildlife Act 1974.	Environmental Manager
Inspections of all heritage mitigation measures will be undertaken and form part of the weekly inspection checklist.	Environmental Manager
Specific training will be provided to persons likely to impact on work in close proximity to heritage items or values.	Environmental Manager
During construction, if any historical heritage sites of state significance will be affected, professional archaeological investigation, excavation, and reporting will be undertaken.	Environmental Manager Excavation Director
CPB will take all reasonable steps so as not to harm, modify or otherwise impact any Aboriginal heritage object associated with the LW scope of works.	Environmental Manager

6.2 Unexpected Finds

If there are any unexpected heritage finds (including Aboriginal objects or human remains) revealed during the scope of works, works must stop immediately in the affected area and the Unexpected Finds Heritage and Human Remains Procedure [SMCSWSPS-CPB-ALL-HE-PRO-00002] would be implemented (refer Appendix C1). The relevant nominated Excavation Director (historic or Aboriginal) will then make a determination on the significance of the find and its appropriate management including archival recording, further historical research/investigation and archaeological excavations (with artefact analysis and identification of a final repository for finds) may be needed. If this were to eventuate, following completion of works, a Heritage Report would be completed. This would include any applicable details relating to the heritage find and further investigations, in accordance with any guidelines and standards required by the Heritage Council of NSW and Heritage NSW. Prior to the recommencement of works following an unexpected find, written archaeological clearance would be required from the Excavation Director.

Advice for the short and / or long-term management of any found artefacts or movable heritage would be sought from Heritage Specialist Consultants (Excavation Director), Sydney Metro and Heritage NSW.

For any unexpected finds which are determined to be of State significance, the Secretary (DPE) and Heritage Council of NSW are to be notified immediately. An Archaeological Relics Management Plan (ARMP) / Excavation Director's Report (EDR) would be prepared in consultation with Heritage NSW. In the event that a potential relic(s) is/are discovered, relevant construction would cease in the affected area, the Excavation Director would be notified, assess the significance level of the find/s and provide mitigation advice according to the significance level and the impact proposed.

An Archaeological Relic Management Plan specific to the relic of State significance would be prepared by the Excavation Director in consultation with the Heritage Council of NSW (or its delegate) in accordance with condition E20. Measures to be implemented to avoid and/or minimise harm to and/or salvage the relic of State significance where this is feasible would be developed. Construction in the vicinity of the discovery would not recommence until the requirements of the ARMP have been implemented, in consultation with the Excavation Director.

Where previously unidentified Aboriginal objects are discovered during construction of the project, construction will stop in the vicinity of the affected area and a suitably qualified and experienced Aboriginal heritage expert will be contacted to provide specialist heritage advice, before works recommence. Excavation and/or salvage would be undertaken by a qualified archaeologist in consultation with the Registered Aboriginal Parties for the CSSI. The measures to consider and

Title: Pitt Street CHMP

ID: MSID-4-295 Version: 11 Date Published: 23/06/2016

Management System - Uncontrolled Document when Printed

manage this process are described in the Unexpected Heritage Finds and Human Remains Procedure (Appendix C1). Aboriginal objects will be registered in the Heritage NSW's Aboriginal Heritage Information Management System (AHIMS).

In the unlikely event that human remains are encountered, work will immediately cease and the police, DPE, Heritage Council and the Excavation Director will be contacted for advice and guidance. The Exhumation Management Plan will be implemented. Reference will also be made to Guidelines for Management of Human Skeletal Remains (NSW Heritage Office, 1998b) and NSW Health Policy Directive – Exhumation of Human Remains (December 2013), and other relevant guidelines and standards prepared by the Heritage Council of NSW or OEH.

6.3 Heritage Protection

Based on assessments carried out to date, PSISD Works and construction methodologies, the project will not need to remove or impact heritage items, or heritage items in the vicinity/curtilage of the works. A detailed inventory of all buildings, structures, fabric, spaces and vistas of heritage significance that are to be retained is not considered to be necessary for PSISD scope of works.

Management measures to be implemented to prevent and minimise impacts on heritage items and/or measures to protect unaffected sites during construction works in the vicinity, will include but not be limited to identification of unexpected heritage items on Site Environmental Plans, installing screens/hoardings, and toolbox talks with workers.

As part of our tower cranes CPB will have specific software installed on the tower cranes enabling CPB to restrict the crane from slewing (loaded or unloaded) over specific areas by introducing "zoning". This "zoning" will be installed on adjacent buildings (including heritage buildings) to minimise the potential risk of the tower cranes coming into contact with them.

Section 7 of the Construction Noise and Vibration Management Plan outlines recommended minimum working distances for vibration intensive plant. Site specific buffer distances for vibration significant plant items must be measured on site where plant and equipment is likely to operate close to or within the minimum working distances for cosmetic damage.

There are a number of listed heritage buildings in proximity to the Project Site. A summary of these items and management recommendations is set out in Table 6-2. The heritage buildings sharing a common boundary with the sites are the Masonic Club and National Building (Pitt St North) and the Edinburgh Castle Hotel and Metropolitan Fire Brigade Building (Pitt St South). CPB will be adopting the same mitigation measures for these buildings to that of the TSE Contractor as documented in Table 6-2. Photographic recording has been completed by the TSE Contractor. It is noted that there are no structural connections between the sites and any of the adjacent buildings, thereby minimizing vibration transmission potential that would otherwise be present. Only some of the Project wide heritage management scope is held by CPB Contractors in delivering the PSISD Works. For completeness, this table therefore includes all listed heritage items and archival recording, and salvage work to be undertaken in delivering the preceding TSE Works and PSISD Works is detailed in Section 5.2. Historic and Aboriginal archaeological investigations and excavation monitoring are not included in this Table, having been addressed by the preceding TSE Contractor.

Table 6-2: Historic heritage buildings and mitigation measures implemented by TSE Interface Contractor

Item	Address	Listing	Significance	Potential Impact	Mitigation Measures
Pitt Street North					
Former "Legion House"	161 – 163 Castlereagh Street	Item 1698 (City of Sydney LEP)	Local	Indirect The PSISD works will not have a direct impact on the heritage fabric of this item. There may be a minor visual impact.	Photographic recording – streetscape (completed by TSE Contractor)
Masonic Club	169-173 Castlereagh St	Item 1699 (City of Sydney LEP and archaeological site)	Local	Direct (adjacent construction)	Photographic recording – streetscape (completed by TSE Contractor) Vibration Monitoring as per relevant CNVIS
Former "Manchester Unity" Building	183-187 Elizabeth Street	Item 1746 (City of Sydney LEP)	Local	Indirect The PSISD works will not have a direct impact on the heritage fabric of this item. There may be a minor visual impact.	Photographic recording – streetscape (Completed by TSE Contractor)
The Great Synagogue	187A Elizabeth Street	Item 1750 (City of Sydney LEP)	State	Indirect The PSISD works will not have a direct impact on the heritage fabric of this item. There may be a minor visual impact.	Nil
Former "Australian Consolidated Press" façade	189-197 Elizabeth Street	Item 1751 (City of Sydney LEP)	Local	Indirect The PSISD works will not have a direct impact on the heritage fabric of this item. There may be a minor visual impact.	Nil
National Building	248A-250 Pitt St	Item 1931 (City of Sydney LEP)	Local	Direct (adjacent construction)	Photographic recording – streetscape (Completed by TSE Contractor) Vibration Monitoring as per relevant CNVIS
Criterion Hotel	258-260 Pitt Street	Item 1933 (City of Sydney LEP)	Local	Indirect The PSISD works will not have a direct impact on the heritage fabric of this item. There may be a minor visual impact.	Nil
Pitt Street South					
Former "Sydney Water" Building (339-341 Pitt Street)	115-119 Bathurst Street	Item 1672 (Sydney City LEP 2012) SHR Item 01645	State	Indirect The PSISD works will not have a direct impact on the heritage fabric of this item. There may be a minor visual impact.	Nil

Title: Pitt Street CHMP

ID: MSID-4-295 Version: 11 Date Published: 23/06/2016

Management System - Uncontrolled Document when Printed

Item	Address	Listing	Significance	Potential Impact	Mitigation Measures
Metropolitan Fire Brigade Building	211 – 217 Castlereagh Street	Item 1703 (Sydney City LEP 2012)	Local	Direct (adjacent construction)	Photographic recording – streetscape (Completed by TSE Contractor) Vibration Monitoring as per relevant CNVIS
Former "Speedwell House"	284-292 Pitt Street	Item 1939 (Sydney City LEP 2012)	Local	Indirect The PSISD works will not have a direct impact on the heritage fabric of this item. There may be a minor visual impact.	Nil
Edinburgh Castle Hotel	294 – 294B Pitt Street	Item 1940 (Sydney City LEP 2012)	Local	Direct (adjacent construction)	Photographic recording – streetscape (Completed by TSE Contractor) Vibration Monitoring as per relevant CNVIS
Former "YMCA" building	323-331 Pitt Street	Item 1941 (Sydney City LEP 2012)	Local	Indirect The PSISD works will not have a direct impact on the heritage fabric of this item. There may be a minor visual impact.	Nil
Former Lismore Hotel façade	343-357 Pitt Street	Item 1942 (Sydney City LEP 2012)	Local	Indirect The PSISD works will not have a direct impact on the heritage fabric of this item. There may be a minor visual impact.	Nil

Title: Pitt Street CHMP

ID: MSID-4-295 **Version:** 11 **Date Published:** 23/06/2016

Management System - Uncontrolled Document when Printed

6.4 Heritage Interpretation and Design

Sydney Metro City and Southwest Heritage Interpretation Strategy (HIS) has been developed to address the likelihood of encountering artefacts on site and the consequences for management of artefacts by the PSISD project, and includes:

- A summary of site risk
- Key mitigation measures
- Training
- Inspection, monitoring and reporting requirements.

The HIS outlines the standards and procedures for the development of individual Heritage Interpretation Plans (HIP) for the Sydney Metro City and Southwest project. It also aims to show how the cultural significance of each of the places might be unveiled to consolidate and conserve the overall sense of identity associated with each location, as well as a sense of place. This is achieved through the revelation and presentation of stories and images that address previous usage, occupation, events or people, and are presented through a range of media within and around each of the sites.

The HIPs will identify and interpret the key Aboriginal and Non-Aboriginal heritage values and stories of heritage items and heritage conservation areas impacted by the PSISD scope of works, where applicable.

The Strategy outlines the management of consent conditions and staging the Heritage Interpretation Plans, the initial phase of interpretation for early works is followed by a later, detailed phase of interpretation developed during the design development of the station and precinct works.

Due to project staging, many of the conditions of approval and REMMS which relate to heritage interpretation are not applicable to PSISD and will be completed by other contractors. The Heritage Interpretation Plan (HIP) for PSISD Works has been developed as part of detailed design as specified under the Station Development Deed.

If any Aboriginal heritage interpretation is associated with the PSISD scope of work, Aboriginal stakeholder consultation will be carried out in accordance with the NSW Office of Environment and Heritage's Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010.

If there are any unexpected heritage finds during the course of PSISD construction, these may be incorporated into interpretation plans, depending on the outcome of the significance assessment.

Heritage design requirements, such as minimizing adverse impacts, maximizing/complementing retention of heritage buildings, structures, fabric, spaces and vistas are outside the scope of this plan will be addressed in Design Reports for specific applicable design packages. They should follow conditions E10 for avoidance of impacts and E100 and E101 with regards to the DRP as well as any requirements of the SWTC and EIS. The DRP and HWG have been established as outlined above in section 2.2

6.5 Archival Recording

Due to project staging, archival recording and reporting of known heritage items on the Project will be undertaken by other contractors. As such, CPB will adopt the recording process already in place at the project site developed by others. If there are any unexpected heritage finds during the course of the PSISD Works, archival recording may be necessary. If so, photographic archival recording would be carried out in accordance with the NSW Heritage Office's How to Prepare Archival Records of Heritage Items (1998), and Photographic Recording of Heritage Items Using Film or Digital Capture (2006).

Following completion of a Work Heritage Report including the details of any archival recording, further historical research either undertaken or to be carried out and archaeological excavations (with artefact analysis and identification of a final repository for finds), must be prepared in accordance with any guidelines and standards required by the Heritage Council of NSW and Heritage NSW.

Title: Pitt Street CHMP

ID: MSID-4-295 **Version:** 11 **Date Published:** 23/06/2016

Management System - Uncontrolled Document when Printed

6.6 Archaeological Excavation

The Archaeological Assessment Research Design Report (AARD) identifies archaeological management zones based on archaeological potential and construction impacts at the station and construction sites.

Bulk excavation, demolition and some preliminary construction activities will already have been undertaken by others by the time construction works commence at the PSISD site. The Tunnelling and Stations Excavation (TSE) Contractor has developed Archaeological Method Statements including management and mitigation measures for various stations and dive sites.

All archaeological investigations and excavations (historic or Aboriginal) have been completed. As such the relevant AARD and AMS will be implemented in the event that an unexpected find is exposed during work.

Clearance certificates have been obtained by TSE. If in the unlikely event that the PSISD works footprint deviates from the areas previously assessed in the AARD, the PSISD project will need to undertake an archaeological desktop study to determine if further searches are warranted and/or additional archaeological requirements are applicable. If this is required, Final Archaeological Method Statements would be prepared in consultation with the Heritage Council of NSW (or its delegate) before commencement of archaeological excavation works, with methodology as described in the Conditions of Approval (CSSI 7400).

A suitably qualified Excavation Director would be nominated to oversee and advise on any required archaeological excavation works.

The archaeological research design, including any mitigation measures identified in the Archaeological Assessment and Research Design report, would be implemented.

6.7 Final Heritage Report

The archaeological requirements of the project are triggered by the Unexpected Heritage Finds Protocol and as such, preparation of a Final Heritage, or Excavation Report should not be required.

In accordance with heritage best practice and contractual obligations, each Unexpected Heritage Find will be the subject of a brief report in Memo format that outlines the archaeological management of the find, additional information gained by analysis and research into the find and its heritage significance.

Each Memo will be provided to Sydney Metro and SMCSWLWC-SYC-1NL-PM-PLN-000375 Page 26 of 48 submitted to the Planning Secretary, the Heritage Council of NSW and Heritage NSW for information no later than 6 months after the completion of the Work associated with the Unexpected Heritage Find.

Part B: Implementation Plan

7. Elements and Expectations

Part B of this Sub-Plan explains how potential heritage impacts during the PSISD Works will be minimised and managed. Compliance with all elements is required at all times to minimise the likelihood of causing unauthorised environmental harm and maximise the uptake of opportunities to reduce environmental impact.

Part B contains the following:

- **Environmental Elements and Expectations:** These describe what is required to implement the Objectives of the PSISD:
 - **Element** – Key aspects for managing this function in delivering the PSISD Works
 - **Expectation** – The outcomes achieved as part of each element.
- **Requirements:** These are the specific actions required to demonstrate compliance with the Elements and Expectations.
- **Responsibility and Key Contributor:** Designation of responsibility or achieving compliance with the stated Expectation. Key contributors assist / contribute to achieving compliance.
- **Deliverables:** Tangible outcomes produced to demonstrate compliance with the environmental Elements and Expectations.

This two-level hierarchy provides a consistent structure that is applied across all CPB Management Plans on the Project. The Elements are:

- Element 1: **Training**
- Element 2: **Monitoring, Compliance, Records and Reporting**
- Element 3: **Auditing, Review and Improvement**
- Element 4: **Project Specific Requirements**

Element 1: Training

Expectations	How we will meet the Expectations (minimum requirements)	Responsible Key Contributor	Deliverables
<p>1.1 All personnel have completed an induction containing relevant environmental information before they are authorised to work on the Project</p>	<p>Inductions All personnel, subcontractors and visitors will undergo an induction before commencing work on-site. The induction presentation will include general information on the following:</p> <ul style="list-style-type: none"> ■ Information on potential heritage of the site ■ Requirements for management of heritage and unexpected finds of potential artefacts ■ Hold points (stop work in the event of an unexpected find or of a potential artefact) <p>An assessment will be conducted upon completion of the induction.</p>	<p>Safety Manager Environmental Manager</p>	<p>Induction Presentation and records Completed induction assessments</p>
<p>1.2 Additional toolbox talk topics are used to reinforce key management requirements and any lessons learnt</p>	<p>Regular toolbox talks will be held during the site establishment and throughout construction of PSISD works. Specific toolboxing will be undertaken on the Unexpected Finds Heritage and Human Remains procedure.</p>	<p>Environment Manager Site Supervisors</p>	<p>Toolbox talk records</p>

Element 2: Monitoring, Compliance, Records and Reporting

Expectations	How we will meet the Expectations (minimum requirements)	Responsible Key Contributor	Deliverables
2.1 Worksites are regularly inspected to ensure the adequacy of controls	<p>The project will regularly review the project sites to ensure compliance with legal and contract requirements and to identify potential non-compliances before they occur, as below:</p> <ul style="list-style-type: none"> ■ Site inspection checklist will include reference to heritage protection measures ■ Details of daily inspections undertaken by the Site Supervisor will be logged in their respective site diaries. <p>Routine weekly inspections are to be conducted which will include heritage checks where applicable. Weekly inspections will be documented in the Weekly Environmental Checklist.</p>	<p>Environment Manager Site Supervisors</p>	<p>Environmental Inspection Reports Site Diary Entries</p>

Heritage monitoring is performed that complies with legal and contract requirements and which is sufficient to identify potential non-compliances before they occur.

Where monitoring determines non-compliance to be a risk or to have occurred, an incident report and corrective actions are raised.

Monitoring and analysis of data will be carried out by a competent person. Evidence of competence must be retained.

It is the accountability of the Environmental Manager to ensure all monitoring is performed according to these requirements.

Where required, advice from a heritage specialist shall be sought regarding the methods and locations for installing equipment used for vibration, movement and noise monitoring of heritage listed structures. This is specifically addressed in the projects CNVMP.

Vibration Monitoring required to address condition E30 is addressed in section 7.2 of the CNVMP. A combination of attended and unattended vibration monitoring is proposed at various locations to verify that vibration levels remain in compliance with the structural damage screening criterion (Group 3), where plant needs to operate within the minimum working distance as identified in the CNVMP. If monitoring identifies that vibration is likely to be above the cosmetic damage screening criterion, a different construction method with lower source vibration levels will be considered where possible. Further vibration site investigations may be undertaken where there is potential for exceedances of the criteria, to determine any required site-specific safe working distances for the particular vibration generating activity.

Settlement monitoring of the buildings adjacent to the PSISD sites, as conducted by the TSE Contractor, will continue to be undertaken during construction to monitor for any movement or settlement.

Element 3: Auditing, Review and Improvement

Expectations	How we will meet the Expectations (minimum requirements)	Responsible Key Contributor	Deliverables
3.1 Audits are undertaken to ensure compliance with the requirements of this CHMP	<p>Procedures for corrective actions are addressed in the Construction Environmental Management Plan.</p> <p>Audits will be performed in accordance with the CEMP and this Sub-Plan and/or associated documents or procedures will be updated if required.</p>	<p>Project Director Environmental Manager Business Unit Environmental Manager</p>	<p>Audit reports Corrective Action Reports</p>
3.2 All non-compliances are reported and actioned	<p>A heritage non-compliance can generally be defined as a failure to comply with:</p> <ul style="list-style-type: none"> ■ Relevant environmental legislation ■ Project Planning Approval ■ Project Deed ■ Heritage Management Sub-Plan and related documents <p>Where a non-compliance is raised as part of an audit or an incident or complaint investigation the audit, incident or complaint report may be used to close out the non-compliance and it is not necessary to raise a separate non-compliance reporting process.</p> <p>Corrective and Preventative Actions may also be raised in accordance with the Construction Environmental Management Plan (SMCSWSPS-CPB-ALL-EM-PLN-000001).</p>	<p>Environment Manager</p>	<p>Audit Reports Corrective Action Reports</p>

Element 4: Project Specific Requirements

Number	Requirements	How will we meet the Expectations	Responsible Key Contributor	Timing
Construction Environmental Management Framework (CEMF) 2017				
10.1a	The following heritage management objectives will apply to construction:	Implementation of this Sub Plan Section 2.4	Project Director Environment Manager	Prior to and during construction
(i)	Embed significant heritage values through any architectural design, education or physical interpretation;			
(ii)	Minimise impacts on items or places of heritage value;			
(iii)	Avoid accidental impacts on heritage items; and			
(iv)	Maximise worker's awareness of indigenous and non-indigenous heritage.			
10.2a	Principal Contractors will develop and implement a Heritage Management Plan which will include as a minimum:	Implementation of this Sub-Plan	Project Director Environment Manager	Prior to and during construction
(i)	Evidence of consultation with the Registered Aboriginal Parties and the NSW Heritage Council;	Section 4.1.2		
(ii)	Identify initiatives that will be implemented for the enhancement of heritage values and minimisation of heritage impacts, including procedures and processes that will be used to implement and document heritage management initiatives;	Section 2.4		
(iii)	The heritage mitigation measures as detailed in the environmental approval documentation;	Element 4		
(iv)	The responsibilities of key project personnel with respect to the implementation of the plan;	Section 3		
(v)	Procedures for interpretation of heritage values uncovered through salvage or excavation during detailed design;	Section 6.4		
(vi)	Procedures for undertaking salvage or excavation of heritage relics or sites (where relevant), consistent with and any recordings of heritage relics prior to works commencing that would affect them;	Section 6.6		
(vii)	Details for the short and / or long term management of artefacts or movable heritage;	Section 6		

Title: Pitt Street CHMP

ID: MSID-4-295 Version: 11 Date Published: 23/06/2016

Management System - Uncontrolled Document when Printed

Number	Requirements	How will we meet the Expectations	Responsible Key Contributor	Timing
(viii)	Details or management measures to be implemented to prevent and minimise impacts on heritage items (including further heritage investigations, archival recordings and/or measures to protect unaffected sites during construction works in the vicinity);	Section 6		
(ix)	Procedures for undertaking unexpected finds, including procedures for dealing with human remains;	Section 6.2		
(x)	Heritage monitoring requirements; and	Element 2		
(xi)	Compliance record generation and management.	Element 2		
10.2b	The Contractor's regular inspections will include checking of heritage mitigation measures	Section 6.1 Element 2	Environment Manager	During construction
10.2c	Compliance records will be retained by the Contractor. These will include:		Environment Manager	Prior to and for the duration of construction
(i)	Inspections undertaken in relation to heritage management measures;	Section 6.1		
(ii)	Archival recordings undertaken of any heritage item;	Section 6.5		
(iii)	Unexpected finds and stop work orders; and	Section 6.2 and Appendix C1		
(iv)	Records of any impacts avoided or minimized through design or construction methods.			
10.3a	Examples of heritage mitigation measures include:		Environment Manager	Prior to and for the duration of construction
(i)	Any heritage item not affected by the works will be retained and protected throughout construction;	Section 6.1, Elements 2 and 4		
(ii)	During construction undertake professional archaeological investigation, excavation, and reporting of any historical Indigenous heritage sites of state significance which will be affected. Reporting may be completed as construction progresses;	Section 6.6		
(iii)	Undertake archival recordings of all non-Indigenous heritage items affected by the works prior to commencement of works; and	Section 6.5		
(iv)	Implement unexpected heritage find procedures for Indigenous and non-Indigenous heritage items.	Section 6.2 and Appendix C1		

Title: Pitt Street CHMP

ID: MSID-4-295 Version: 11 Date Published: 23/06/2016

Management System - Uncontrolled Document when Printed

Number	Requirements	How will we meet the Expectations	Responsible Key Contributor	Timing
<i>Planning Approval SSI 7440</i>				
E10	The Proponent must not destroy, modify or otherwise physically affect any Heritage item not identified in documents referred to in Condition A1.	Compliance with this CHMP and CSSI conditions. Section 6.1	Project Director Environment Manager	Prior to and for the duration of construction
E13	<p>The Proponent must prepare a Heritage Archival Recording Report, including photographic recording of the heritage items identified in documents referred to in Condition A1.</p> <p>Archival recording must include but not be limited to the following heritage items:</p> <p>(a) any component of the Blues Point Waterfront Group and the McMahons Point South heritage conservation area to be directly affected or altered, including vegetation and significant landscape features;</p> <p>(b) Hickson Road wall in the vicinity of proposed ventilation risers and skylights for Barangaroo Station or any other project elements to be located in front of the Hickson Road wall;</p> <p>(c) Martin Place, between Elizabeth and Castlereagh Streets, Sydney;</p> <p>(d) the Rolling Stock Officers' Garden, Rolling Stock Officers' Building and Cleaners' Amenities Building in Sydney Yard and any other component of the Sydney Terminal and Central Railway Stations group to be removed or altered;</p> <p>(e) any component of Sydenham Station or Sydenham Pit and Pumping Station to be removed or altered;</p> <p>(f) views from Mortuary Station before construction of the Sydney Yard Access Bridge; and</p> <p>(g) Former "Metro Goldwyn Mayer" building including interior, 22-28 Chalmers Street, Surry Hills.</p> <p>The archival recording must be undertaken by a suitably qualified heritage specialist and prepared in accordance with NSW Heritage Office's How to Prepare Archival Records of Heritage Items (1998) and</p>	<p>Handover documentation from TSE contractor</p> <p>Implementation of unexpected finds process (Section 6.2)</p>	Project Director Environment Manager	During Construction

Title: Pitt Street CHMP

ID: MSID-4-295 Version: 11 Date Published: 23/06/2016

Management System - Uncontrolled Document when Printed

Number	Requirements	How will we meet the Expectations	Responsible Key Contributor	Timing
	<p>Photographic Recording of Heritage Items Using Film or Digital Capture (2006).</p> <p>Within two (2) years of completing the archival recording, or any other later time agreed by the Secretary, the Proponent must submit the Heritage Archival Recording Report to the Department, the OEH, Heritage Council of NSW, Relevant Council(s), relevant local libraries and local historical societies in the respective local government area(s).</p>			
E14	In addition to the archival recording as required by Condition E13, the Proponent must, prior to demolition, undertake external photography of all buildings and structures to be demolished, in consultation with and to the standards of the relevant Council. The recordings must be made available to the relevant Council.	Not Applicable. Demolition of buildings and structures has been completed as part of a separate interface contract.	Sydney Metro	-
E15	The Proponent must salvage items of heritage value from heritage listed buildings and structures to be demolished before demolition, and assess options for its sympathetic reuse (including integrated heritage displays) on the project or other options for repository, reuse and display.	Not Applicable. Demolition of buildings and structures has been completed as part of a separate interface contract.	Sydney Metro	-
E16	<p>The Proponent must prepare a Salvage Report, including photographic recording of the heritage items identified for salvage in documents referred to in Condition A1. The Salvage Report must include:</p> <p>(a) the internal heritage fabric removed from within the curtilage of Mowbray House, Chatswood;</p> <p>(b) the interior, exterior and setting of the shop at 187 Miller Street, North Sydney;</p> <p>(c) the fabric and setting of the North Sydney bus shelters;</p> <p>(d) the interior, exterior and setting of the 'Flat Building' at 7 Elizabeth Street, Sydney;</p> <p>(e) the heritage fabric of the existing Martin Place Station affected by the project;</p> <p>(f) the heritage fabric of the existing Sydenham Station affected by the project;</p>	No heritage items identified for salvage relevant to the Pitt St project works.	Sydney Metro	-

Title: Pitt Street CHMP

ID: MSID-4-295 Version: 11 Date Published: 23/06/2016

Management System - Uncontrolled Document when Printed

Number	Requirements	How will we meet the Expectations	Responsible Key Contributor	Timing
	<p>(g) directly impacted parts of the Congregational Church at Waterloo; and</p> <p>(h) the former 'Metro Goldwyn Mayer' building including interior, 22-28 Chalmers Street, Surry Hills.</p>			
E17	<p>The Archaeological Assessment Research Design Report (AARD) in the documents listed in A1 must be implemented. Final Archaeological Method Statements must be prepared in consultation with the Heritage Council of NSW (or its delegate) before commencement of archaeological excavation works. The final methodology must:</p> <p>a) provide for the detailed analysis of any heritage items discovered during the investigations;</p> <p>b) include detailed site specific archaeological management and artefact management strategies;</p> <p>c) include cored soil samples for soil and pollen for the Pitt Street site within the Tank Stream Valley; and</p> <p>d) provide for a sieving strategy.</p>	<p>Section 6.6 Noted applicable when triggered by delivery of PSISD (Unexpected Finds – Section 6.2)</p>	<p>Environment Manager</p>	<p>If and when required</p>
E18	<p>Before excavation of archaeological management sites, the Proponent must nominate a suitably qualified Excavation Director who complies with the Heritage Council of NSW's Criteria for Assessment of Excavation Directors (July 2011) to oversee and advise on matters associated with historic archaeology and advise the Department and OEH.</p> <p>Where archaeological excavation is required, the Excavation Director must be present to oversee excavation and advise on archaeological issues. The Excavation Director must be given the authority to advise on the duration and extent of oversight required as informed by the provisions of the approved AARD and Excavation Methodology.</p> <p>A final archaeological report must be submitted to the Heritage Council of NSW within two (2) years of the completion of archaeological excavation on the project. The report must include information on the entire historical archaeological program relating to the CSSI.</p>	<p>Section 6.6 Noted – Not activated by delivery of PSISD – refer to section 6.2 unexpected finds</p>	<p>Environment Manager</p>	<p>If and when required</p>

Title: Pitt Street CHMP

ID: MSID-4-295 Version: 11 Date Published: 23/06/2016

Management System - Uncontrolled Document when Printed

Number	Requirements	How will we meet the Expectations	Responsible Key Contributor	Timing
E19	<p>An Unexpected Heritage Finds Procedure must be prepared:</p> <p>a) to manage unexpected heritage finds in accordance with any guidelines and standards prepared by the Heritage Council of NSW or OEH; and</p> <p>b) by a suitably qualified and experienced heritage specialist.</p> <p>The procedure must be included in the AARD and must be implemented for the life of the project.</p>	Sydney Metro Unexpected Heritage Finds Procedure to be implemented. Section 6.2 and Appendix C1	Environmental Manager	If and when required for the duration of construction
E20	<p>In the event that a potential relic(s) is/are discovered, relevant construction must cease in the affected area and the Excavation Director must be notified and assess the significance level of the find/s and provide mitigation advice according to the significance level and the impact proposed. The Excavation Director must attend the site in accordance with E18 to oversee the excavation where relics of State significance are found.</p> <p>The Secretary must be notified at the same time as the Heritage Council of NSW (or its delegate) of any relic of State significance found.</p> <p>An Archaeological Relic Management Plan specific to the relic of State significance must be prepared in consultation with the Heritage Council of NSW (or its delegate) to outline measures to be implemented to avoid and/or minimise harm to and/or salvage the relic of State significance. Construction in the vicinity of the discovery must not recommence until the requirements of the ARMP have been implemented, in consultation with the Excavation Director. The Proponent must notify the Secretary in writing of the outcome of consultation on the Archaeological Relic Management Plan with the Heritage Council of NSW.</p>	Section 6.2 and Appendix C1	Environmental Manager	If and when required
E21	<p>The Proponent must prepare a Heritage Interpretation Plan which identifies and interprets the key Aboriginal and Non-Aboriginal heritage values and stories of heritage items and heritage conservation areas impacted by the CSSI. The Heritage Interpretation Plan must inform the Station Design and Precinct Plan referred to in Condition E101. The</p>	CPB HIP to be implemented Section 6.4	Design Manager Environment Manager	Prior to and for the duration of construction

Title: Pitt Street CHMP

ID: MSID-4-295 Version: 11 Date Published: 23/06/2016

Management System - Uncontrolled Document when Printed

Number	Requirements	How will we meet the Expectations	Responsible Key Contributor	Timing
(a)	Heritage Interpretation Plan must be prepared in accordance with the NSW Heritage Manual, the NSW Heritage Office's Interpreting Heritage Places and Items: Guidelines (August 2005), and the NSW Heritage Council's Heritage Interpretation Policy and include, but not be limited to: a discussion of key interpretive themes, stories and messages proposed to interpret the history and significance of the affected heritage items and sections of heritage conservation areas including, but not limited to the Sydney Terminal and Central Railway Stations Group, Martin Place Station, Sydenham Station and Sydenham Pit and Drainage Pumping Station Precincts;			
(b)	identification and confirmation of interpretive initiatives implemented to mitigate impacts to archaeological Relics, heritage items and conservation areas affected by the CSSI including: <ul style="list-style-type: none"> (i) use of interpretive hoardings during construction (ii) community open days (iii) community updates station and precinct design; and			
(c)	Aboriginal cultural and heritage values of the project area including the results of any archaeological investigations undertaken. The Heritage Interpretation Plan must be prepared in consultation with the Heritage Council of NSW (or its delegate), Relevant Councils and Registered Aboriginal Parties, and must be submitted to the Secretary before commencement of construction.			
E23	The Proponent must take all reasonable steps so as not to harm, modify or otherwise impact any Aboriginal object associated with the CSSI except as authorised by this approval.	Section 6.1	Environment Manager	If and when required
E24	Before excavation, the Proponent must implement the Aboriginal Cultural Heritage Assessment prepared for the CSSI and included in the PIR. Excavation and/or salvage must be undertaken by a qualified archaeologist in consultation with the Registered Aboriginal Parties for the CSSI.	Implementation of this CHMP and Unexpected Finds Heritage and Human Remains Procedure (SMCSWSPS-CPB-ALL-HE-PRO-000002).	Environment Manager	If and when required

Title: Pitt Street CHMP

ID: MSID-4-295 Version: 11 Date Published: 23/06/2016

Management System - Uncontrolled Document when Printed

Number	Requirements	How will we meet the Expectations	Responsible Key Contributor	Timing
E25	Where previously unidentified Aboriginal objects are discovered during construction of the CSSI, construction must stop in the vicinity of the affected area and a suitably qualified and experienced Aboriginal heritage expert must be contacted to provide specialist heritage advice, before works recommence. The measures to consider and manage this process must be specified in the Heritage Management sub-plan required by Condition C3 and, where relevant, include registration in the OEH's Aboriginal Heritage Information Management System (AHIMS).	Refer to section 6.2 and Appendix C1		
E26	This approval does not allow the Proponent to harm, modify, or otherwise impact human remains uncovered during the construction and operation of the CSSI, except in accordance with the Exhumation Management Plan (Condition E27).	Section 6.2	Environment Manager	Prior to and for the duration of construction
E27	<p>An Exhumation Management Plan must be prepared to guide the relocation of recovered human remains. The Exhumation Management Plan must be prepared:</p> <ul style="list-style-type: none"> (a) in consultation with, and meeting the requirements of, the OEH and NSW Health; and (b) in accordance with the Guidelines for Management of Human Skeletal Remains (NSW Heritage Office, 1998b) and NSW Health Policy Directive – Exhumation of human remains (December, 2013), and other relevant guidelines and standards prepared by the Heritage Council of NSW or OEH. <p>The Exhumation Management Plan must be provided to the Secretary for information before the commencement of excavation works.</p> <p><i>Note: Human remains that are found unexpectedly during works are under the jurisdiction of the NSW State Coroner and must be reported to the NSW Police immediately.</i></p>	<p>Implementation of this CHMP</p> <p>Implementation of the Sydney Metro Exhumation Management Plan if required.</p>	<p>Preparation of Exhumation Management Plan has been done by Sydney Metro, implementation will be the responsibility of the Environment Manager if it is required to be implemented</p>	If and when required
E30	The Proponent must conduct vibration testing before and during vibration generating activities that have the potential to impact on heritage items to identify minimum working distances to prevent cosmetic damage. In the event that the vibration testing and monitoring	Section 7.2 CNVMP	Environmental Manager	During construction

Title: Pitt Street CHMP

ID: MSID-4-295 Version: 11 Date Published: 23/06/2016

Management System - Uncontrolled Document when Printed

Number	Requirements	How will we meet the Expectations	Responsible Key Contributor	Timing
	shows that the preferred values for vibration are likely to be exceeded, the Proponent must review the construction methodology and, if necessary, implement additional mitigation measures.			
E31	The Proponent must seek the advice of a heritage specialist on methods and locations for installing equipment used for vibration, movement and noise monitoring of heritage-listed structures.	Element 2 Projects Noise and Vibration Management Sub-Plan	Environmental Manager	As required
Planning Approval SSI-7400 Revised Environmental Management Measures (REMMs)				
AH1	Aboriginal stakeholder consultation would be carried out in accordance with the NSW Office of Environment and Heritage's Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010.	Section 6.1 Appendix C2	Stakeholder and Community Relations Manager	If and when required
AH2	The cultural heritage assessment report would be implemented.	Not currently activated under PSISD	Environmental Manager	At all times during construction
AH3	Archaeological test excavation (and salvage when required) would be carried out where intact natural soil profiles with the potential to contain significant archaeological deposits are encountered at the Blues Point temporary site, Barangaroo Station, Martin Place Station, Pitt Street Station, Central Station, Waterloo Station and Marrickville dive site. Excavations would be conducted in accordance with the methodology outlined in the Aboriginal cultural heritage assessment report.	Refer to section 6.6	Design Manager Stakeholder and Community Relations Manager	During design and if required
NAH2	An archaeological research designs would be prepared and implemented to identify the need for archaeological testing or monitoring. Archaeological mitigation measures recommended in the archaeological research design would be carried out in accordance with Heritage Council guidelines, and where identified in the archaeological research design, would be supervised by a suitably qualified Excavation Director with experience in managing State significant archaeology.	Section 6.6	Design Manager	During design
NAH3	An Exhumation Policy and Guideline would be prepared and implemented. It would be developed in accordance with the Guidelines for Management of Human Skeletal Remains (NSW Heritage Office, 1998b).	Implementation of this CHMP Implementation of the Sydney Metro Exhumation Management Plan if required.	Preparation of Exhumation Management Plan has been done by Sydney Metro,	If and when required

Title: Pitt Street CHMP

ID: MSID-4-295 Version: 11 Date Published: 23/06/2016

Management System - Uncontrolled Document when Printed

Number	Requirements	How will we meet the Expectations	Responsible Key Contributor	Timing
			implementation will be the responsibility of the Environment Manager if it is required to be implemented	
NAH7	The project design would be sympathetic to heritage items and, where reasonable and feasible, minimise impacts to the setting of heritage items. The detailed design for Martin Place Station and Central Station would be developed with input from a heritage architect.	Implementation of the Heritage Interpretation Plan	Design Manager	During design
NAH8	Appropriate heritage interpretation would be incorporated into the design for the project in accordance with the NSW Heritage Manual, the NSW Heritage Office's Interpreting Heritage Places and Items: Guidelines (August 2005), and the NSW Heritage Council's Heritage Interpretation Policy.	Refer to section 6.4	Design Manager	During design

Title: Pitt Street CHMP

ID: MSID-4-295 Version: 11 Date Published: 23/06/2016

Management System - Uncontrolled Document when Printed

8. References

NSW Government Transport for NSW *Environmental Impact Statement: Sydney Metro City & Southwest Chatswood to Sydenham* (May 2016) including the various Technical Papers (1 – 9).

NSW Government Department of Planning and Environment *State Significant Infrastructure Assessment: Sydney Metro City and Southwest - Chatswood to Sydenham SSI 7400* (December 2016)

NSW Government Department of Planning and Environment *Critical State Significant Infrastructure Sydney Metro City & Southwest Chatswood to Sydenham Conditions of Approval SSI 15_7400* (January 2017)

NSW Government Transport for NSW *Sydney Metro City & Southwest Chatswood to Sydenham Staging Report* (July 2019)

Sydney Metro Exhumation Management Plan 2019

Sydney Metro Unexpected Finds Procedure

The key NSW legislation relevant to heritage management includes:

- *Environmental Planning and Assessment Act 1979* (EP&A Act)
- *Heritage Act 1977*
- *National Parks and Wildlife Act 1974* (NPW Act)

Additional guidelines relating to the management of heritage include:

- NSW Heritage Council's Criteria for Assessment of Excavation Directors (2011)
- NSW Heritage Council's Assessing Significance for Historical Archaeological Sites and Relics (2009)
- NSW Heritage Office Archaeological Assessments (1996)
- Office of Environment and Heritage's Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (2011)
- Office of Environment and Heritage's Aboriginal cultural heritage consultation requirements for proponents 2010 (DECCW 2010)
- NSW Heritage Council's Photographic Recording of Heritage Items Using Film or Digital Capture (2006) guidelines

NSW Heritage Office Guidelines for Management of Human Skeletal Remains (1998)

Part C: Appendices

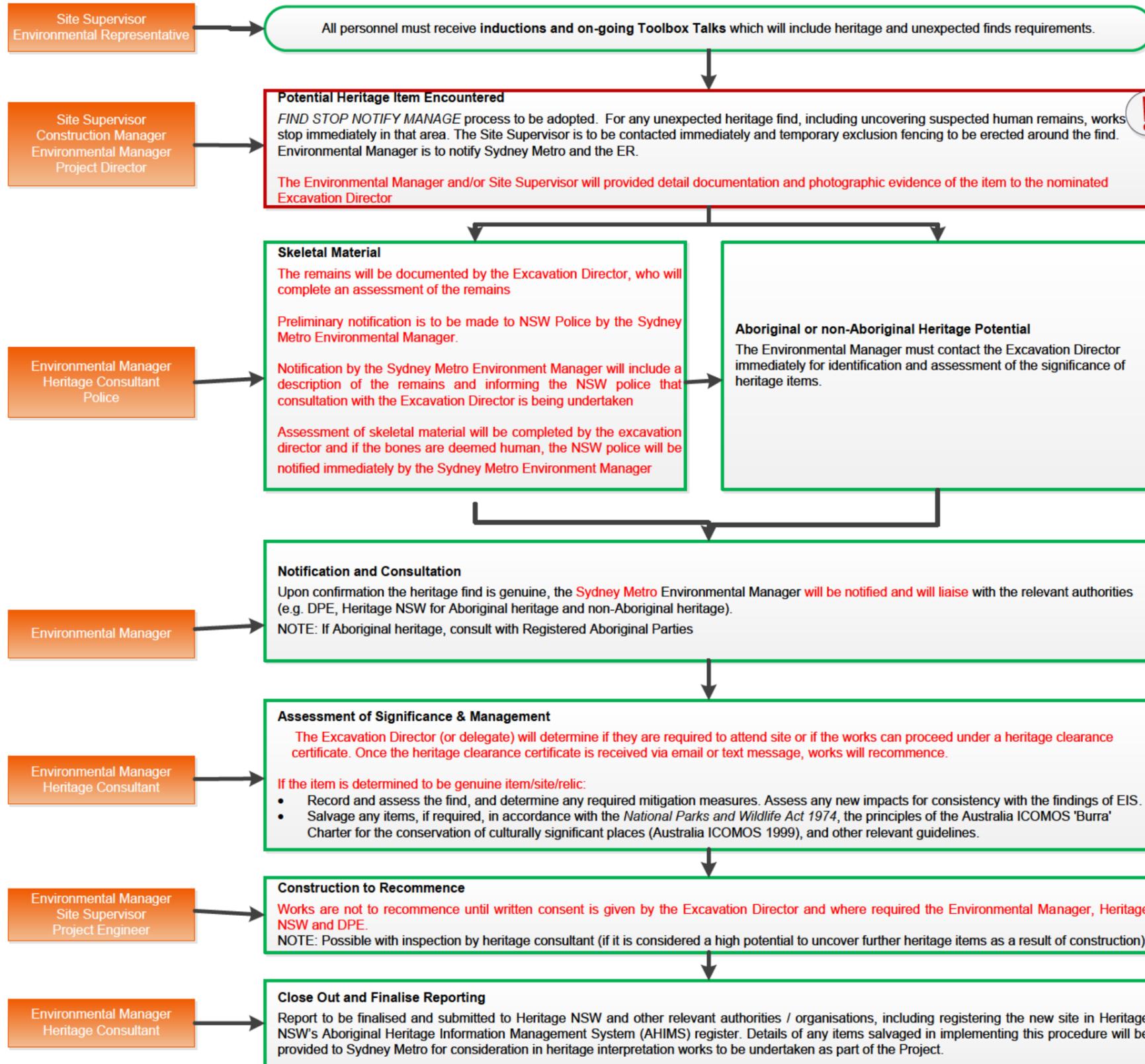
9. Appendices

9.1 Appendix C1 Unexpected Heritage Finds Procedure SMCSWSPS-CPB-ALL-HE-PRO-00002

RESPONSIBILITY

MANAGEMENT ACTIONS

NOTES



HOLD POINT

- Protected or 'No-Go' Areas
- Permit to Enter Protected or 'No-Go' Areas required to be obtained for any works in these areas.
- Unexpected Finds
- Unexpected finds can include:
- Human remains
 - Sandstone blocks
 - Former infrastructure (Tram trucks / kerbs)
 - Tools
 - Crockery and bottles
 - Recreational items
- Monitoring
- Workers inspect work areas prior to start of work each day
- Recording
- Unexpected Finds Record Form
 - Consultant reports on confirmed heritage or human remains
 - Location of unexpected finds on SEPs & register
 - Records of toolbox talks and inductions
- Note: Additional information on management of heritage and unexpected finds in Part C of the CEMP (SMCSWSPS-CPB-ALL-EM-PLN-00001).
- Contact Details
- [Redacted]
 - [Redacted]
 - [Redacted]

David Virtue
A/Associate Director Environment
Environment Sustainability and Planning
Sydney Metro
Transport for NSW
PO Box K659
HAYMARKET NSW 1240

5 May 2023

Ref: CSWPSISD_CHMP_Rev2

Dear Ben

**RE: Approval of Minor Amendments to Sydney Metro City & Southwest –
Construction Heritage Management Plan - Pitt Street Integrated Station
Development, Rev 01**

Thank you for providing the following document for Environmental Representative (ER) review and approval in accordance with MCoA A24(j) of the Sydney Metro City & Southwest Chatswood to Sydenham project (SSI – 15_7400 February 2019).

- *Construction Heritage Management Plan - Pitt Street Station Development, Revision 2 dated 18/04/2023 (CHMP Rev 2).*

As an approved ER for the Sydney Metro City Southwest project, I have reviewed the following proposed minor amendments in CHMP Rev 2:

1. Inclusion of CPB Project Director as CPB internal approver, with the content of the document remaining unchanged.

In my opinion, the proposed changes constitute a minor amendment pursuant MCoA A24(j). On this basis, I approve the amended *Construction Environmental Management Plan* Revision 2 dated 18/04/2023 (CHMP Rev 2)

Yours sincerely



Rui Henriques
Environmental Representative - City and Southwest Sydney Metro

4. Flora and Fauna Management Sub-Plan

4.1 Scope

This Sub-Plan addresses Flora and Fauna management on the project and the management of impacts on the environment and/or community. An aspect specific flora and fauna management procedure [SMCSWSPS-CPB-ALL-EM-PRO-000003] has been developed to supplement this sub-plan to manage unexpected flora and fauna finds during construction. This procedure is contained in Appendix H.

Activities conducted on the project that have the potential to impact flora and fauna are provided below. These have been extracted from project risk assessments:

Table 4-1: Activities, Hazards and Risks

Project Activity (Aspect)	Environmental Hazard	Environmental Impact
Vegetation clearing / trimming	Trimming / clearing required outside of approved work area	Unapproved works, potential for prosecution
Construction works	Local fauna entering works area	Fauna injured as a result of construction works
Excavation / ground-disturbing activities	Contaminates entering waterways	Impacts on aquatic fauna and flora
Refuelling/ hazardous materials handling	Accidental release of contaminants to storm water	Loss of water species

4.2 Existing Environment

The Pitt Street station sites are located within Sydney City, a built-up urbanised area with very limited native flora and fauna in its vicinity. There are no existing trees around the Pitt St South site. A small number of existing street trees (Chinese Elms) of varying maturities exist in the public domain areas surrounding the Pitt St North site (Park and Pitt Streets). At the time of this management plan preparation, 1 existing tree will be required to be removed from Pitt St and Park St surrounding the Pitt St North Site to facilitate construction of the project. Approval for their removal will be required to be obtained in accordance with condition E6 (SSI7400) and City of Sydney Council requirements. The extent of pruning required to facilitate construction is under preparation associated with the finalization of the projects hoarding plans. The protection of trees and pruning will be completed in accordance with the approval process with City of Sydney Council.

Under the EIS, there were two (2) threatened species considered to have a high to moderate likelihood of occurrence within the Pitt Street study area, however both of the species identified are not expected to be encountered during the construction of PSISD. Pitt Street was also a site that was not envisaged to have potential biodiversity impacts during the EIS, hence no field surveys were conducted. The EIS also found that the majority of fauna species within the study area were highly

mobile bird species. City of Sydney Council have also confirmed that there have been a small number of microbat observations in buildings in the Sydney CBD area.

The EIS confirmed that there were no likely impacts to Groundwater Dependent Ecosystems from the Pitt Street Station site.

4.3 Project Compliance Requirements

4.3.1 Contract Clauses and Construction Environmental Management Framework (CEMF)

Specific contract clauses and Construction Environmental Management Framework (CEMF) references which sets limits and/or govern impacts to flora and fauna on the project are detailed below in Table 4-2. Appendix D2.3 of the CEMP includes all contractual information and CEMF requirements relating to this project.

Table 4-2: CEMF (2017) – Management of Flora and Fauna

CEMF Clause	Requirement	Schedule C1 SWTC- Appendix F3 Annexure 2	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
11.1a	The following flora and fauna management objectives will apply to construction:	The Contractor must comply with these requirements	Section 4.5	Environmental Manager	During Construction
(i)	Minimise impacts on flora and fauna;				
(ii)	Design waterway modifications and crossings to incorporate best practice principles;				
(iii)	Retain and enhance existing flora and fauna habitat wherever possible; and				
(iv)	Appropriately manage the spread of weeds and plant pathogens.				

4.3.2 Conditions of Project Environmental Approvals

Project specific environmental CoA's and Revised Environmental Mitigation Measures (REMMs) applicable to Pitt Street that specifically address the management of flora and fauna are included in Table 4-3 and Table 4-4 below. Appendix D2.1 of the CEMP contains all conditions of approval information relevant to this project.

Table 4-3: Conditions of Approval – Management of Flora and Fauna

SSI 7400 Condition Number	Requirement	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
C3	The following CEMP sub-plans must be prepared in consultation with the relevant government agencies identified for each CEMP sub-plan and be consistent with the CEMF and CEMP referred to in Condition C1. (b) Biodiversity – OEH and Relevant Council(s)	Part C Section 4.3.4 Appendix I (CEMP)	Environmental Manager	Prior to construction
C4	The CEMP sub-plans must state how: (a) the environmental performance outcomes identified in the EIS as amended by the documents listed in A1 will be achieved; (b) the mitigation measures identified in the EIS as amended by documents listed in A1 will be implemented; (c) the relevant terms of this approval will be complied with; and (d) issues requiring management during construction, as identified through ongoing environmental risk analysis, will be managed.	Part C Section 4.3 Part C Section 4.4 Part C Section 4.5 Part C Section 4.6	Environmental Manager	Prior to construction
C5	The CEMP sub-plans must be developed in consultation with relevant government agencies. Where an agency(ies) request(s) is not included, the Proponent must provide the Secretary justification as to why. Details of all information requested by an agency to be included in a CEMP sub-plan as a result of consultation and copies of all correspondence from those agencies, must be provided with the relevant CEMP sub-plan.	Part C Section 4.3.4 Appendix I (CEMP)	Environmental Manager	Prior to construction
C8	Construction must not commence until the CEMP and all CEMP sub-plans have been approved by the Secretary. The CEMP and CEMP sub-plans, as approved by the	Part A Section 1 CEMP Part A Section 3.2 CEMP	Project Director	Prior to and during construction

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 **Date Published:** 25/09/2019

Management System - Uncontrolled Document when Printed

SSI 7400 Condition Number	Requirement	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
	<p>Secretary, including any minor amendments approved by the ER (or AA in regards to the Noise and Vibration sub-plan), must be implemented for the duration of construction.</p> <p>Where the CSSI is being staged, construction of that stage is not to commence until the relevant CEMP and sub-plans have been approved by the Secretary.</p>		Environmental Manager	
E6	<p>The CSSI must be designed to retain as many trees as possible and provide replacement trees such that there a net increase in the number of trees. The Proponent must commission an independent, experienced and suitably qualified arborist to prepare a comprehensive Tree Report before removing any trees as detailed in the EIS, as amended by the documents listed in A1. The Tree Report must include:</p> <p>(a) a description of the conditions of the tree(s) and its amenity and visual value;</p> <p>(b) consideration of all options to avoid tree removal, including relocation of services, redesign or relocation of ancillary components (such as substations, fencing etc.) and reduction of standard offsets to underground services; and</p> <p>(c) measures to avoid tree removal, minimise damage to, and ensure the health and stability of those trees to be retained and protected. This includes details of any proposed canopy or root pruning, root protection zone, excavation, site controls on waste disposal, vehicular access, materials storage and protection of public utilities.</p> <p>In the event that tree removal cannot be avoided, then replacement trees are to be planted within, or in close proximity to the CSSI or other location in consultation with the Relevant Councils and agreed by the Secretary. The size of the replacement trees will be determined in consultation with the relevant Council. A copy of the Tree Report must be</p>	Part C Section 4.3	Environmental Manager	Prior to and during Construction

SSI 7400 Condition Number	Requirement	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
	<p>submitted to the Secretary before the removal, damage and/or pruning of any trees, including those affected by the site establishment works. All recommendations of the Tree Report must be implemented by the Proponent, unless otherwise agreed by the Secretary.</p> <p>The Tree Report may be prepared for the entire CSSI or separate reports may be prepared for individual areas where tree removal and/or pruning is proposed.</p>			

Table 4-4: Revised Environmental Mitigation Measures Applicable to Pitt St – Management of Flora and Fauna

SSI 7400 REMM Number	Requirement	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
B3	The local WIRES group and / or veterinarian would be contacted if any fauna are injured on site or require capture and / or relocation.	Part C Section 4.5 Appendix H (CEMP)	Environmental Manager	Where required

4.3.3 Specific Conditions of Local, State and Commonwealth Legislation

The main legislation relevant to air quality management includes:

- *Framework for Biodiversity Assessment (OEH, 2014).*

Refer to the Appendix D1 of this CEMP (SMC&SSPS-CPB-ALL-EM-PLN-000001) for details of relevant legislation.

Additional guidelines and standards relating to the management of flora and fauna include:

- Threatened Species Survey and Assessment Guidelines.

4.3.4 Agency Consultation

Agencies to be consulted for this Sub-Plan are as detailed in the table below:

Table 4-5: Agency Consultation

Subject	Agency Consultation
Flora and Fauna Management Sub-Plan	<ul style="list-style-type: none">• OEH• Relevant Councils (City of Sydney)

CPB has engaged with the above agencies in developing and finalising this Sub-Plan. Following finalisation, all the agencies will be provided with a copy of this Sub-Plan.

This sub-plan will be submitted to the Planning Secretary at least one month before commencement of construction, be approved prior to commencement of works and be implemented for the duration.

All comments received from agencies and CPBs response to these comments are included in Appendix I.

4.4 Project Objectives

CPB's objectives for management of flora and fauna during delivery of PSISD works are aligned with the CEMF which states that the following management objectives will apply to construction:

- Minimise impacts on flora and fauna;
- Design waterway modifications and crossings to incorporate best practice principles;
- Retain and enhance existing flora and fauna habitat wherever possible; and
- Appropriately manage the spread of weeds and plant pathogens.

Based on the requirements defined at Section 4.1 (above), the findings of project risk management processes and the potential impacts on the community, the following targets have been set. Any deviance from the targets will result in Project Management immediately implementing corrective actions:

Table 4-6: Project Objectives

Metric/Measure	Objective	Timeframe	Accountability
----------------	-----------	-----------	----------------

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 Date Published: 25/09/2019

Management System - Uncontrolled Document when Printed

Number of native fauna injured	Zero	At all times	Project Director
Number of actions taken by regulators and/or client	Zero	At all times	Project Director
Minor ancillary facilities must have no impact on biodiversity	Zero	At all times	Project Director

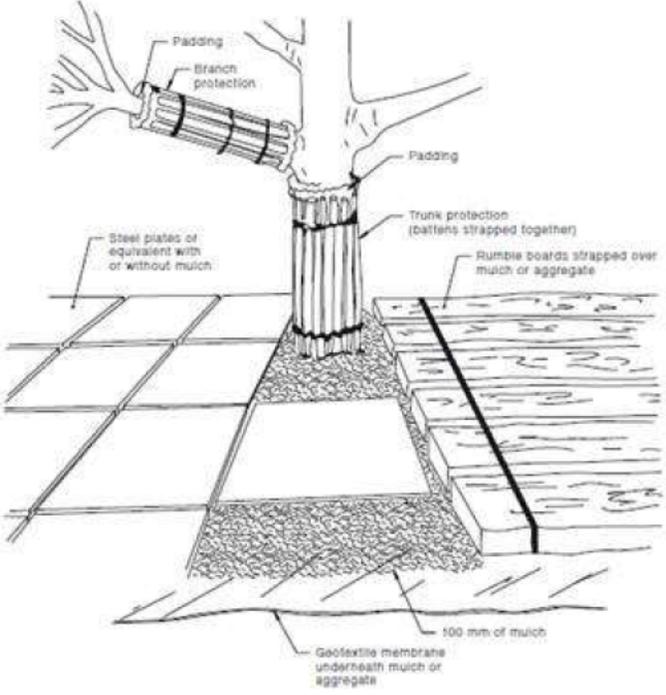
4.5 Controls Used to Manage Flora and Fauna

Controls that are adequate to manage flora and fauna risks and to reduce risk to the lowest acceptable rating achievable are implemented before any relevant works commence. Elimination of the hazard is the first preference of control, followed by engineering, then administrative controls.

Controls used on this project include:

Table 4-7: Flora and Fauna controls

Control	Accountability
<p>Prior to any disturbance, clearing or grubbing activities in any locations, the following must be in place;</p> <ul style="list-style-type: none"> ■ A Land Disturbance Permit (or equivalent) must be in place for all land disturbance or clearing activities. ■ No-go Zones for significant flora and fauna must be established, fenced/flagged and signposted prior to commencement of clearing. ■ A wildlife catcher/spotter or the project environmental representative needs to conduct a search for any wildlife that may need to be removed and relocated prior to the commencement of land disturbance, clearing or grubbing activities. 	Site Supervisor
<p>A suitably qualified and experience arborist to be engaged to prepare a Tree Report prior to the removal or trimming of any trees in accordance with condition E6 of SSI 7400. The tree report must address the requirements of condition E6.</p>	Environmental Manager
<p>Trees to be retained are to be protected against damage during construction in accordance with Australian Standard AS4970 (2009) - Protection of Trees on Development Sites and Adjoining Properties. Tree protection must be installed to existing trees and roots that may be affected during construction and maintained at all times. An examples of tree/root protection is shown below.</p> <p>If any pruning is required for the trees a qualified arborist is to be engaged and written approval is to be received from Council prior to commencing.</p> <p>Any damage to existing trees must be reported to CPB Site Manager immediately.</p>	Site Supervisor Environmental Manager

 <p>NOTES:</p> <ol style="list-style-type: none"> 1 For trunk and branch protection use boards and padding that will prevent damage to bark. Boards are to be strapped to trees, not nailed or screwed. 2 Rumble boards should be of a suitable thickness to prevent soil compaction and root damage. 	
<p>Clearing limits are set out, clearly identified and have been checked against project approvals prior to the commencement of clearing.</p>	<p>Environmental Manager</p>
<p>Unexpected flora or fauna finds (such as birds or microbats) on site are to be managed in accordance with Flora and Fauna Management Procedure {SMCSWSPS-CPB-ALL-EM-PRO-000003} located in Appendix H of this CEMP. The local WIRES group and/or vet will be contacted in the event that fauna are injured on site or require capture and/or relocation.</p>	<p>Site Supervisor Environmental Manager</p>
<p>No-go zones must be obeyed at all times without a Permit to Enter No-go Zone. Any damage to no-go zone fencing or signage must be reported to your supervisor or Environmental Manager immediately. If access to the area within any protective barrier is required during the works, it must be carried out under the supervision of a qualified arborist. Alternative tree protection measures must be installed, as required. The removal of tree protection measures, following completion of the works, must be carried out under the supervision of a qualified arborist and must avoid both direct mechanical injury to the structure of the tree and soil compaction within the canopy or the limit of the former protective fencing, whichever is the greater.</p>	<p>Site Supervisor</p>
<p>Boundaries of allowable disturbance areas on the project are clearly marked and delineated</p>	<p>Site Supervisor</p>
<p>Priority weeds would be managed in accordance with the Biosecurity Act 2015. Weeds of national environmental significance would be managed in accordance with the applicable Weeds of National Significance Weed Management Guide, if encountered</p>	<p>Environmental Manager</p>

<p>during the PSISD scope of work. CPB will endeavour to appropriately manage the spread of weeds and plant pathogens by implementing all applicable mitigation measures.</p> <p>When CPB take control of the Pitt St site, an inspection will be undertaken to check that weeds have been appropriately managed by preceding contractors, or that weeds are not present. Weeds encountered will be managed as necessary to control their spread. Weed management is to be completed prior to vegetation removal where practicable and feasible within schedule. Ongoing weeding will occur throughout the construction phase, where required</p>	<p>Site Supervisor</p>
---	------------------------

4.6 Monitoring

Flora and Fauna monitoring is performed that complies with legal and contract requirements and which is sufficient to identify potential non-compliances before they occur.

Where monitoring determines non-compliance to be a risk or to have occurred, an incident report and corrective actions are raised in Synergy.

Monitoring and analysis of data will be carried out by a competent person. Evidence of competence must be retained.

It is the accountability of the Environmental Manager to ensure all monitoring is performed according to these requirements.

4.7 Compliance Record Generation and Management

The details of record keeping and documentation in relation to flora and fauna can be found in Element 11 of the CEMP.

4.8 Roles and Responsibilities

The Project team's organisational structure and overall roles and responsibilities are outlined in Section 5 and Appendix C of the CEMP.

5. Visual Amenity Management Sub-Plan

5.1 Scope

The purpose of the Visual Amenity Management Sub-Plan (this Sub-Plan) is to describe how CPB Contractors will minimise and manage visual impacts throughout the delivery of the Sydney Metro City & Southwest Pitt Street Integrated Station Development.

This Sub-Plan has been prepared to address the requirements of relevant Minister for Planning's Conditions of Approval (CoA), including CSSI 7400, the Revised Environmental Mitigation Measures (REMMs), applicable legislation, the Environmental Impact Statements (EIS), contractual requirements including Schedule C1 Scope of Works and Technical Criteria (SWTC), and the Sydney Metro Construction Environment Management Framework (CEMF).

The key aspects and potential impacts about the overall management of air quality during the PS Works are listed in Table 5-1 below.

Table 5-1 Activities, Hazards and Risks to Visual Amenity

Project Activity (Aspect)	Environmental Hazard	Environmental Impact
General construction works	Litter	Potential for waste to be disposed of incorrectly, resulting in litter around the construction worksites
	Lighting	Potential for site lighting to affect this amenity of surrounding land uses
	Traffic and Transport	Potential for required traffic control signage to increase visual clutter surrounding construction sites
	Fencing and Temporary Structures	Potential to create visual impacts and graffiti space
	Erosion and Sediment Control	Potential for tracking of mud and other debris onto public roads
	Vegetation	Removal / trimming of existing street trees potentially reducing visual screening of the construction sites or impact landscape character within the city.
	Graffiti	Potential for site hoardings or other exposed surfaces to be vandalised

The PSISD Works has potential to impact landscape character and visual amenity during construction. Potential impacts require management and mitigation in accordance with relevant state legislation, government policies and the compliance requirements as noted in Section 5.2.

Viewpoints from various locations adjacent the Project will be impacted. During construction, there would be a moderate adverse visual impact on some locations due to the requirement for vehicle deliveries and haulage outside of daytime construction hours. Other potential impacts resulting from the Project include:

- potential to create visual impacts and graffiti space associated with fencing and hoardings.
- indirect positive impacts and land use changes as a result of opportunities for urban renewal near stations.

This Sub-Plan identifies potential visual impacts of the PSISD Works and sets out an integrated management framework to eliminate, manage, mitigate or minimise the potential impacts.

5.2 Existing Environment

Table 5-2 below provides a brief description of the PSISD worksite and surrounding areas, including elements and activities that are likely to be visible by potentially sensitive receivers. Information has been drawn from the EIS of CSSI 7400, Chapter 16.

As the worksite that will be occupied by CPB Contractors has been previously established by the TSE Contractor, much of the temporary visual elements will be already in place. A list of existing visible elements is included in Table 5-2 based on existing worksites at the time of drafting this document.

Table 5-2 Visual Amenity Summary CSSI7400

Site / Area Character	Visual Elements During Construction	Potential Sensitivities
<p>Located towards the mid-town precinct of Sydney's CBD, the Pitt Street North site flanks Parks Street and is situated between Pitt Street and Castlereagh Street. The Pitt Street South worksite is situated towards the southern end of the mid-town district, flanking Bathurst Street, between Pitt Street and Castlereagh Street.</p> <p>The Pitt Street Station precinct is located in one of the busiest parts of the city for vehicular and pedestrian movement. The site is a short walk, and in view of, some of Sydney's most prominent landmarks and attractions including Hyde Park, Town Hall, Pitt Street Mall, St Andrew's Cathedral and World Square. The nearby streets are lined by a mixture of low and high-rise office, commercial and apartment buildings of varying ages and styles</p>	<p>CPB Contractors will be principal contractor in this site, upon handover from the TSE Contractor.</p> <p>Visual Elements established during the TSE Stage include:</p> <ul style="list-style-type: none"> ■ 3 m existing A-Class hoarding surrounds the perimeter of the Pitt St North site. ■ 3 m existing A-Class hoarding on the Pitt St and Bathurst St frontages of the Pitt St South site. Visual elements established during the PSISD project: ■ Existing A Class hoarding will be maintained throughout the project. ■ B Class hoarding will be established on the footpath during the project on Pitt St, Park St and Castlereagh St to 	<p>Views from Hyde Park</p> <p>Local residents and businesses</p>

Site / Area Character	Visual Elements During Construction	Potential Sensitivities
	<p>house site accommodation and will remain in place to ensure public safety once works have commenced on the tower. This hoarding will have a suitably rated protection deck installed above the sheds in order to eliminate the risk of a falling object penetrating the structure and potentially impacting on citizens below.</p> <ul style="list-style-type: none"> ■ B-Class hoarding will be established on the footpaths along Pitt Street and Bathurst Street to house site accommodation and a suitably rated protection deck above the site sheds. This hoarding will have a suitably rated protection deck installed above the sheds in order to eliminate the risk of a falling object penetrating the structure and potentially impacting on citizens below. ■ All new hoardings installed during construction will be installed in compliance with City of Sydney Hoarding Guidelines and must be approved by City of Sydney Council. Project branding will be included as necessary. ■ Work zones will be established as per the CTMP on Park, Pitt and Castlereagh Streets for the Pitt St North site, ■ Work zones will be established as per the CTMP on Pitt and Bathurst Streets for the Pitt St South site. 	

Site / Area Character	Visual Elements During Construction	Potential Sensitivities
	<ul style="list-style-type: none"> ▪ Tower cranes and hoists to be established on the project as per the Construction and Site Management Plan (SMCSWSPS-CPB-ALL-CM-PLN-000001). Two (2) tower cranes and two (2) hoists are proposed for the Pitt St North site. One tower crane and one hoist are proposed for the Pitt St South site. <p>A section within the worksite will be used to support the LWW and TSOM tunnel works. This will include areas for:</p> <ul style="list-style-type: none"> ▪ concrete drop pipes ▪ washout areas 	

There are no existing trees around the Pitt St South site. A small number of existing street trees (Chinese Elms) of varying maturities exist in the public domain areas surrounding the Pitt St North site (Park and Pitt Streets). At the time of this management plan preparation, 1 existing tree will be required to be removed from Pitt St and Park St surrounding the Pitt St North Site to facilitate construction of the project. Approval for their removal will be required to be obtained in accordance with condition E6 (SSI7400) and City of Sydney Council requirements. The extent of pruning required to facilitate construction is under preparation associated with the finalization of the projects hoarding plans. The protection of trees and pruning will be completed in accordance with the approval process with City of Sydney Council.

5.3 Project Compliance Requirements

5.3.1 Contract Clauses and Construction Environmental Management Framework (CEMF)

Specific contract clauses and Construction Environmental Management Framework (CEMF) references which set limits and/or govern impacts to the visual amenity of the project are detailed below in Table 5-3. Appendix D2.3 of the CEMP includes all contractual information and CEMF requirements relating to this project.

Table 5-3: CEMF (2017) – Visual Amenity Management

CEMF Clause	Requirement	Schedule C1 SWTC- Appendix F3 Annexure 2	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
12.1a	The following visual and landscape management objectives will apply to the construction of the project:	The Contractor must comply with these requirements.			
(i)	Minimise impacts on existing landscape features as far as feasible and reasonable;		Part C Section 5.4	Project Director Environmental Manager	During Construction
(ii)	Ensure the successful implementation of the Landscape Design; and				
(iii)	Reduce visual impact of construction to surrounding community.				
12.2a	Principal Contractors will develop and implement a Visual Amenity Management Plan for temporary works which will include as a minimum:	The Contractor must comply with these requirements.			
(i)	The visual mitigation measures as detailed in the environmental approval documentation for construction;		Part C Section 5.3	Environmental Manager	Prior to construction
(ii)	Input from an experienced Landscape or Urban Designer;		Part C Section 5.6.1	Design Manager	During Design
(iii)	The maintenance of outward facing elements of site hoarding or noise barriers, including the removal of graffiti and weeds;		Part C Section 5.6.2	Supervisor Engineer	During Construction

CEMF Clause	Requirement	Schedule C1 SWTC- Appendix F3 Annexure 2	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
(iv)	Apply the principles of Australian Standard 4282-1997 Control of the obtrusive effects of outdoor lighting and relevant safety design requirements and detail mitigation measures to minimise lighting impacts on sensitive receivers for all permanent, temporary and mobile light sources;		Part C Section 5.3.5 Part C Section 5.6.1	Supervisor Engineer	During Construction
(v)	Identify the processes and procedures that will be used for the incorporation of the principles of Crime Prevention Through Environmental Design (CPTED) in the design and construction of any temporary site facilities; and		Part C Section 5.3.5 Part C Section 5.5 Part C Section 5.6.1	Project Director Environmental Manager Supervisor	Prior to and during construction
(vi)	Compliance record generation and management.		Part C Section 5.7 Part C Section 5.8	Environmental Manager	During Construction
12.2b	Visual and landscape measures will be incorporated into the Principal Contractor's regular inspections including checking the health of retained vegetation around site boundaries, checking the condition of any site hoarding and acoustic sheds, and checking the position and direction of any sight lighting.	The Contractor must comply with these requirements.	Part C Section 5.7	Environmental Manager	During Construction
12.2c	The Contractor will retain compliance records of any inspections undertaken in relation to visual and landscape measures	The Contractor must comply with these requirements.	Part C Section 5.7 Part C Section 5.8	Environmental Manager	During Construction

CEMF Clause	Requirement	Schedule C1 SWTC- Appendix F3 Annexure 2	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
12.3a	Examples of visual amenity mitigation measures include:	The Contractor must comply with these requirements.	Part C Section 5.6	Project Director Environmental Manager Supervisor	During Construction
(i)	Wherever feasible and reasonable, vegetation around the perimeter of the construction sites will be maintained;				
(ii)	Temporary construction works will be designed with consideration of urban design and visual amenity as per Section 4.4; and				
(iii)	Temporary site lighting, for security purposes or night works will be installed and operated in accordance with AS4282:1997 Control of the Obtrusive Effect of Outdoor Lighting.				

5.3.2 Conditions of Project Environmental Approvals

Project specific environmental CoA's and Revised Environmental Mitigation Measures (REMMs) applicable to Pitt Street that specifically address the management of visual amenity are included in Table 5-4 and Table 5-5 below. Appendix D2.1 of the CEMP contains all conditions of approval information relevant to this project.

Table 5-4: Conditions of Approval – Visual Amenity Management

SSI 7400 Condition Number	Requirement	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
C4	<p>The CEMP sub-plans must state how:</p> <p>(a) the environmental performance outcomes identified in the EIS as amended by the documents listed in A1 will be achieved;</p> <p>(b) the mitigation measures identified in the EIS as amended by documents listed in A1 will be implemented;</p> <p>(c) the relevant terms of this approval will be complied with; and</p> <p>(d) issues requiring management during construction, as identified through ongoing environmental risk analysis, will be managed.</p>	<p>Part C Section 5.3</p> <p>Part C Section 5.4</p> <p>Part C Section 5.5</p> <p>Part C Section 5.6</p>	<p>Environmental Manager</p>	<p>Prior to construction</p>
C8	<p>Construction must not commence until the CEMP and all CEMP sub-plans have been approved by the Secretary. The CEMP and CEMP sub-plans, as approved by the Secretary, including any minor amendments approved by the ER (or AA in regards to the Noise and Vibration sub-plan), must be implemented for the duration of construction. Where the CSSI is being staged, construction of that stage is not to commence until the relevant CEMP and sub-plans have been approved by the Secretary.</p>	<p>Part A Section 1 CEMP</p> <p>Part A Section 3.2 CEMP</p>	<p>Project Director Environmental Manager</p>	<p>Prior to and during construction</p>

Table 5-5: Revised Environmental Mitigation Measures Applicable to Pitt St – Management of Visual Amenity

SSI 7400 REMM Number	Requirement	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
LV1	Where feasible and reasonable, the elements within construction sites would be located to minimise visual impacts, for example materials and machinery would be stored behind fencing.	Construction and Site Management Plan [SMCSWSPS-CPB-ALL-CM-PLN-00001) Section 6 and 7 CEMP Part C Section 5.6.1	Site Supervisor Environmental Manager	During Construction
LV2	Existing trees to be retained would be protected prior to the commencement of construction in accordance with Australian Standard AS4970 the Australian Standard for Protection of Trees on Development Sites and Adjoining Properties.	Part C Section 5.3	Site Supervisor Environmental Manager	During Construction
LV3	Lighting of construction sites would be oriented to minimise glare and light spill impact on adjacent receivers.	Part C Section 5.3	Site Supervisor Environmental Manager	During Construction
LV4	Visual mitigation would be implemented as soon as feasible and reasonable after the commencement of construction and remain for the duration of the construction period.	Part C Section 5.6.1	Project Director Environmental Manager	During Construction
LV5	Opportunities for the retention and protection of existing street trees would be identified during detailed construction planning.	Part C Section 5.6.1.1	Senior Project Engineer Environmental Manager	During Construction Planning

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 **Date Published:** 25/09/2019

Management System - Uncontrolled Document when Printed

SSI 7400 REMM Number	Requirement	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
LV6	The design and maintenance of construction site hoardings would aim to minimise visual amenity and landscape character impacts, including the prompt removal of graffiti. Public art opportunities would be considered.	Part C Section 5.6.2	Senior Project Engineer Environmental Manager	At all times
LV10	Temporary impacts to public open space would be rehabilitated in consultation with the relevant local council and / or landowner.	Construction and Site Management Plan (SMCSWSPS-CPB-ALL-CM-PLN-000001) Section 6.5.9 and 7.5.9	Site Supervisor Environmental Manager	During Construction

5.3.3 Specific Conditions of Local, State and Commonwealth Legislation

The main legislation relevant to visual amenity management includes:

- *Environmental Planning and Assessment Act 1979.*

Refer to the Appendix D1 of this CEMP (SMC&SSPS-CPB-ALL-EM-PLN-000001) for details of relevant legislation.

5.3.4 Agency Consultation

No Agencies were required by the Conditions of Approval to be consulted during the development of this sub-plan.

5.3.5 Guidelines and Standards

Additional guidelines and standards relating to the management of visual amenity include:

- Crime Prevention through Environmental Design (CPTED) principles
- NWRL Style Guidelines (Co-branding) (TfNSW, November 2012)
- AS 4282-1997 Control of the obtrusive effects of outdoor lighting
- Guidelines for landscape character and visual impact assessment, EIA-N04, Version 1.0 (RTA, March 2009).

5.4 Project Objectives

CPB Contractors' objectives for management of visual amenity during delivery of scope are aligned with the CEMF, which states that the following management objectives will apply to construction:

- Minimise impacts on existing landscape features as far as feasible and reasonable.
- Ensure the successful implementation of the Landscape Design.
- Reduce visual impact of construction to surrounding community.

Based on the requirements defined at previous sections and in the CEMP, the findings of project risk management processes and the potential impacts to the community, the following targets have been set for managing visual amenity on the project. Any deviance from the targets will result in Project Management implementing corrective actions.

These have been extracted from project risk assessments:

Table 5-6: Visual Amenity Management Targets

Metric / Measure	Objective	Timeframe	Accountability
Successful implementation of approved landscape design	100%	At all times	Project Director
No complaints related with visual amenity from the Regulators as a result of the works undertaken	Zero Complaints	At all times	Project Director

5.5 Crime Prevention Through Environmental Design

The principle of Crime Prevention Through Environmental Design (CPTED) will be incorporated throughout the design and construction of temporary and permanent facilities during PSISD Works. CPTED aims to create the perception that the risk of committing the crime is greater than the likely benefits. Key principles adopted for the safety of public areas around the stations include:

- increasing the possibility of detection, challenge and capture
- increasing the effort required to commit crime
- reducing the potential rewards of crime by minimizing, removing or concealing 'crime benefits'
- removing conditions that create confusion about required norms of behavior.

5.5.1 Surveillance

The effect of having high levels of surveillance often prevents offenders from committing crime. Designing a public space should utilise natural, physical features that will enhance visibility and promote social interaction between users of the area. Effective surveillance includes both natural and technical resources. By limiting potential escape routes and places to hide, the design reduces the appeal of crime by making the offender feel uneasy.

Such prevention methods from a design perspective include:

- clear sightlines between public and private places
- sufficient lighting of public places
- landscaping that is attractive and inviting but does not provide offenders a place to hide and entrap victims.

Application to PSISD construction sites:

- Technological and/or personnel-based surveillance and monitoring systems will be used at the PSISD worksites. Details will be defined and implemented on a case by case basis for each site and considering interface contractors accessing the site.
- Hoarding and noise walls will be set up in a way that maximizes natural surveillance as much as practicable.
- Adequate levels of lighting will be provided around the worksites to increase visibility at night, where it does not negatively impact the surrounding community or light spill.

5.5.2 Access Control

The movement of people can be influenced by having physical and symbolic barriers, increasing the effort required to commit a crime. By having legible and clear boundary markers, people can easily identify where they are permitted to go or not go. However, such barriers should create a hostile environment that will discourage the use of the area.

Effective access control can be achieved by creating:

- landscapes and physical locations that channel pedestrians into target areas
- public spaces that are attractive and inviting for people to gather
- restricted access to internal areas or high-risk areas.

Application to PSISD construction sites:

- Worksites will be protected using industry standard physical barriers and clear delineation of the boundaries.
- Fencing/hoarding is to be set away from fixed infrastructure where possible, so that it does not create access to climbing onto buildings or structures.
- Requirements for pruning of vegetation adjacent to the worksites will be assessed to reduce the risk of climbing over hoarding.
- Each worksite will have vehicle and pedestrian access points with adequate access control (e.g. ID checkpoints, sign-in and sign-out).

5.5.3 Territorial Reinforcement

Community ownership of public spaces promotes social control and encourages people to gather and enjoy that space, increasing the number of pedestrians that can witness a potential crime. The principle of territorial reinforcement is designed to make general users feel safe and make potential offenders aware of the risk of prosecution.

Territorial reinforcement can be achieved through:

- design that encourages people to gather in a public space whilst feeling some responsibility for its use and condition
- design with clear boundaries between public and private space
- clear cues on what the space is design for and who it is to be used by.

Application to PSISD construction sites:

- Surrounding community will be notified and updated as required during the progress of PSISD Works.
- Clear signage will be displayed around the worksites.
- Visual amenity strategies will be in place and maintained for temporary construction works, as detailed in section 5.6.

5.6 Visual Amenity Management Strategy

The key visual amenity mitigation measures to be implemented during the PSISD Works are detailed in the sections below. Controls that are adequate to ensure compliance and to reduce risk to the lowest acceptable rating achievable are planned before any relevant works commence.

5.6.1 Design of Temporary Works at Construction Sites

Development of the temporary works design will take into account the CPTED principles and application opportunities identified in Section 5.5.

CPB Contractors will coordinate with the TSE Contractor currently occupying the worksites, and discuss opportunities for keeping temporary site facilities, hoardings, sheds or fencing, to the extent possible. This will allow consistency to be maintained across the project areas and limit the visual amenity impacts.

All temporary site facilities, including hoardings and site sheds, must be maintained in excellent condition. Existing structures will be used where possible and required maintenance identified and implemented. Where practicable, the elements within construction sites would be located to minimise visual impacts on adjacent receivers. For example, as specified in the Construction and Site Management Plan (SMCSWSPS-CPB-ALL-CM-PLN-000001), Hoist number 2 at the Pitt St North site has been located inside a permanent penetration, thereby minimizing visual impact.

The selection of materials and colours of temporary structures and compounds will aim to minimise their visual prominence. Where required an experienced urban or landscape designer (from within the CPB Contractors Design team) will be engaged to provide input to temporary works.

Visual mitigation will be implemented as soon as feasible and reasonable and will remain in place for the duration of the PSISD Works.

5.6.1.1 Site Lighting

Temporary site lighting, for security purposes or night works, will be installed and operated in accordance with AS4282:1997 Control of the Obtrusive Effect of Outdoor Lighting and relevant Australian Standards in the series AS/NZ 1158 – Lighting for Roads and Public Spaces. A lighting strategy will be assessed during detailed construction planning for each site to minimise any glare or light spill issues.

Any security and warning lighting used at the PSISD construction sites will be installed so that light is not directed at or reflected onto neighboring properties. Cut-off and directed lighting will be used where required to ensure glare and light trespass/spill are minimised.

5.6.1.2 Hoardings and Fencing

Hoardings, fencing and/or walls will be in place around the PSISD worksites as necessary prior to commencement of works, to provide safety and security. Hoardings and fencing will be maintained in a neat and tidy condition, and be sympathetic with the surroundings, where feasible.

Hoarding banners for the external faces of hoardings and fences at each construction site will be produced in accordance with designs provided by Sydney Metro, and are to comply with the hoarding requirements of the Sydney Metro City & Southwest Brand Guidelines and the City of Sydney Hoardings and Scaffolding Guidelines 2017. Approval from City of Sydney Council is required for

hoardings as per these guidelines. Signage will also be installed to provide the community with details of the Sydney Metro City & Southwest information line.

Hoarding banners and signage will be installed and maintained by CPB Contractors. Installation of hoarding banners helps to minimise opportunities for vandalism, such as bill posting and graffiti.

Where CPB Contractors establishes an ancillary facility adjacent to sensitive receivers, boundary fencing must be erected at this site(s) and must incorporate screening, unless otherwise agreed with Relevant Council(s), and affected residents, business operators and landowners. This boundary screening must minimise visual, noise and air quality impacts on adjacent sensitive receivers. Where boundary fencing and screening is required, this is to be in place for the duration of construction. Note that screening will not be used when sight lines are affected in relation to traffic safety or security.

5.6.2 Vegetation Management

As mentioned above, vegetation is limited to the public domain area surrounding Pitt St North site. Vegetation adjacent to the Pitt St North site that is to be retained and protected will be appropriately demarcated (e.g. fenced, flagged, etc.), and signage will be erected identifying these areas as 'Tree Protection Zone – No Access', in accordance with AS 4970–2009. These areas will also be clearly marked on Site Environment Plans (SEPs) as 'Tree Protection Zone – No Access'.

Where any tree pruning is required during site set up or construction, this will be undertaken in accordance with the project's tree management strategy prepared by Sydney Metro, and guided by a tree report prepared by a qualified arborist.

If trees are required to be removed for the scope of PSISD, a Tree Report will be prepared by a suitable qualified arborist and appropriate mitigation measures and tree replacement will be implemented as defined in the relevant Planning Approval requirements. Further details relating to the management, trimming or removal of trees are provided in the Flora and Fauna Management Sub-Plan.

5.6.3 Site Maintenance and Housekeeping

All site facilities, including hoardings, will be maintained in excellent condition, and must remain fit for their intended purpose for the project duration.

All PSISD construction sites, and other areas affected by PSISD construction activities, will be kept clean and tidy and free of refuse. This includes the regular removal of:

- Rubbish
- Litter
- Graffiti
- Surplus material
- Weeds

Rubbish or loose items will be frequently removed from the construction sites to avoid extended storage.

All site facilities, hoardings and fencing, as well as banners and signage on hoardings and fencing must be maintained free of graffiti and any advertising material not authorised by Sydney Metro. As set out in section 5.7, regular site inspections will be undertaken to ensure these structures are free of graffiti and unauthorised advertising material. If graffiti or unauthorised advertising material is identified on any of the abovementioned structures, it must be removed as soon as possible and practicable.

If hoarding banners/signs become irreparably damaged, CPB Contractors will install replacement banners or fencing signage within 24 hours of this damage occurring, or as soon as practicable.

5.6.4 Site Restoration and Handover

Handover includes the completed Pitt Street Integrated Station Development.

5.7 Monitoring

Where monitoring determines non-compliance to be a risk or to have occurred, an incident report and corrective actions are raised in Synergy.

Monitoring and analysis of data will be carried out by a competent person. Evidence of competence must be retained.

It is the accountability of the Environmental Manager to ensure all monitoring is performed according to these requirements.

CPB Contractors will regularly review the PSISD sites to ensure compliance with this Sub-Plan. Routine weekly inspections are to be conducted to monitor visual amenity mitigation measures in active worksites, including:

- Site hoarding and perimeter site areas
- Acoustic sheds and any other site structures
- Lighting structures, including position and direction of lighting
- Health of retained vegetation around site boundaries
- Litter and rubbish
- Materials storage and surplus material
- Graffiti
- General housekeeping

5.8 Compliance Record Generation and Management

The details of record keeping and documentation in relation to visual amenity can be found in Element 11 of the CEMP.

5.9 Roles and Responsibilities

The Project team's organisational structure and overall roles and responsibilities are outlined in Section 5 and Appendix C of the CEMP.

6. Waste and Recycling Management Sub-Plan

6.1 Scope

This Plan addresses the management and reporting of waste streams generated on the PSISD project. This plan has been developed in conjunction with the projects Sustainability Management Plan [SMCSWSPS-CPB-ALL-SU-PLN-000001].

Activities conducted on the project that has the potential to generate waste are provided below. These have been extracted from the project workflow, including activities and materials used.

Table 6-1: Activities, Hazards and Risks

Project Activity	Environmental Hazard	Environmental Risk
Construction and operational processes	Generation of waste products	Soil and water contamination
Plant maintenance	Generation and waste oil	Soil and water contamination
Operation and maintenance of offices, crib huts and camp facilities	Generation of general wastes	Unnecessary load on landfill availability Incorrect segregation of wastes
Waste transportation and disposal	Handling waste Incorrect classification of waste	Noise and dust impacts Mud tracking on roads Unlicensed entity(s) transporting waste Illegal disposal or reuse of waste
Waste disposal	Generation of waste Windblown waste	Litter being blown into the surrounding environment and entering waterways
Concreting works	Concrete washout in undesignated areas	Alkaline water polluting surrounding stormwater system / watercourses

6.2 Project Compliance Requirements

6.2.1 Contract Clauses and Construction Environmental Management Framework (CEMF)

Specific contract clauses and Construction Environmental Management Framework (CEMF) references which set limits and/or govern the management of waste on the project are detailed below in Table 6-2. Appendix D2.3 of the CEMP includes all contractual information and CEMF requirements relating to this project.

Table 6-2: CEMF (2017) – Management of Waste and Recycling

CEMF Clause	Requirement	Schedule C1 SWTC- Appendix F3 Annexure 2	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
17.1a	The following waste objectives will apply to construction	The Contractor must comply with these requirements.			
(i)	Minimise waste throughout the project life-cycle; and			Project Director Environmental Manager Sustainability Manager	During Construction
(ii)	Waste management strategies will be implemented in accordance with the Waste Avoidance and Resource Recovery Act 2001 management hierarchy as follows: -Avoidance of unnecessary resource consumption; -Resource recovery (including reuse, reprocessing, recycling and energy recovery); and -Disposal		Section 6.4		
17.1b	Targets for the recovery, recycling or reuse of construction waste, and beneficial reuse of spoil will be provided by the Principal Contractor.	The Contractor must comply with these requirements.	Section 6.4	Project Director Environmental Manager Sustainability Manager	During Construction

CEMF Clause	Requirement	Schedule C1 SWTC- Appendix F3 Annexure 2	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
17.2a	Principal Contractors will develop and implement a Waste Management and Recycling Plan which will include as a minimum:	The Contractor must comply with these requirements.	Part C Section 6	Environmental Manager	Prior to Construction
(i)	The waste management and recycling mitigation measures as detailed in the environmental approval documentation;		Section 6.2.2	Environmental Manager Sustainability Manager	Prior to Construction
(ii)	The responsibilities of key project personnel with respect to the implementation of the plan;		Section 6.5	Environmental Manager	Prior to Construction
(iii)	Waste management and recycling monitoring requirements;		Section 6.6	Environmental Manager	Prior to Construction
(iv)	A procedure for the assessment, classification, management and disposal of waste in accordance with the Waste Classification Guidelines (DECC, 2008); and		Section 6.5 Appendix I (CEMP)	Environmental Manager	Prior to Construction
(v)	Compliance record generation and management.		Section 6.7	Environmental Manager	Prior to Construction

CEMF Clause	Requirement	Schedule C1 SWTC- Appendix F3 Annexure 2	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
17.2b	Principal Contractors will undertake the following waste monitoring as a minimum:	The Contractor must comply with these requirements.	Section 6.6	Environmental Manager	Prior to and during construction
(i)	Weekly inspections will include checking on the waste storage facilities on site; and		Section 6.6		
(ii)	All waste removed from the site will be appropriately tracked from 'cradle to grave' using waste tracking docketts.		Section 6.5		
17.2c	Principal Contractors will report all necessary waste and purchasing information to TfNSW as required for TfNSW to fulfil their WRAPP reporting requirements.	The Contractor must comply with these requirements.	Appendix E (CEMP)	Environmental Manager	During Construction
17.2d	Compliance records will be retained by the Principal Contractors in relation to waste management including records of inspections and waste docketts for all waste removed from the site.	The Contractor must comply with these requirements.	Section 6.5 Section 6.7	Environmental Manager	During Construction
17.3a	Examples of waste management and recycling mitigation measures include:	The Contractor must comply with these requirements.	Section 6.5	Environmental Manager	During Construction
(i)	All waste materials removed from the sites will be directed to an appropriately licensed waste management facility;			Sustainability Manager Supervisor	

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 **Date Published:** 25/09/2019

Management System - Uncontrolled Document when Printed

CEMF Clause	Requirement	Schedule C1 SWTC- Appendix F3 Annexure 2	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
(ii)	The use of raw materials (noise hoarding, site fencing, etc...) will be reused or shared, between sites and between construction contractors where feasible and reasonable; and				
(iii)	Recyclable wastes, including paper at site offices, will be stored separately from other wastes.				

Contract Ref.	Requirement:	Responsibility	Where Addressed
PSISD Station Delivery Deed Schedule C1 Appendix B9 and F8	Sustainability requirements: Appendix B9 Target 6, 7, 8: 6 – Recycle or reuse at least 95% of inert and non-hazardous construction and demolition recyclable waste, excluding spoil 7 – Beneficially reuse 100% of reusable spoil 8 – Recycle or reuse 60% of office waste	Environment & Sustainability Manager	Sustainability Management Plan (SMCSWSPS-CPB-ALL-SU-PLN-000001) CEMP(SMCSWSPS-CPB-ALL-EM-PLN-000001) Waste Management Sub-Plan Table 6.6 and Spoil Management Sub-Plan Reporting through Sustainability Quarterly Reports

Conditions of Project Environmental Approvals

Project specific environmental CoA's and Revised Environmental Mitigation Measures (REMMs) applicable to Pitt Street that specifically address the management of waste are included Table 6-3 and Table 6-4 below. Appendix D2.1 of the CEMP. contains all conditions of approval information relevant to this project.

Table 6-3: Conditions of Approval – Management of Waste and Recycling

SSI 7400 Condition Number	Requirement	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
C4	<p>The CEMP sub-plans must state how:</p> <p>(a) the environmental performance outcomes identified in the EIS as amended by the documents listed in A1 will be achieved;</p> <p>(b) the mitigation measures identified in the EIS as amended by documents listed in A1 will be implemented;</p> <p>(c) the relevant terms of this approval will be complied with; and</p> <p>(d) issues requiring management during construction, as identified through ongoing environmental risk analysis, will be managed.</p>	<p>Section 6.3</p> <p>Section 6.4</p> <p>Section 6.5</p> <p>Section 6.6</p>	Environmental Manager	Prior to construction
C8	<p>Construction must not commence until the CEMP and all CEMP sub-plans have been approved by the Secretary. The CEMP and CEMP sub-plans, as approved by the Secretary, including any minor amendments approved by the ER (or AA in regards to the Noise and Vibration sub-plan), must be implemented for the duration of construction. Where the CSSI is being staged, construction of that stage is not to commence until the relevant CEMP and sub-plans have been approved by the Secretary.</p>	<p>Section 1 CEMP</p> <p>Section 3.2 CEMP</p>	Project Director Environmental Manager	Prior to and during construction
E106	<p>Waste generated during construction and operation is to be dealt with in accordance with the following priorities:</p> <p>(a) waste generation is to be avoided and where avoidance is not reasonably practicable, waste generation is to be reduced;</p>	<p>Section 6.4</p> <p>Section 6.5</p>	Environmental Manager Sustainability Manager Supervisor	During Construction

SSI 7400 Condition Number	Requirement	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
	(b) where avoiding or reducing waste is not possible, waste is to be re-used, recycled, or recovered; and (c) where re-using, recycling or recovering waste is not possible, waste is to be treated or disposed of.			

Table 6-4: Revised Environmental Mitigation Measures Applicable to Pitt St – Management of Waste and Recycling

SSI 7400 REMM Number	Requirement	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
WM1	All waste would be assessed, classified, managed and disposed of in accordance with the NSW Waste Classification Guidelines.	Section 6.5	Environmental Manager	During Construction
WM3	A recycling target of at least 90 per cent would be adopted for the project.	Section 6.4	Sustainability Manager Environmental Manager	During Construction
WM4	Construction waste would be minimised by accurately calculating materials brought to the site and limiting materials packaging.	Section 6.4 Section 6.5	Sustainability Manager	During Construction

6.2.3 Specific Conditions of Local, State and Commonwealth Legislation

Legislation and regulations relevant to waste management and recycling include:

- *Environmental Planning and Assessment Act 1979 (EP&A Act);*
- *Protection of the Environment Operations Act 1997 (POEO Act);*
- *Protection of the Environment Operations (General) Regulation 2009;*
- *Protection of the Environment Operations (Waste) Regulation 2014;*
- *Waste Avoidance and Resource Recovery Act 2001 (WARR Act);*
- *Contaminated Land Management Act 1997; and*
- *Environmentally Hazardous Chemicals Act 1985.*

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

The main guidelines, specifications and policy documents relevant to this Sub-plan include:

- *Waste Guidelines, Part 1: Classifying Waste (EPA November 2014);*
- *Waste Classification Guidelines, Part 4: Acid Sulfate Soils (DECCW August 2009);*
- *Environmental Best Practice Guidelines for Concreting Contractors (DEC 2004);*
- *Australian Dangerous Goods Code 7th Edition (ADG7) (National Transport Commission, October 2011);*
- *Concrete Washout Guideline (3TP-SD-112) (TfNSW);*
- *NSW Waste Avoidance and Resource Recovery Strategy 2014–21 (EPA 2014); and*
- *Australian Code for the Transport of Dangerous Goods by Road and Rail (National Transport Commission, 2008).*

Refer to the Appendix D5 of the CEMP (SMC&SSPS-CPB-ALL-EM-PLN-000001) for details of relevant legislation.

6.2.4 Agency Consultation

No Agencies were required by the Conditions of Approval to be consulted during the development of this sub-plan.

6.3 Waste Streams

The following waste streams and waste classifications have been identified on PSISD.

Table 6-5: Expected waste streams and classification

Waste Classification	Waste Stream
General solid waste (non-putrescible)	Surplus spoil (excavated soil, sediment, rock) from earthworks which is unable to be reused within backfilling or restoration.
	Concrete, steel, and other materials from demolition work.

	Sediment/sludge from impoundment areas / sediment control desilting.
	Surplus material or offcuts from construction and general site reinstatement, such as fencing, concrete, steel, reinforcement, PVC, wire, metal, timber, formwork, and sandbags.
	Packaging of materials.
	Plant and vehicle maintenance waste.
	General office waste and litter.
	Food waste, sanitary products
	Mixed recyclables
	Sewage from construction compounds and ancillary facilities.
Hazardous waste/general solid waste (non-putrescible)	Contaminated materials that may be exposed during Construction.
	Waste generated from chemical/spill clean-up or remediation.
General solid waste (putrescible)	Vegetative / green waste from clearing or trimming of vegetation.
Liquid waste	Wastewater, such as from stockpiled materials, water captured in excavations, and de-watering.
	Non-destructive digging waste
	Waste oil

6.4 Project Objectives

The waste and recycling management objectives of the Project are:

- Minimise the amount of waste throughout the Project life-cycle;
- Waste management strategies will be implemented in accordance with the WARR Act 2001 and waste hierarchy (Figure 6-1) namely:
 - Avoidance of unnecessary resource consumption;
 - Resource recovery (including reuse, reprocessing, recycling and energy recovery);
 - Disposal



Figure 6-1– Waste Hierarchy

- Minimise potential impacts from waste during Construction;
- Achieve recycling and reuse targets for Construction waste (including from earthworks and excavation); and
- Ensure compliance with relevant Legislation, Conditions of Approval and Mitigation Measures.

Based on the requirements defined in Section 6.1, the findings of project risk management processes and the potential impacts on the community, the following targets have been set for managing waste on the project. Any deviance from the targets will result in Project Management immediately implementing corrective actions:

Table 6-6: Targets

Metric/Measure	Objective	Timeframe	Accountability
% of waste quantified in waste management reports	100%	At all times	Environmental Manager
% of regulated/hazardous wastes for which transfer certificates are retained	100%	At all times	Environmental Manager
Number of enforcement notices and penalties received from regulators and/or client	Zero	At all times	Environmental Manager Project Director
% of spoil reused	100%	At all times	Environmental Manager
% recycle or reuse of inert and non-hazardous construction and demolition recyclable waste, excluding spoil	95%	At all times	Sustainability Manager
% of office waste recycled or reused	60%	At all times	Sustainability Manager

6.5 Controls Used to Manage Waste

Controls that are adequate to ensure compliance and to reduce risk to the lowest acceptable rating achievable are planned before any relevant works commence. Elimination or avoidance of the waste is the first preference of control, followed by reuse and recycling. Where re-using, recycling or recovering waste is not possible, waste will be treated or disposed of. Aspect specific procedures have been developed as outlined in Table 3-3 of the CEMP to manage waste and recycling on this project and are included in Appendix I of the CEMP. Controls used on this project include:

Table 6-7: Controls used to manage waste

Control	Accountability
All wastes need to be classified (prior to disposal), stored, tracked, transported and treated in accordance with contractual and regulatory requirements, including the use of licensed transporters and treatment facilities	Environmental Manager Site Supervisor
Limiting the packaging of materials brought onto site. Packaging take-back arrangements with suppliers will be implemented where feasible. Bulk purchases will also be preferred where possible and space permitting.	Environmental Manager
The relevant licences of waste facilities and transport contractors utilised for the transport, disposal or handling of waste will be obtained to ensure they are legally compliant.	Environmental Manager
Storage containers (bins, skips, tanks, etc) are provided at each work area in sufficient numbers to facilitate segregation of waste at the source of generation, where ever possible. The correct bin type must be used to avoid contamination.	Site Supervisor Environmental Manager
Storage containers are signposted to inform all project personnel of the correct material to be placed within each bin type. Containers are emptied at a frequency that is sufficient to ensure their correct use. If a bin needs to be emptied/collected contact your supervisor or Environmental Manager.	Site Supervisor Environmental Manager
Burial or burning of waste is not permitted.	Site Supervisor
Waste removed from the worksite will be appropriately tracked from "cradle to grave" using waste tracking dockets where required. All waste data must be collated and tracked using Material Tracking Forms.	Environmental Manager Project Engineer
Excess concrete and concrete washout are not to be discharged to land or stormwater; a concrete washout facility must always be used.	Site Supervisor Project Engineer
Waste management controls to be included in the Work Pack(s) and Construction Area Plans (CAPs)	Site Supervisor Project Engineer
An adequate number of fully maintained concrete washout pits will always be maintained on-site.	Senior Project Engineer

Maintain a high level of housekeeping and ensure that waste is placed in the correct bins/containers.	Site Supervisor
Erosion and control devices that are temporary must be compostable or reusable where possible.	Site Supervisor Environmental Advisor
All waste data must be collated and entered in to Synergy.	Environmental Manager

6.6 Monitoring

CPB will carry out regular visual monitoring and inspections of activities with the potential to generate waste for the duration of construction on the Project. The environmental inspection checklist is to be used to record project waste practices.

Waste data is collected on the project to allow monthly reporting of the following:

- The quantity of each type of waste sent to landfill;
- The quantity of each type of waste recycled;
- The quantity of each type of waste reused;
- The quantity of each type of hazardous/regulated waste generated on the project and:
 - Its method of treatment and disposal;
 - The location of treatment and disposal;
 - Copies of records confirming the legal transport, treatment and disposal; and
- Measurement of any reduction in waste generation that has been achieved.

The quantity of waste in each solid waste stream is measured by weight and liquid waste stream by volume, with records provided by the waste transport contractor. Alternative measures may only be used when an economical alternative is not available. All relevant information is included in the project environmental monthly report.

Waste storage facilities on site will be checked in weekly inspections.

6.7 Compliance Record Generation and Management

The details of record keeping and documentation in relation to waste management and recycling can be found in Element 11 of the CEMP.

6.8 Roles and Responsibilities

The Project team's organisational structure and overall roles and responsibilities are outlined in Section 5 and Appendix C of the CEMP.

Subcontractor and Waste contractors will have waste data reporting and performance requirements included in their contracts. The contract administrators will be responsible for monitoring contractor compliance.

7. Air Quality Management Sub-Plan

7.2 Scope

The purpose of this Construction Air Quality Management Sub-Plan is to describe how CPB will minimize and manage impacts on ambient air quality during the design and construction of the Sydney Metro City PSISD project works.

The key aspects and potential impacts about the overall management of air quality during the PS Works are listed in Table 7-1 below.

Table 7-1 Activities, Hazards and Risks to Air Quality

Project Activity (Aspect)	Environmental Hazard	Environmental Impact
Worksite establishment	Dust generation through exposing soil surfaces to erosion	Negative impact on surrounding sensitive receivers and waterways
Earthworks / Excavation works	Dust generation through exposing soil surfaces to erosion, rock hammering or rock sawing. Mud tracking on roads	Nuisance dust to personnel and surrounding receivers Negative impacts on waterways from airborne dust or mud tracking Health effects of dust on persons with suppressed immune systems
Spoil handling, storage and transport	Dust generation Wind erosion	Negative impact on surrounding sensitive receivers and waterways
Plant and vehicle emissions movement	Exhaust fumes	Negative odour and health effects from exposure to carbon monoxide, oxides of nitrogen, sulfur dioxide or VOCs
Utility relocations	Dust generation through exposing soil surfaces to erosion	Nuisance dust to personnel and surrounding receivers Negative impacts on waterways from airborne dust Health effects of dust on persons with suppressed immune systems
Demolition of buildings and other structures, including the management of demolition material	Demolition material management	Negative impact on surrounding sensitive receivers and waterways Health effects of dust on persons with suppressed immune systems
General construction works	Windblown rubbish	Nuisance dust to personnel and surrounding receivers Airborne dust / litter entering waterways

The worksites are located on the corner of Pitt, Park and Castlereagh streets; and around the corner of Pitt and Bathurst streets. Both worksites are surrounded by a mixture of commercial, residential, retail and educational land uses. Several hotels and short-term accommodation premises are located nearby (eg. Edinburgh Castle), the Great Synagogue and Pitt Street Uniting Church are all considered potentially sensitive receivers to the project works.

7.3 Project Compliance Requirements

7.3.1 Contract Clauses / Construction Environmental Management Framework (CEMF)

Specific contract clauses and Construction Environmental Management Framework (CEMF) references which sets limits and/or govern impacts to air quality on the project are detailed below in Table 7-2. Appendix D2.3 CEMP includes all contractual information and CEMF requirements relating to this project.

Table 7-2: CEMF (2017) – Management of Air Quality

CEMF Clause	Requirement	Schedule C1 SWTC- Appendix F3 Annexure 2	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
16.1a	The following air quality management objectives will apply to construction:	The Contractor must comply with these requirements.	Part C Section 7.4	Project Director Environmental Manager	During Construction
(i)	Minimise gaseous and particulate pollutant emissions from construction activities as far as feasible and reasonable; and				
(ii)	Identify and control potential dust and air pollutant sources.				
16.2a	Principal Contractors will develop and implement an Air Quality Management Plan which will include, as a minimum:	The Contractor must comply with these requirements.			
(i)	The air quality mitigation measures as detailed in the environmental approval documentation;		Section 7.3.2	Environmental Manager	During Construction
(ii)	The requirements of any applicable EPL conditions;		Not Applicable		
(iii)	Site plans or maps indicating locations of sensitive receivers and key air quality / dust controls;		Appendix F	Environmental Manager	During Construction
(iv)	The responsibilities of key project personnel with respect to the implementation of the plan;		Section 7.5	Environmental Manager	During Construction

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 **Date Published:** 25/09/2019

Management System - Uncontrolled Document when Printed

CEMF Clause	Requirement	Schedule C1 SWTC- Appendix F3 Annexure 2	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
(v)	Air quality and dust monitoring requirements; and		Section 7.6	Environmental Manager	During Construction
(vi)	Compliance record generation and management.		Section 7.6 Section 7.7	Environmental Manager	During Construction
16.2b	Air quality and dust monitoring will involve the following as a minimum:	The Contractor must comply with these requirements.			
(i)	Meteorological conditions will be monitored and appropriate responses will be organised and undertaken periodically by the Principal Contractor;		Section 7.6	Supervisor Environmental Manager	During Construction
(ii)	Regular visual monitoring of dust generation from work zones; and		Section 7.6	Supervisor Engineers Environmental Manager	During Construction
(iii)	Monitoring emissions from plant and construction vehicles to ensure they have appropriate emission controls and are being maintained correctly.		Section 7.6	Supervisor Engineers Environmental Manager	During Construction

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 **Date Published:** 25/09/2019

Management System - Uncontrolled Document when Printed

CEMF Clause	Requirement	Schedule C1 SWTC- Appendix F3 Annexure 2	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
16.2c	The following compliance records will be kept by the Principal Contractor:	The Contractor must comply with these requirements.	Section 7.6	Supervisor Engineers Environmental Manager	During Construction
(i)	Records of any meteorological condition monitoring;				
(ii)	Records of any management measures implemented as a result of adverse, windy weather conditions; and				
(iii)	Records of air quality and dust inspections undertaken.				
16.3	Examples of air quality mitigation measures include:	The Contractor must comply with these requirements.	Section 7.5		During Construction
(i)	Plant and equipment will be serviced and maintained in good working order to reduce unnecessary emissions from exhaust fumes;		Section 7.5	Engineer Site Supervisor	During Construction
(ii)	Water suppression will be used for active earthwork areas, stockpiles, unsurfaced haul roads and loads of soil being transported to reduce wind-blown dust emissions;		Section 7.5	Engineer Site Supervisor Environmental Manager	During Construction

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 **Date Published:** 25/09/2019

Management System - Uncontrolled Document when Printed

CEMF Clause	Requirement	Schedule C1 SWTC- Appendix F3 Annexure 2	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
(iii)	Wheel-wash facilities or rumble grids will be provided and used near the site exit points, as appropriate; and		Section 7.5	Engineer Site Supervisor Environmental Manager	During Construction
(iv)	Dust extraction and filtration systems will be installed for tunnel excavation works and deep excavation with limited surface exposure.		Not Applicable		

7.3.2 Conditions of Project Environmental Approvals

Project specific environmental CoA's and Revised Environmental Mitigation Measures (REMMs) applicable to Pitt Street that specifically address the management of air quality are included in Table 7-3 and Table 7-4 below. Appendix D.1 of the CEMP contains all conditions of approval information relevant to this project.

Table 7-3: Conditions of Approval – Management of Air Quality

SSI 7400 Condition Number	Requirement	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
C4	The CEMP sub-plans must state how: (a) the environmental performance outcomes identified in the EIS as amended by the documents listed in A1 will be achieved; (b) the mitigation measures identified in the EIS as amended by documents listed in A1 will be implemented; (c) the relevant terms of this approval will be complied with; and (d) issues requiring management during construction, as identified through ongoing environmental risk analysis, will be managed.	Section 7.3 Section 7.4 Section 7.5 Section 7.6	Environmental Manager	Prior to construction
C8	Construction must not commence until the CEMP and all CEMP sub-plans have been approved by the Secretary. The CEMP and CEMP sub-plans, as approved by the Secretary, including any minor amendments approved by the ER (or AA in regards to the Noise and Vibration sub-plan), must be implemented for the duration of construction. Where the CSSI is being staged, construction of that stage is not to commence until the relevant CEMP and sub-plans have been approved by the Secretary.	Section 1 CEMP Section 3.2 CEMP	Project Director Environmental Manager	Prior to and during construction

SSI 7400 Condition Number	Requirement	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
E5	In addition to the performance outcomes, commitments and mitigation measures specified in PIR, all reasonably practicable measures must be implemented to minimise the emission of dust and other air pollutants during the construction and operation of the CSSI.	Section 7.5	Project Director Environmental Manager	During Construction

Table 7-4: Revised Environmental Mitigation Measures Applicable to Pitt St – Management of Air Quality

SSI 7400 REMM Number	Requirement	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
AQ1	The engines of all on-site vehicles and plant would be switched off when not in use for an extended period.	Section 7.5	Supervisor	At all times
AQ2	Plant would be well maintained and serviced to minimise emissions. Emissions from plant would be considered as part of pre-acceptance checks.	Section 7.5	Supervisor Engineer	
AQ3	Construction site layout and placement of plant would consider air quality impacts to nearby receivers.	Section 7.5	Engineer	Prior to and during construction
AQ4	Hard surfaces would be installed on long term haul routes and regularly cleaned.	Section 7.5	Supervisor Engineer	During Construction

SSI 7400 REMM Number	Requirement	How we will meet the expectations (minimum requirements)	Responsibility Key Contributor	Timing
AQ5	Unsurfaced haul routes and work area would be regularly damped down in dry and windy conditions.	Section 7.5	Supervisor Engineer	During Construction
AQ6	All vehicles carrying loose or potentially dusty material to or from the site would be fully covered.	Section 7.5	Supervisor Engineer	During Construction
AQ7	Stockpiles would be managed to minimise dust generation.	Section 7.5	Supervisor Engineer	During Construction
AQ8	Demolition would be managed to minimise dust generation.	Section 7.5	Supervisor Engineer	At all times during Demolition

7.3.3 Specific Conditions of Local, State and Commonwealth Legislation

The main legislation relevant to air quality management includes:

- *Protection of the Environment Operations Act 1997*
- *Protection of the Environment Operations (Clean Air) Regulations 2010.*

Refer to the Appendix D5 of this CEMP (SMC&SSPS-CPB-ALL-EM-PLN-000001) for details of relevant legislation.

Additional guidelines and standards relating to the management of air quality include:

- AS 3580.1.1-2007 Methods of Sampling Analysis of Ambient Air. Part 1.1 Guide to Siting Air Monitoring Equipment;
- AS 3580.10.1-2003 Methods of Sampling Analysis of Ambient Air. Determination of Particulate Matter – Deposited Matter - Gravimetric Method;
- Safe Work Australia 2013 - Workplace Exposure Standards for Airborne Contaminants;
- National Environment Protection Council 1998 - Ambient Air: National Environment Protection Measure for Ambient Air Quality; and
- NSW EPA 2016 - Approved Methods for the Modelling and Assessment of Air Pollutants in NSW.

7.3.4 Agency Consultation

No Agencies were required by the Conditions of Approval to be consulted during the development of this sub-plan.

7.4 Project Objectives

CPB's objectives for management of air quality during delivery of PSISD works are aligned with the CEMF which states that the following management objectives will apply to construction:

- Minimise gaseous and particulate pollutant emissions from construction activities as far as feasible and reasonable; and
- Identify and control potential dust and air pollutant sources.

Based on the requirements defined in the environmental Obligations Register, the findings of project risk management processes and the potential impacts to the community, the following objectives have been set. Any deviance from the objectives will result in Project Management immediately implementing corrective actions:

Table 7-5: Air Quality objectives for PSISD works

Metric/Measure	Objective	Timeframe	Accountability
Number of unresolved complaints relating to dust or emissions	Zero	At all times	Project Director

The key air quality objective for PSISD is to comply with contractual requirements, to minimise dust and exhaust emissions during construction and to maintain ambient air quality that provides for the adequate protection of human health and equipment. This objective is consistent with the objective of the Approved Methods for Modelling and Assessment of Air Pollutants in NSW (EPA 2016).

The main impacts of plant and vehicle emissions include an increase in greenhouse gases and a general reduction in air quality. The main compounds associated with diesel combustion in plant and equipment include carbon monoxide, sulphur dioxide and nitrogen dioxide. The potential reduction of air quality from plant and vehicle emissions associated with PSISD works is not considered significant in isolation. However, the accumulated impact in conjunction with other adjacent sources (i.e. motor vehicle emissions, commercial businesses, domestic sources, vegetation burning, and dust storms etc.) has the potential to diminish air quality in the immediate vicinity and region of the PSISD worksite.

7.5 Controls Used to Manage Air Quality

Controls that are adequate to minimise air quality issues and to reduce risk to the lowest acceptable rating achievable are implemented before any relevant works commence. Elimination of the hazard is the first preference of control, followed by engineering, then administrative controls. Typical controls used on this project include:

Table 7-6: Controls used to manage air quality

Control	Accountability
The engines of all on-site vehicles and plant would be switched off when not in use for an extended period.	Site Supervisor
Plant would be well maintained and serviced to minimise emissions. Emissions from plant would be considered as part of sites pre-acceptance checks.	Engineer Site Supervisor
Construction site layout and placement of plant is to take into consideration air quality impacts to nearby receivers. Sensitive receivers to be shown on SEPs.	Engineer
Vehicle trafficking on exposed surfaces is to be minimized wherever possible. Designated long term haul routes to be established as early as possible in the construction program with ground surfaces stabilized to minimise the generation of dust.	Engineer Site Supervisor
Exposed surfaces or work areas (eg. unsurfaced haul routes) to be regularly damped down in dry and windy conditions using water carts or other suitable equipment, especially in high-risk areas and/or on during high-risk days.	Engineer Site Supervisor Environmental Manager
All vehicles carrying loose or potentially dusty material to or from the site would be fully covered. Tail gates are to be checked that they are secured and any dirt removed from haul vehicles prior to entering the public roads.	Site Supervisor Environmental Manager

In the event that dirt is spilt onto the public road by the project, immediately remove this dirt. Street sweepers to be used as required to maintain surrounding public roads.	Site Supervisor Environmental Manager
Stockpiles are to be managed to minimize dust generation. Stockpiles of loose or fine material to be minimized wherever possible.	Site Supervisor Engineer
Stabilised access, rumble grids, wash bays or similar must be established for the entries site and exits to site to minimize mud on public roads. Sweepers shall be used periodically to clean public roads where mud has been deposited.	Engineer Site Supervisor Environmental Manager
Water sprays and/or water carts to be used as required for dampening exposed surfaces to control dust generation from activities such as rock hammering or sawing.	Engineer Site Supervisor
Program any dust generating works to occur outside of periods of high wind or when fugitive dust emissions cannot be controlled.	Engineer Site Supervisor Environmental Manager
Traffic speed limit(s) are determined to minimize dust generation and must be adhered to at all times.	Environmental Manager Health and Safety Manager
All construction plant and equipment must be maintained so they do not emit visible smoke for any period greater than: <ul style="list-style-type: none"> ■ 15 consecutive seconds for plant not being registered for use on public roads; and ■ 10 consecutive seconds for plant registered for use on public roads. 	Engineer Site Supervisor Environmental Manager
Where practicable, ensure all excavators and mobile cranes used for the Contractor's Activities, which are onsite for more than three months, comply with USEPA Tier 4 exhaust emission standards.	Site Supervisor
Works are to cease immediately in the event that dust is observed leaving the project site. Work methodologies are to be reviewed and changes made to address this. This may include the postponing of the work that is generating the dust to a time with more suitable weather conditions.	Engineer Site Supervisor
Demolition works are to be managed in such a way so as to minimize dust generation.	Engineer Site Supervisor
Burning of any materials is prohibited on site.	Environmental Manager Health and Safety Manager Engineer

Shade cloth will be installed on the scaffolding system surrounding the OSD structures to assist in containing dust emissions and materials on site.	Site Supervisor Engineer
--	-----------------------------

The PSISD worksite layout has been designed to consider construction air quality impacts on nearby receivers, wherever feasible and reasonable. This includes consideration of required mitigation to minimise potential construction air quality impacts, including dust and emissions.

Details of air quality mitigation implemented at the PSISD Worksite will be incorporated into site layout drawings and Site Environment Plans (SEPs), as the staging of works progresses.

7.6 Monitoring

Monitoring the impacts of dust-generating activities and emissions from plant and machinery will be undertaken using visual inspections of onsite construction activities. This risk-based approach will highlight the effectiveness of implemented dust controls and the need for any additional measures. Visual inspections will be undertaken by Site Supervisors, Site Engineers and the Environment Team periodically to ensure construction activities are not generating excessive amounts of dust with the potential to adversely impact nearby receivers. Inspection records will be used to record the effectiveness of dust mitigation measures and any actions that may need to be implemented during adverse meteorological conditions

The Independent ER will conduct regular inspections of the PSISD worksite. The ER may raise observations and actions during these inspections. Records of all air quality and dust inspections that are undertaken must be kept in accordance with Element 11 of this CEMP.

Daily monitoring of meteorological conditions (wind direction, speed, rainfall / dew, soil moisture) is to be undertaken to evaluate the risk of dust generation. These local meteorological factors will significantly influence the day-to-day risk of dust generation and suspension. Monitoring will be undertaken in accordance with the requirements outlined above. Accordingly, weather conditions are to be considered by the Project Engineers, in consultation with the Environment Manager, to ensure appropriate mitigation measures are adopted throughout the project works.

7.7 Compliance Record Generation and Management

The details of record keeping and documentation in relation to air quality can be found in Element 11 of the CEMP.

7.8 Roles and Responsibilities

The Project team's organisational structure and overall roles and responsibilities are outlined in Section 4 and Appendix C of this CEMP.

8. Noise and Vibration Management Sub-Plan

PITT STREET INTEGRATED STATION DEVELOPMENT

Construction Noise and Vibration Management Sub- Plan for Station Box Construction

9 November 2022

CPB

TL093-01F03 CNVMP ISD (r17)

Document details

Detail	Reference
Doc reference:	Renzo Tonin Ref: TL093-01F03 CNVMP ISD (r17) CPB Ref: SMCSWSPS-CPB-ALL-EM-PLN-000004 Rev 17
Prepared for:	CPB
Address:	Level 18, 177 Pacific Highway, North Sydney NSW 2060
Attention:	Aimee Stuart

Document control

Date	Revision history	Non-issued revision	Issued revision	Prepared	Instructed	Authorised
06.04.2020	Issued	0	1	T Taylor	N Tselios	N Tselios
05.08.2020	Issued	2	3	T Taylor	N Tselios	N Tselios
06.08.2020	Issued		4	T Taylor	N Tselios	N Tselios
18.09.2020	Issued		5	T Taylor	N Tselios	N Tselios
2.10.2020	Issued		6	T Taylor	N Tselios	N Tselios
13.10.2020	Issued		7	T Taylor	N Tselios	N Tselios
15.10.2020	Issued		8	T Taylor	N Tselios	N Tselios
30.10.2020	Issued		9	T Taylor	N Tselios	N Tselios
8.12.2020	Issued		10	T Taylor	N Tselios	N Tselios
11.12.2020	Issued		11	T Taylor	N Tselios	N Tselios
10.8.2021	Issued		12	T Taylor	T Taylor	T Taylor
22.10.2021	Issued		13	T Taylor	T Taylor	T Taylor
9.12.2021	Issued		14	T Taylor	T Taylor	T Taylor
3.2.2022	Issued		15	T Taylor	T Taylor	T Taylor
23.6.2022	Issued		16	T Taylor	T Taylor	T Taylor
09.11.2022	Issued		17	T Taylor	T Taylor	T Taylor

Important Disclaimer:

The work presented in this document was carried out in accordance with the Renzo Tonin & Associates Quality Assurance System, which is based on Australian Standard / NZS ISO 9001.

This document is issued subject to review and authorisation by the Team Leader noted by the initials printed in the last column above. If no initials appear, this document shall be considered as preliminary or draft only and no reliance shall be placed upon it other than for information to be verified later.

This document is prepared for the particular requirements of our Client referred to above in the 'Document details' which are based on a specific brief with limitations as agreed to with the Client. It is not intended for and should not be relied upon by a third party and no responsibility is undertaken to any third party without prior consent provided by Renzo Tonin & Associates. The information herein should not be reproduced, presented or reviewed except in full. Prior to passing on to a third party, the Client is to fully inform the third party of the specific brief and limitations associated with the commission.

In preparing this report, we have relied upon, and presumed accurate, any information (or confirmation of the absence thereof) provided by the Client and/or from other sources. Except as otherwise stated in the report, we have not attempted to verify the accuracy or completeness of any such information. If the information is subsequently determined to be false, inaccurate or incomplete then it is possible that our observations and conclusions as expressed in this report may change.

We have derived data in this report from information sourced from the Client (if any) and/or available in the public domain at the time or times outlined in this report. The passage of time, manifestation of latent conditions or impacts of future events may require further examination and re-evaluation of the data, findings, observations and conclusions expressed in this report.

We have prepared this report in accordance with the usual care and thoroughness of the consulting profession, for the sole purpose described above and by reference to applicable standards, guidelines, procedures and practices at the date of issue of this report. For the reasons outlined above, however, no other warranty or guarantee, whether expressed or implied, is made as to the data, observations and findings expressed in this report, to the extent permitted by law.

The information contained herein is for the purpose of acoustics only. No claims are made and no liability is accepted in respect of design and construction issues falling outside of the specialist field of acoustics engineering including and not limited to structural integrity, fire rating, architectural buildability and fit-for-purpose, waterproofing and the like. Supplementary professional advice should be sought in respect of these issues.

Contents

1	Introduction	7
2	Scope of Project Works and Background.	8
2.1	Site Description and Identification of Works the Subject of this Assessment.	8
2.2	Approved Hours of Construction	8
2.3	Background Information	9
2.4	Noise Receiver Information	9
3	Legislative Requirements	11
3.1	Requirements of this Construction Noise and Vibration Management Plan	11
3.2	Submission of this report, endorsement and commencement of works.	11
3.3	Construction Noise and Vibration Monitoring Programs.	12
3.4	Construction Noise/Vibration Requirements in the Project Approval Conditions	15
3.5	Construction Noise Performance Requirements from the EIS (Condition C4(a))	20
4	Background Noise Survey	21
5	Construction Noise and Vibration Criteria	23
5.1	Construction Noise Criteria	23
5.1.1	EPA Interim Construction Noise Guideline (Airborne Noise)	23
5.1.2	Ground Borne Noise	25
5.1.3	Construction Traffic	25
5.1.4	Sleep Disturbance	25
5.1.5	Summary of Noise Goals.	26
5.2	Construction vibration criteria	28
5.2.1	Building Damage Criteria - Generally	28
5.2.2	Building Damage – Heritage Buildings	30
5.2.3	Sensitive Scientific and Medical Equipment	30
5.2.4	Utilities and Other Vibration Sensitive Structures	31
5.2.5	Vibration Disturbance to Buildings Occupants / Human Comfort	32
6	Construction Noise Assessment, Mitigation and Monitoring.	33
6.1	Proposed works	33
6.2	Proposed construction noise sources	34
6.3	Predicted Noise Levels and Commentary	34
6.4	Construction noise mitigation measures.	38
6.4.1	General engineering noise controls and <i>Sydney Metro Southwest Construction Noise and Vibration Strategy</i> principles.	38
6.5	Site Specific Noise Management Measures	39
6.5.1	Verification measurements/noise monitoring	42
6.6	Additional Noise Considerations (Construction Traffic and Cumulative Noise Impacts)	43
7	Construction Vibration Assessment, Mitigation and Monitoring	45

7.1	Vibration Impact Analysis	46
7.2	Vibration Mitigation Measures and Monitoring	47
8	Emergency Works, Changes in Work Hours and Outside of Hours Works Protocol.	50
8.1	Emergency Works (Condition of Approval E45).	50
8.2	Changes in Permitted Work Hours	50
8.3	Outside of Hours Work Protocol (Condition of Approval E47).	50
8.3.1	Short-term OOHW residual impacts	51
9	Consultation and Complaints Handling	53
9.1	Consultation	53
9.1.1	Communication Generally	53
9.1.2	Communication Required By Conditions of Consent.	53
9.1.3	Consultation with Government Agencies	54
9.2	Complaints Management	54
10	Noise Impacts on Workers (Condition E43)	57
11	Conclusion	58
APPENDIX A	Glossary of terminology	59
APPENDIX B	Specification for Construction Noise Monitoring	61
B.1	Scope	61
B.2	Referenced Standards and Guidelines	61
B.3	Testing Procedures	61
B.4	Long-Term (Unattended) Noise Monitoring	62
B.5	Short-Term (Attended) Monitoring	62
APPENDIX C	Specification for Construction Vibration Monitoring	64
C.1	Scope	64
C.2	Referenced Standards and Guidelines	64
C.3	Testing Procedures	64
C.3.1	Short-Term (Attended) Monitoring	64
C.3.2	Long-Term (Unattended) Monitoring	66
APPENDIX D	Noise/Vibration Complaint Management Procedure	68
APPENDIX E	Construction Site Plan	70
APPENDIX F	Construction Noise and Vibration Monitoring Program	73
APPENDIX G	Noise Logging Data	78
APPENDIX H	Revised Environmental Management Measures -Acoustic Analysis	80

List of tables

Table 3.1:	Conditions of Approval Analysis/Compliance	19
Table 3.2:	EIS Construction Noise and Vibration Criteria	20

Table 3.3: EIS Construction Noise and Vibration Performance Outcomes/Compliance	20
Table 5.1: Noise management levels at residential receivers	24
Table 5.2: Noise management levels at other noise sensitive land uses	24
Table 5.3: Ground Borne Noise Management Levels	25
Table 5.4: Construction Traffic Noise	25
Table 5.5: Sleep Disturbance Criteria (10pm-7am)	25
Table 5.6: Construction noise management levels at receivers	27
Table 5.7: BS 7385 Structural Damage Criteria	29
Table 5.8: Building Damage Vibration Targets	30
Table 5.9: DIN 4150-3 Structural Damage Criteria	30
Table 5.10: DIN 4150-3 Guideline values for vibration velocity to be used when evaluating the effects of short-term vibration on buried pipework	31
Table 5.11: Acceptable Vibration Dose Values for Intermittent Vibration ($m/s^{1.75}$)	32
Table 6.1: Typical construction equipment & sound power levels, dB(A)	34
Table 6.2: Noise Emission Assessment – South Building	35
Table 6.3: Noise Emission Assessment – North Building	36
Table 6.4: Relative effectiveness of various forms of noise control	38
Table 6.5: Additional Airborne Noise Mitigation Guidelines (as per <i>Sydney Metro Southwest Construction Noise and Vibration Strategy</i>)	39
Table 7.1: Additional Ground-borne Noise Mitigation Guidelines (as per <i>Sydney Metro Southwest Construction Noise and Vibration Strategy</i>)	45
Table 7.2: Additional Vibration Mitigation Guidelines (as per <i>Sydney Metro Southwest Construction Noise and Vibration Strategy</i>)	46
Table 7.3: Recommended minimum working distances for vibration intensive equipment	47

List of figures

Figure 1 – Site Aerial Photo and Surrounding Noise Receivers.

1 Introduction

Renzo Tonin & Associates was engaged to prepare a site specific Construction Noise and Vibration Management Sub-Plan (CNVMSP) for the Pitt Street Integrated Station Development (a part of the Sydney Metro Chatswood to Sydenham Critical State Significant Infrastructure project).

The purpose of this CNVMSP is to address condition of consent C3 of planning approval SS15_7400.

This will involve:

- Identifying the construction noise and vibration requirements pursuant to the conditions of project approval, Revised Environmental Mitigation Measures (REMMs) and the performance guidelines set out in the Environmental Impact Statement (EIS) for the project.
- A review of noise/vibration generation expected from the ISD construction works (assessment of impacts and identification of mitigation measures).
- Outlining procedures relating to ongoing noise/vibration monitoring.
- Providing procedures to the assessment of unexpected/unaccounted for events, such as emergency works, changes in work hours or outside of hours works.

Structure of this Construction Noise and Vibration Management Sub-Plan is as follows:

- Section 1: Introduction
- Section 2: Site Description, Permitted hours of work, background information and identification of nearby noise/vibration receivers.
- Section 3: Legislative Requirements
- Section 4: Background Noise Survey
- Section 5: Construction Noise and Vibration Criteria
- Section 6: Construction Noise Assessment, Mitigation and Monitoring.
- Section 7: Construction Vibration Assessment, Mitigation and Monitoring.
- Section 8: Emergency Works, Changes in Work Hours and Outside of Hours Works Protocol.
- Section 10: Community Consultation and Complaints Handling.
- Section 11: Noise impacts on Workers.
- Section 12: Conclusion
- Appendices

The work documented in this report was carried out in accordance with the Renzo Tonin & Associates Quality Assurance System, which is based on Australian Standard / NZS ISO 9001.

2 Scope of Project Works and Background.

2.1 Site Description and Identification of Works the Subject of this Assessment.

The Pitt Street Metro Station Box construction is part of the Pitt Street Integrated Station Development (ISD). The ISD consists of the Station Box building, the tunnels and the Over Station Development Buildings. The Station Box development the subject of this report consists an underground station and two surface level sites:

- The North Site (on the corner of Park, Pitt and Castlereagh Streets) and
- The South Site (on the corner of Bathurst and Pitt Street).

The ISD development the subject of this report consists of the construction of the following items:

- Platform/concourse levels on ground level and below (five basement levels for North Building, four basement levels for South Building) basement levels, up to ground floor).
- Above ground levels incorporated plant rooms/risers/air plenums and ancillary spaces retail space and parts of Over Station development (up to level five on the North Site, up to level 6 on south site).

We note that primary demolition and excavation work at the two sites is complete or already approved under other CNVMSPs. Remaining demolition work consists of the demolition of a capping beam (generally around the site perimeter) and localised detailed excavation for footings on both North and South sites.

A construction plan indicating crane location, work zones and concrete pump zones is shown in Appendix E.

As such, it is the construction works for the Station Box alone that is the subject of this plan. Key works items to be addressed are therefore the basement and surface level structural works (concrete work), fit out work and ancillary items to these activities (work zones, crane usage etc). The remaining demolition works and detailed excavation will also be addressed.

2.2 Approved Hours of Construction (SSI 7400 MOD 9)

Construction hours are regulated by condition of consent E36, as detailed below.

Condition E36 Permitted Construction Hours	
Monday to Friday	7:00am to 6.00pm
Saturday	8:00am to 6.00pm

Notes: No work permitted on Sunday and Public Holidays

In some circumstances, works is permitted outside of these hours (emergency work, works pursuant to Outside of Hours Protocols). These works are discussed in section 8.

2.3 Background Information

Background noise levels are used in setting construction noise goals for the site. With respect to ambient/background noise logging used to set noise emission limits for the site:

- We note that ambient noise logging at the site was conducted as part of the EIS for the Chatswood to Sydenham Metro project (Chapter 10 of the EIS).
- However we are aware that more recent noise logging was conducted as part of the *Construction Noise and Vibration Management Plan* for the TSE Works (report SMCSWTSE-JCG-TPW-EM-PLN-002012 dated 10/12/018 by Renzo Tonin & Associates). We note that this report was approved by the Environmental Representative for the project.

As such, the ambient noise levels referred to in the TSE Works *Construction Noise and Vibration Management Plan* will be adopted in this report when setting noise emission goals given they are based on more recent logging, and have been adopted in other approvals for this site.

2.4 Noise Receiver Information

Noise sensitive development to the site is as follows:

- South Site:
 - Receiver R1 (Residential) – 304-308 Pitt Street (Princeton Apartments).
 - Receiver R2 (Residential) – 115-123 Pitt Street 37-139 Bathurst Street.
 - Receiver R3 (Residential) - 137-139 Park Street.
 - Receiver C1 (Commercial – a heritage building) – 209 & 213 Castlereagh Street.
 - Receiver C2 (Commercial – a heritage building) – Edinburgh Hotel, a heritage item.
 - Receiver C3 (Commercial – a heritage building) – 280-284 Park Street.
- Northern Site:
 - Receiver R4 (Residential – a heritage building) – 167 Castlereagh Street.
 - Receiver R5 (Residential) – 189-199 Castlereagh Street.
 - Receiver C4 (Commercial – a heritage building) – 166-174 Castlereagh Street

- o Receiver C5 (Commercial – a heritage building) – 250 Pitt Street.
- o Receiver C6 (Commercial) – The Galleries development.
- o Receiver C7 (Commercial – a heritage building) – 9 Park Street, a heritage item.

The site and adjacent noise receivers are indicated in the aerial photo below. Items of heritage significance are indicated with dashed lines.



Figure 1 – Site Aerial Photo and Surrounding Noise Receivers.

3 Legislative Requirements

3.1 Requirements of this Construction Noise and Vibration Management Plan

Part C conditions C1 and C2 of the conditions of approval to SSI 15_7400 require that a Construction Environmental Management Plan (CEMP) be prepared.

Condition C3 stipulates a series of "Sub-Plans" there are required a part of the CEMP. Condition C3(a) states that a Noise and Vibration sub-plan is required.

Condition C4 sets out the reporting requirements for the Noise and Vibration Sub-Plan. Condition C4 states:

C4 The CEMP sub-plans must state how:

- (a) the environmental performance outcomes identified in the EIS as amended by the documents listed in A1 will be achieved;
- (b) the mitigation measures identified in the EIS as amended by documents listed in A1 will be implemented;
- (c) the relevant terms of this approval will be complied with; and
- (d) issues requiring management during construction, as identified through ongoing environmental risk analysis, will be managed.

The reporting requirements are addressed as follows:

- Condition C4(c) requires compliance with the conditions of project approval. Relevant conditions relating to construction noise and vibration are E28 to E48. These are identified in section 3.1.
- Conditions C4 (a) and (b) require compliance with the performance outcomes identified in the EIS documentation. A summary of the performance outcomes from the EIS is detailed in section 3.2, below (to satisfy condition C4(a) and C4(b)).
- Condition C4(d) requires identification of how noise and vibration issues during the construction process will be managed. This will include site specific management requirements for work practices already anticipated, and an outline of procedures and monitoring to address issues that may arise during the construction process. This is addressed in sections 7-10.

In addition to the conditions of approval, a series of Revised Environmental Mitigation Measures (REMMs) were created post approval, which must also be addressed. How each section of the report addresses the specific REMMs is presented in Appendix G.

3.2 Submission of this report, endorsement and commencement of works.

Conditions C6-C8 dictate submission and approval procedures for the Construction Noise and Vibration Management Plan and the commencement of works, and are as follows:

- C6 Any of the **CEMP sub-plans** may be submitted to the Secretary along with, or subsequent to, the submission of the **CEMP** but in any event, no later than one (1) month before commencement of construction.
- C7 The **CEMP** must be endorsed by the ER and then submitted to the Secretary for approval no later than one (1) month before the commencement of construction or within another timeframe agreed with the Secretary.
- C8 Construction must not commence until the **CEMP** and all **CEMP sub-plans** have been approved by the Secretary. The **CEMP** and **CEMP sub-plans**, as approved by the Secretary, including any minor amendments approved by the ER (or AA in regards to the Noise and Vibration sub-plan), must be implemented for the duration of construction. Where the CSSI is being staged, construction of that stage is not to commence until the relevant CEMP and sub-plans have been approved by the Secretary.

3.3 Construction Noise and Vibration Monitoring Programs.

Conditions of Approval C9-C17 relate to construction noise and vibration monitoring programs. These conditions and detail of the proposed programs is set out in Appendix F and sections 6.5.1 and 7.2.

CONSTRUCTION MONITORING PROGRAMS

- C9 The following **Construction Monitoring Programs** must be prepared in consultation with the relevant government agencies identified for each **Construction Monitoring Program** to compare actual performance of construction of the CSSI against predicted performance.

	Required Construction Monitoring Programs	Relevant government agencies to be consulted for each Construction Monitoring Program
(a)	Noise and Vibration	EPA and Relevant Council(s)
(b)	Blasting	EPA and Relevant Council(s)
(c)	Water Quality	EPA and Relevant Council(s)
(d)	Groundwater	DPI Water

- C10 Each **Construction Monitoring Program** must provide:
- (a) details of baseline data available;
 - (b) details of baseline data to be obtained and when;
 - (c) details of all monitoring of the project to be undertaken;
 - (d) the parameters of the project to be monitored;
 - (e) the frequency of monitoring to be undertaken;
 - (f) the location of monitoring;
 - (g) the reporting of monitoring results;
 - (h) procedures to identify and implement additional mitigation measures where results of monitoring are unsatisfactory; and
 - (i) any consultation to be undertaken in relation to the monitoring programs.
- C11 The **Noise and Vibration Construction Monitoring Program** and **Blast Construction Monitoring Program** must include provision of real time noise and vibration monitoring data. The real time data must be available to the construction team, Proponent, ER and AA **in real time**. The Department and EPA must be provided with access to the real time monitoring data **in real time**.
- C12 The **Construction Monitoring Programs** must be developed in consultation with relevant government agencies as identified in Condition C9 of this approval and must include, to the written satisfaction of the Secretary, information requested by an agency to be included in a **Construction Monitoring Programs** during such consultation. Details of all information requested by an agency including copies of all correspondence from those agencies, must be provided with the relevant **Construction Monitoring Program**.
- C13 The **Construction Monitoring Programs** must be endorsed by the ER (or AA in regards to the **Noise and Vibration Construction Monitoring Program**) and then submitted to the Secretary for approval at least one (1) month before commencement of construction or within another timeframe agreed with the Secretary.
- C14 Construction must not commence until the Secretary has approved all of the required **Construction Monitoring Programs**, and all relevant baseline data for the specific construction activity has been collected.

- C15 The **Construction Monitoring Programs**, as approved by the Secretary including any minor amendments approved by the ER (or AA in regards to the Noise and Vibration Construction Monitoring Program), must be implemented for the duration of construction and for any longer period set out in the monitoring program or specified by the Secretary, whichever is the greater.
- C16 The results of the **Construction Monitoring Programs** must be submitted to the Secretary for information, and relevant regulatory agencies, for information in the form of a **Construction Monitoring Report** at the frequency identified in the relevant **Construction Monitoring Program**.
- C17 Where a relevant **CEMP sub-plan** exists, the relevant **Construction Monitoring Program** may be incorporated into that **CEMP sub-plan**.

3.4 Construction Noise/Vibration Requirements in the Project Approval Conditions

Conditions of consent in approval SSI 15_7400 which are relevant to construction noise and vibration from the project approval are detailed below.

NOISE AND VIBRATION

Vibration

E28 The Proponent must ensure that vibration from construction activities does not exceed the vibration limits set out in the British Standard BS 7385-2:1993 *Evaluation and measurement for vibration in buildings. Guide to damage levels from groundborne vibration*

E28.1 If the modifications to this approval as described in A1(e) proceed, the vibration screening criterion for 50 Martin Place must remain at 7.5 mm/s, unless a detailed investigation of the construction of the building determines that increasing the screening criterion to 25 mm/s is acceptable. The investigation must be undertaken by a suitably qualified structural engineer with experience assessing heritage structures and approved by the Secretary and must be supported by evidence to demonstrate the higher criterion is appropriate.

E29 Owners of properties at risk of exceeding the screening criteria for cosmetic damage must be notified before construction that generates vibration commences in the vicinity of those properties. The [management of construction works in the vicinity of properties at risk of exceeding the screening criteria for cosmetic damage](#) must be considered in the **Noise and Vibration management sub plan** required by Condition C3.

E30 The Proponent must conduct vibration testing before and during vibration generating activities that have the potential to impact on heritage items to identify minimum working distances to prevent cosmetic damage. In the event that the vibration testing and monitoring shows that the preferred values for vibration are likely to be exceeded, the Proponent must review the construction methodology and, if necessary, implement additional mitigation measures.

E31 The Proponent must seek the advice of a heritage specialist on methods and locations for installing equipment used for vibration, movement and noise monitoring of heritage-listed structures.

Construction Noise and Vibration Strategy

E32 The Proponent must review the *Sydney Metro City and Southwest Construction Noise and Vibration Strategy* in the PIR during detailed construction planning to consider scale and duration of impacts, the requirements of this approval and all measures to limit construction noise impacts to sensitive receivers including:

- (a) at property or architectural treatment;
- (b) relocation; and
- (c) other forms of mitigation where impacts are predicted to be long term and significant.

The revised *Sydney Metro City and Southwest Construction Noise and Vibration Strategy* must be submitted to the Secretary for approval at least one (1) month before construction commences.

E33 Construction Noise and Vibration Impact Statements must be prepared for each construction site before construction noise and vibration impacts commence and include specific mitigation measures identified through consultation with affected sensitive receivers.

- E34 Noise generating works in the vicinity of potentially-affected, religious, educational, community institutions and noise and vibration-sensitive businesses and critical working areas (such as theatres, laboratories and operating theatres) must not be timetabled within sensitive periods, unless other reasonable arrangements to the affected institutions are made at no cost to the affected institution or as otherwise approved by the Secretary.
- E35 The Proponent must review alternative methods to rock hammering and blasting for excavation as part of the detailed construction planning with a view to adopting methods that minimise impacts on sensitive receivers. Construction Noise and Vibration Impact Statements must be updated for each location or activity to adopt the least impact alternative in any given location unless it can be demonstrated, to the satisfaction of the AA, why it should not be adopted.

Standard Construction Hours

- E36 Construction, except as allowed by Condition E48 (excluding cut and cover tunnelling), must only be undertaken during the following standard construction hours:
- (a) 7:00am to 6:00pm Mondays to Fridays, inclusive;
 - (b) 8:00am to 6:00pm Saturdays; and
 - (c) at no time on Sundays or public holidays.

Respite for Receivers

- E37 The Proponent must identify all receivers likely to experience internal noise levels greater than $L_{eq(15\text{ minute})}$ 60 dB(A) inclusive of a 5 dB penalty, if rock breaking or any other annoying activity likely to result in regenerated (ground-borne) noise or a perceptible level of vibration is planned (including works associated with utility adjustments), between 7am – 8pm at:
- (a) Crows Nest, Victoria Cross, Blues Point, Barangaroo, Martin Place, Pitt Street, and Central; and
 - (b) Marrickville, Newtown, St Peters, Sydenham and Tempe for works specified in SSI 7400_MOD 4 referenced in Condition A1 (c).
- E38 The Proponent must consult with all receivers identified in accordance with Condition E37 with the objective of determining appropriate hours of respite so that construction noise (including ground-borne noise), does not exceed internal noise levels of:
- (a) $L_{eq(15\text{ minute})}$ 60 dB(A) inclusive of a 5 dB penalty if rock breaking or any other annoying activity likely to result in ground-borne noise or a perceptible level of vibration is planned between 7am – 8pm for more than 50 percent of the time; and
 - (b) $L_{eq(15\text{ minute})}$ 55 dB(A) inclusive of a 5 dB penalty if rock breaking or any other annoying activity likely to result in ground-borne noise or a perceptible level of vibration is planned between 7am – 8pm for more than 25 percent of the time,

unless an agreement is reached with those receivers. This condition does not apply to noise associated with the cutting surface of a TBM as it passes under receivers.

Note This condition requires that noise levels be less than $L_{eq(15\text{ minute})}$ 60 dB(A) for at least 6.5 hours between 7am and 8pm, of which at least 3.25 hours must be below $L_{eq(15\text{ minute})}$ 55 dB(A). Noise equal to or above $L_{eq(15\text{ minutes})}$ 60 dB(A) is allowed for the remaining 6.5 hours between 7am and 8pm.

- E39 The Proponent must consult with proponents of other construction works in the vicinity of the CSSI and take reasonable steps to coordinate works to minimise cumulative impacts of noise and vibration and maximise respite for affected sensitive receivers.

E40 The Proponent must ensure all works (including utility works associated with the CSSI where undertaken by third parties) are coordinated to provide the required respite periods identified in accordance with the terms of this approval.

Mitigation – Non Residential Zones

E41 The Proponent must ensure that residential receivers, located in non-residential zones, likely to experience an internal noise level exceeding $L_{eq(15\text{ minute})}$ 60 dB(A) between 8pm and 9pm or $L_{eq(15\text{ minute})}$ 45 dB(A) between 9pm and 7am (inclusive of a 5 dB penalty if rock breaking or any other annoying activity likely to result in ground-borne noise, or a perceptible level of vibration is planned (including works associated with utility adjustments)) must be offered additional mitigation in accordance with the *Sydney Metro City and South West Noise and Vibration Strategy* referenced in Condition E32.

Mitigation – Residential receivers in residential zones

E42 The Proponent must ensure that residential receivers in residential zones likely to experience an internal noise level of $L_{eq(15\text{ minute})}$ 45 dB(A) or greater between 8pm and 7am (inclusive of a 5 dB penalty if rock breaking or any other annoying activity likely to result in ground-borne noise, or a perceptible level of vibration is planned (including works associated with utility adjustments)) must be offered additional mitigation in accordance with the *Sydney Metro City and South West Noise and Vibration Strategy* referenced in Condition E32.

Workplace health and safety for nearby workers

E43 At no time can noise generated by construction exceed the National Standard for exposure to noise in the occupational environment of an eight-hour equivalent continuous A-weighted sound pressure level of $L_{Aeq,8h}$ of 85dB(A) for any employee working at a location near the CSSI.

Variation to Standard Construction Hours

E44 Notwithstanding Condition E36 construction associated with the CSSI may be undertaken outside the hours specified under those conditions in the following circumstances:

- (a) for the delivery of materials required by the NSW Police Force or other authority for safety reasons; or
- (b) where it is required in an emergency to avoid injury or the loss of life, to avoid damage or loss of property or to prevent environmental harm; or
- (c) where different construction hours are permitted or required under an EPL in force in respect of the construction; or
- (d) construction that causes $L_{Aeq(15\text{ minute})}$ noise levels:
 - i. no more than 5 dB(A) above the rating background level at any residence in accordance with the *Interim Construction Noise Guideline* (DECC, 2009), and
 - ii. no more than the noise management levels specified in Table 3 of the *Interim Construction Noise Guideline* (DECC, 2009) at other sensitive land uses, and
 - iii. continuous or impulsive vibration values, measured at the most affected residence are no more than those for human exposure to vibration, specified in Table 2.2 of *Assessing Vibration: a technical guideline* (DEC, 2006), and
 - iv. intermittent vibration values measured at the most affected residence are no more than those for human exposure to vibration, specified in Table 2.4 of *Assessing Vibration: a technical guideline* (DEC, 2006); or
- (e) where a negotiated agreement has been reached with a substantial majority of sensitive receivers who are within the vicinity of and may be potentially affected by the particular

- construction, and the noise management levels and/or limits for ground-borne noise and vibration (human comfort) cannot be achieved. All agreements must be in writing and a copy forwarded to the Secretary at least one (1) week before the works commencing; or
- (f) construction approved through an **Out of Hours Work Protocol** referred to in Condition E47, provided the relevant council, local residents and other affected stakeholders and sensitive receivers are informed of the timing and duration at least five (5) days and no more than 14 days before the commencement of the works.

Note: This condition does not apply where an EPL is in force in respect of the construction.

- E45** On becoming aware of the need for emergency construction in accordance with Condition E44(b), the Proponent must notify the AA, the ER and the EPA (if an EPL applies) of the need for those activities or work. The Proponent must also use best endeavours to notify all affected sensitive receivers of the likely impact and duration of those works.
- E46** Notwithstanding Conditions E44 and E48, rock breaking and other particularly annoying activities for station shaft or cut and cover stations is not permitted outside of standard construction hours, except at Central (excluding Central Walk works at 20-28 Chalmers Street, Surry Hills); or
- (a) where it is required in an emergency to avoid injury or the loss of life, to avoid damage or loss of property or to prevent environmental harm; or
- (b) where different construction hours are permitted or required under an EPL in force in respect of the construction or approved through an **Out of Hours Work Protocol developed in accordance with Condition E47**; or
- (c) construction that causes $L_{Aeq(15\text{ min})}$ noise levels:
- i. no more than 5 dB(A) above the rating background level at any residence in accordance with the *Interim Construction Noise Guideline* (DECC, 2009); and
 - ii. no more than the noise management levels specified in Table 3 of the *Interim Construction Noise Guideline* (DECC, 2009) at other sensitive land uses; and
 - iii. continuous or impulsive vibration values, measures at the most affected residence are no more than those for human exposure to vibration, specified in Table 2.2 of *Assessing Vibration: a technical guideline* (DEC, 2006); and
 - iv. intermittent vibration values measured at the most affected residence are no more than those for human exposure to vibration, specified in Table 2.4 of *Assessing Vibration: a technical guideline* (DEC, 2006).
- E48** Notwithstanding Condition E36 of this approval and subject to Condition E47, the following activities may be undertaken 24 hours per day, seven (7) days per week:
- (a) tunnelling and associated support activities (excluding cut and cover tunnelling, and excluding the installation and decommissioning of the Blues Point acoustic shed except where compliance with Condition E44 is achieved);
 - (b) excavation within an acoustic enclosure (excluding the Blues Point temporary site except where compliance with Condition E44 is achieved);
 - (c) excavation at Central (excluding Central Walk works at 20-28 Chalmers Street, Surry Hills) without an acoustic enclosure;
 - (d) station and tunnel fit out; and
 - (e) haulage and delivery of spoil and materials.

The Approval Conditions are addressed as follows:

Table 3.1: Conditions of Approval Analysis/Compliance

Condition Number	Description of Requirement	Where Addressed in this Report
E28	Vibration Limits for Construction Work	Section 5
E28.1	Vibration Limits for Construction Work	N/A (only applied to Martin Place Station)
E29	Notification of Properties at Risk of Building Damage	Section 7.
E30	Vibration Monitoring of Heritage Items	Section 7
E31	Identification of Heritage Items and Monitoring Locations	Section 2.3 and 7 and Appendix F.
E32	Analysis of noise/vibration impacts.	Section 6 and 7
E33	Requirement for Construction Noise and Vibration Impact Statements (site specific)	Section 6 and 7.
E34	Timetabling of works around noise sensitive neighbours.	Section 6.6
E35	Alternative Methods of Rock Hammering and Blasting	Section 6 and 7.
E36	Identification of Standard Construction Hours	Section 2.
E37	Respite periods for rock breaking.	Section 6.
E38	Consultation with Neighbours regarding respite periods.	Sections 6 and 10.
E39	Cumulative Impacts from Nearby Construction Sites	Section 6.
E40	Coordination of Respite Periods	Section 6.
E41	Noise Limits for Residential Properties in Non-Residential Zones	Section 5 and 6 and 8.3.
E42	Noise Limits for Residential Properties in Residential Zones	Section 5 and 6.
E43	Compliance with Workplace Safety Noise Exposure Limits	Section 11.
E44	Variation of Standard construction Hours	Section 8.
E45	Emergency Works	Section 8.
E46	Rock breaking Works outside of Standard Hours	Sections 7 and 8.
E47	Outside of Standard Hours Work Protocol	Section 8.
E48	List of activities where 24 hour operation is permitted, subject to E47.	Not applicable to this report. Will be the subject of an OOH application if proposed.
E49	Erection of Acoustic Sheds	This applies to tunnelling and bulk excavation phase and is not applicable to Station Box construction.

Refer to Appendix F for conditions of consent relating to construction noise and vibration monitoring programs.

3.5 Construction Noise Performance Requirements from the EIS (Condition C4(a))

Chapter 10 of the EIS details the construction noise and vibration targets that are to be adopted for the project.

These are summarised below:

Table 3.2: EIS Construction Noise and Vibration Criteria

Noise Source	Standard Adopted	Section of EIS (Chapter 10)	Where Addressed in this Report
Airborne Noise	EPA <i>Interim Construction Noise Guideline</i>	10.2.3	Section 5 and 6.
Ground Borne Noise	EPA <i>Interim Construction Noise Guideline</i>	10.2.3	Section 5 and 6.
Ground Borne Vibration	BS 7385.2-1993	10.2.4	Section 5 and 7.
Blasting	Typical Practice for NSW Infrastructure	10.2.5	Not applicable – no blasting proposed in ISD works.
Construction Traffic	EPA Road Noise Policy	10.2.6	Section 5 and 6.
Sleep Disturbance	Typical Practice	10.2.7	Section 5 and 8.

The environmental performance outcomes identified in the EIS relating to construction are as follows:

Table 3.3: EIS Construction Noise and Vibration Performance Outcomes/Compliance

Performance Outcome	Where Addressed in this Report
Noise levels would be minimised with the aim of achieving the noise management levels where feasible and reasonable.	Management Levels identified in table 5.6. Assessment with reference to Management levels in section 6.3. Reasonable and feasible mitigation measures – section 6.5. Verification of effectiveness of mitigation measures in section 6.5.1.
The project would avoid any damage to buildings from Vibration.	Criteria identified in sections 5.1 and 5.2. Assessment with reference to criteria in section 7.1. Reasonable and feasible mitigation measures – section 7.2. Verification of effectiveness of mitigation measures/monitoring - section 7.2.

4 Background Noise Survey

Background noise levels are used in setting construction noise management levels for the site.

We note that background noise levels at the site have been determined at various stages across the history of the project:

- At EIS stage.
- During the TSE (Tunnelling Station Excavation) stage.

Background noise surveys gathered at these stages are more than two years old, and in the case of the EIS noise surveys, over 10 years old.

Renzo Tonin has been conducting on-going noise logging at both north and south sites since December 2020. It is appropriate that the noise levels measured from this more recent noise logging be used when determining noise emission goals/noise management levels for the project.

A summary of historical and current ambient noise conditions is presented below. Noise logging data is attached, **Appendix G**.

Table 4.1: Ambient Noise Survey Results – North Site

Logger Location	Used for	Measured Noise Level		
		Day ¹	Evening ²	Night ³
260 Pitt Street	EIS noise logging data (2010 survey)	71dB(A) _{Leq(15min)}	70dB(A) _{Leq(15min)}	68dB(A) _{Leq(15min)}
		66dB(A) _{L90}	64dB(A) _{L90}	61dB(A) _{L90}
Pitt Street Metro – North Site	2020 Ambient Noise Survey (12 to 21 December 2020)	69dB(A) _{Leq(15min)}	69dB(A) _{Leq(15min)}	65dB(A) _{Leq(15min)}
		63dB(A) _{L90}	61dB(A) _{L90}	59dB(A) _{L90}

- Notes:
1. Day represents the period from 7am to 6pm, Monday to Saturday and 8am to 6pm, Sunday & Public Holidays.
 2. Evening represents the period from 6pm to 10pm, Monday to Sunday & Public Holidays
 3. Night represents the period from 10pm to 7am, Monday to Saturday and 10pm to 8am, Sundays & Public Holidays

Table 4.2: Ambient Noise Survey Results – South Site

Logger Location	Use for	Measured Noise Level		
		Day ¹	Evening ²	Night ³
302 - 306 Pitt Street*	TSE Noise survey (2015 noise survey used in 2018 TSE CNVMP)	63dB(A) _{Leq(15min)}	60dB(A) _{Leq(15min)}	57dB(A) _{Leq(15min)}
		59dB(A) _{L90}	57dB(A) _{L90}	53dB(A) _{L90}
Pitt Street Metro – South Site (Bathurst Street frontage)	2020 Ambient Noise Survey (10 to 17 December 2020)	71dB(A) _{Leq(15min)}	68dB(A) _{Leq(15min)}	67dB(A) _{Leq(15min)}
		65dB(A) _{L90}	63dB(A) _{L90}	59dB(A) _{L90}
Pitt Street Metro – South Site (Pitt Street frontage)	2020 Ambient Noise Survey (23/11 to 29/11 2020)	72dB(A) _{Leq(15min)}	67dB(A) _{Leq(15min)}	65dB(A) _{Leq(15min)}
		64dB(A) _{L90}	61dB(A) _{L90}	58dB(A) _{L90}

- Notes:
1. Day represents the period from 7am to 6pm, Monday to Saturday and 8am to 6pm, Sunday & Public Holidays.
 2. Evening represents the period from 6pm to 10pm, Monday to Sunday & Public Holidays
 3. Night represents the period from 10pm to 7am, Monday to Saturday and 10pm to 8am, Sundays & Public Holidays
 4. *The 2018 report is based on a noise survey conducted in 2015 (5-13 February) by a logger with microphone at Level 1 at 302-306 Pitt Street (now demolished). Logger was placed just over the street awning. The logger will have been partially screened from street noise (by the Street awning) and is over 5 years old. Current logging data better reflects current traffic conditions, development in the area and is obviously much more recent. For this reason, data gathered in the 2020/2021 period should be used when setting Noise Management Levels. Refer to Appendix I for photos of 2015 logger.

There was no activity on site by either the TSE or Station Box Contractor for the 10-20 December period. Measurements during this period was used primarily to determine ambient noise conditions.

Noise logging data for the south site Pitt Street frontage was not available for the 10-17 December period. As such, the 23-29 November 2020 period has been included, as ambient noise levels during this period were lowest and not affected by significant periods of construction noise.

On review of logging data (Appendix F), North site logger is periodically affected by a compressor located at the southern boundary of the Central Boutique Hotel. It creates a noise level of 70dB(A) at the logger, verified by on site measurement on 18/2/2021. Any periods where the L₉₀ noise levels are 70dB(A) were excluded when determining background noise levels. We also note that there is other plant and equipment located on the southern boundary of the Central Boutique Hotel site. Prior to January 2021, the North Site noise logger had been located away from the Central Boutique Hotel and any plant located on the boundary of the Hotel (see figure 1). Noise levels at this location (59dB(A)_{L90} at night) do not appear to be affected by local noise sources and are representative of the background noise level with the contribution of any local plant noise excluded.

Noise management levels determined with reference to the background noise levels presented above are set out in Section 5.

5 Construction Noise and Vibration Criteria

Noise and vibration criteria based on the Planning Approval conditions and the EIS performance goals are detailed below.

Noise impacts on construction workers is addressed separately in section 11.

5.1 Construction Noise Criteria

5.1.1 EPA Interim Construction Noise Guideline (Airborne Noise)

These are the primary noise criteria proposed in Chapter 10 of the EIS (section 10.2.3).

The NSW *Interim Construction Noise Guideline* (ICNG, 2009) provides guidelines for assessing noise generated during the construction phase of developments.

The key components of the guideline that are:

- Setting Noise Management Levels through using a $L_{Aeq(15min)}$ noise descriptor for measuring and assessing construction noise (a 15 minute average noise level). (Noise Management Levels are noise levels which, if exceeded, trigger the need to consider mitigation).
- Application of reasonable and feasible noise mitigation measures in the event of projected exceedance of the Noise Management Level.

The table below is reproduced from the ICNG, sets out the Noise Management Levels and how they are to be applied for nearby noise receivers.

Table 5.1: Noise management levels at residential receivers

Time of day	Management level L _{Aeq} (15 min) *	How to apply
Recommended standard hours: Monday to Friday 7 am to 6 pm Saturday 8 am to 1 pm No work on Sundays or public holidays	Noise affected RBL + 10dB	The noise affected level represents the point above which there may be some community reaction to noise. Where the predicted or measured L _{Aeq} (15 min) is greater than the noise affected level, the proponent should apply all feasible and reasonable work practices to meet the noise affected level. The proponent should also inform all potentially impacted residents of the nature of works to be carried out, the expected noise levels and duration, as well as contact details.
	Highly noise affected 75dB(A)	The highly noise affected level represents the point above which there may be strong community reaction to noise. Where noise is above this level, the relevant authority (consent, determining or regulatory) may require respite periods by restricting the hours that the very noisy activities can occur, taking into account: <ul style="list-style-type: none"> • times identified by the community when they are less sensitive to noise (such as before and after school for works near schools, or mid-morning or mid-afternoon for works near residences) • if the community is prepared to accept a longer period of construction in exchange for restrictions on construction times.
Outside recommended standard hours	Noise affected RBL + 5dB	A strong justification would typically be required for works outside the recommended standard hours. The proponent should apply all feasible and reasonable work practices to meet the noise affected level. Where all feasible and reasonable practices have been applied and noise is more than 5dB(A) above the noise affected level, the proponent should negotiate with the community. For guidance on negotiating agreements see section 7.2.2 <i>[of the ICNG]</i> .

* Noise levels apply at the property boundary that is most exposed to construction noise, and at a height of 1.5 m above ground level. If the property boundary is more than 30 m from the residence, the location for measuring or predicting noise levels is at the most noise-affected point within 30 m of the residence. Noise levels may be higher at upper floors of the noise affected residence.

The ICNG also sets Noise Management Levels for other, non-residential land uses. Relevant criteria are presented below.

Table 5.2: Noise management levels at other noise sensitive land uses

Land use	Where objective applies	Management level L _{eq} (15 min)
Classrooms at schools and other educational institutions	Internal noise level	45 dB(A)
Commercial premises	External noise level	70 dB(A)

Notes: Noise management levels apply when receiver areas are in use only.

5.1.2 Ground Borne Noise

These are noise levels inside nearby developments generated as a result of construction vibration generating ground borne noise within buildings.

The criteria are those proposed in Chapter 10 of the EIS (section 10.2.3), and are as follows:

Table 5.3: Ground Borne Noise Management Levels

Land use	Where objective applies	Time of Day	Management level $L_{eq}(15 \text{ min})$
Residential receivers	Internal noise level	Day- 7am-6pm	45dB(A)
	Internal noise level	Evening - 6pm-10pm	40dB(A)
	Internal noise level	Night - 10pm-7am	35dB(A)

5.1.3 Construction Traffic

For noise generated as a result of additional traffic created by the construction site, the following criteria proposed in Chapter 10 of the EIS (section 10.2.6), apply:

Table 5.4: Construction Traffic Noise

Land use	Where objective applies	Time of Day	Management level
Residential receivers	Building Façade (externally)	Day- 7am-10pm	60dB(A) $L_{eq}(15hr)$
		Night - 10pm-7am	55dB(A) $L_{eq}(9hr)$

However, in the event that pre-existing road traffic noise levels already exceed the levels in the table above, then it is required that the increased in noise as a result of the construction traffic not cause an increase of existing noise levels by more than 2dB(A).

5.1.4 Sleep Disturbance

Sleep disturbance criteria are those proposed in Chapter 10 of the EIS (section 10.2.7). They apply only in the event of night works (10pm-7am).

Table 5.5: Sleep Disturbance Criteria (10pm-7am)

Land use	Where objective applies	Management level
Residential Receivers	External Noise Level	65dB(A) L_{max}^*

*As noted in the EIS, this level was set with a view to targeting an internal noise level within the sleeping area of 55dB(A) L_{max} (windows open).

5.1.5 Summary of Noise Goals.

On review of the Sydney Local Environmental Plan 2012 land zoning map LZN_015, the zoning map indicates that the nearest residential receivers to the Pitt Street Station sites are in Metropolitan Centre (zone B8) . As such, condition of consent E41 is applicable at the North and South sites (and E42 is not, as there is no residential development in a residential zone.

On adopting the above criteria, and the background noise levels presented in section 4, the following noise goals/management levels apply:

Table 5.6: Construction noise management levels at receivers

Receiver type	Time of Day ²	EIS Chapter 10 Requirements			CSSI Approval Requirements		
		ICNG*	Ground Borne Noise	Sleep Disturbance	Construction Traffic	Condition E37 ³	Condition E41 ⁴
Pitt Street South							
Residential	Day (Standard – 7am-6pm)	74dB(A) _{L_{eq}15min} 75dB(A) _{L_{eq}15min} – Highly Noise Affected Threshold	45dB(A) _{L_{eq}15min} (internal noise level)	N/A	60dB(A) _{L_{eq}(15hr)}	60dB(A) _{L_{eq}(15Min)} (internal noise level) 80dB(A) _{L_{eq}(15Min)} (external noise level)**	N/A
	Day (OOH)	69dB(A) _{L_{eq}15min}	45dB(A) _{L_{eq}15min} (internal noise level)	N/A	60dB(A) _{L_{eq}(15hr)}	60dB(A) _{L_{eq}(15Min)} (internal noise level) 80dB(A) _{L_{eq}(15Min)} (external noise level)**	N/A
	Evening (OOH)	66dB(A) _{L_{eq}15min}	40dB(A) _{L_{eq}15min} (internal noise level)	N/A	60dB(A) _{L_{eq}(15hr)}	N/A	60dB(A) _{L_{eq}(15Min)} (internal noise level) 80dB(A) _{L_{eq}(15Min)} (external noise level)**
	Night (OOH)	63dB(A) _{L_{eq}15min}	35dB(A) _{L_{eq}15min} (internal noise level)	65dB(A) _{L_{max}} (external noise level)	55dB(A) _{L_{eq}(15hr)}	N/A	45dB(A) _{L_{eq}(15Min)} (internal noise level) 65dB(A) _{L_{eq}(15Min)} (external noise level)**
Commercial	When in use	70dB(A) _{L_{eq}15min}	N/A	N/A	N/A	60dB(A) _{L_{eq}(15Min)} (internal noise level) 80dB(A) _{L_{eq}(15Min)} (external noise level)**	N/A
Pitt Street North							
Residential	Day (Standard – 7am-6pm)	73dB(A) _{L_{eq}15min} (weekdays) 75dB(A) – Highly Noise Affected Threshold	45dB(A) _{L_{eq}15min} (internal noise level)	N/A	60dB(A) _{L_{eq}(15hr)}	60dB(A) _{L_{eq}(15Min)} (internal noise level) 80dB(A) _{L_{eq}(15Min)} (external noise level)**	N/A
	Day (OOH)	68dB(A) _{L_{eq}15min}	45dB(A) _{L_{eq}15min} (internal noise level)	N/A	60dB(A) _{L_{eq}(15hr)}	60dB(A) _{L_{eq}(15Min)} (internal noise level) 80dB(A) _{L_{eq}(15Min)} (external noise level)**	N/A
	Evening	66dB(A) _{L_{eq}15min}	40dB(A) _{L_{eq}15min} (internal noise level)	N/A	60dB(A) _{L_{eq}(15hr)}	N/A	60dB(A) _{L_{eq}(15Min)} (internal noise level) 80dB(A) _{L_{eq}(15Min)} (external noise level)**
	Night	64dB(A) _{L_{eq}15min}	35dB(A) _{L_{eq}15min} (internal noise level)	65dB(A) _{L_{max}} (external noise level)	55dB(A) _{L_{eq}(15hr)}	N/A	45dB(A) _{L_{eq}(15Min)} (internal noise level) 65dB(A) _{L_{eq}(15Min)} (external noise level)**

Receiver type	Time of Day ²	EIS Chapter 10 Requirements			CSSI Approval Requirements		
		ICNG*	Ground Borne Noise	Sleep Disturbance	Construction Traffic	Condition E37 ³	Condition E41 ⁴
Commercial	When in use	70dB(A) _{L_{eq}15min}	N/A	N/A	N/A	60dB(A) _{L_{eq}15Min} (internal noise level) 80dB(A) _{L_{eq}15Min} (external noise level)**	N/A

Notes:

* ICNG noise management levels for residential receivers based on the background noise levels presented in Section 4.

**External noise target determined by assuming a 20dB(A) noise reduction between outside and inside (closed windows).

- Noise levels apply at the property boundary that is most exposed to construction noise, and at a height of 1.5m above ground level unless stated otherwise. .
- Noise management levels apply when receiver areas are in use only.
- Exceedance of this level triggers the need for consideration of respite periods as per Condition of Approval E38.
- Exceedance of this level triggers the need to consider additional mitigation methods as detailed in *Sydney Metro City and South West Noise and Vibration Strategy*

5.2 Construction vibration criteria

5.2.1 Building Damage Criteria - Generally

Consent condition E28 and EIS Chapter 10 (section 10.2.4) identify BS7385 as being the relevant criteria in the assessment of construction vibration and potential building damage.

Within British Standard 7385 Part 1: 1990, different levels of structural damage are defined:

- **Cosmetic** - *The formation of hairline cracks on drywall surfaces, or the growth of existing cracks in plaster or drywall surfaces; in addition, the formation of hairline cracks in mortar joints of brick/concrete block construction.*
- **Minor** - *The formation of large cracks or loosening of plaster or drywall surfaces, or cracks through bricks/concrete blocks.*
- **Major** - *Damage to structural elements of the building, cracks in supporting columns, loosening of joints, splaying of masonry cracks, etc.*

The vibration limits in Table 1 of British Standard 7385 Part 2 (1993) are for the protection against cosmetic damage (the most stringent criteria), and are presented below.

Table 5.7: BS 7385 Structural Damage Criteria

Group	Type of Structure	Damage Level	Peak Component Particle Velocity ¹ , mm/s		
			4Hz to 15Hz	15Hz to 40Hz	40Hz and above
1	Reinforced or framed structures Industrial and heavy commercial buildings	Cosmetic		50	
		Minor ²		100	
		Major ²		200	
2	Un-reinforced or light framed structures Residential or light commercial type buildings	Cosmetic	15 to 20	20 to 50	50
		Minor ²	30 to 40	40 to 100	100
		Major ²	60 to 80	80 to 200	200
Notes:	1. Peak Component Particle Velocity is the maximum peak particle velocity (PPV) in any one direction (x, y, z) as measured by a tri-axial vibration transducer 2. Minor and major damage criteria established based on British Standard 7385 Part 2 (1993) Section 7.4.2				

BS7385 is based on peak particle velocity and specifies damage criteria for frequencies within the range 4Hz to 250Hz, being the range usually encountered in buildings. The values set in the Standard relate to transient vibrations and to low-rise buildings. Continuous vibration can give rise to dynamic magnifications due to resonances and may need to be reduced by up to 50%.

For this reason, the following targets were set in the EIS as a "screening" vibration level:

Table 5.8: Building Damage Vibration Targets

Affected Building Type	Vibration Screening Test (Cosmetic Building Damage)
Reinforced/Framed Structures	25mm/s Peak Particle Velocity.
Unreinforced/unframed	7.5mm/s Peak Particle Velocity.

5.2.2 Building Damage – Heritage Buildings

In addition to BS7385, German Standard DIN 4150 - Part 3 '*Structural vibration in buildings - Effects on Structure*' (DIN 4150-3), also provides recommended maximum levels of vibration that reduce the likelihood of building damage caused by vibration.

DIN 4150-3 presents the recommended maximum limits over a range of frequencies (Hz), measured in any direction, and at the foundation or in the plane of the uppermost floor of a building or structure. The vibration limits increase as the frequency content of the vibration increases.

The structural damage vibration criteria adopted for this project is presented below.

For heritage buildings, it is recommended that vibration sensitive heritage buildings be assessed with reference to the Group 3 criteria, at least during initial monitoring (this being the more stringent of the criteria in BS7385 and DIN4150-3). This threshold may be revisited on further advice from Heritage/Structural consultant.

Table 5.9: DIN 4150-3 Structural Damage Criteria

Group	Type of Structure	Vibration Velocity, mm/s			
		At Foundation at Frequency of			Plane of Floor Uppermost Storey
		1Hz to 10Hz	10Hz to 50Hz	50Hz to 100Hz	All Frequencies
1	Buildings used for commercial purposes, industrial buildings and buildings of similar design	20	20 to 40	40 to 50	40
2	Dwellings and buildings of similar design and/or use	5	5 to 15	15 to 20	15
3	Structures that because of their particular sensitivity to vibration, do not correspond to those listed in Group 1 or 2 and have intrinsic value (eg buildings under a preservation order)	3	3 to 8	8 to 10	8

5.2.3 Sensitive Scientific and Medical Equipment

Some scientific equipment (e.g. electron microscopes and microelectronics manufacturing equipment) can require more stringent objectives than those applicable to human comfort.

No such equipment has been identified in proximity to the Project area, and therefore no criteria proposed at this stage. If required, objectives for the satisfactory operation of sensitive instruments will be identified in the relevant CNVIS. Where manufacturer's data is not available, generic vibration criterion (VC) curves as published by the Society of Photo-Optical Instrumentation Engineers (Colin G. Gordon - 28 September 1999) may be adopted as vibration goals should it be necessary.

5.2.4 Utilities and Other Vibration Sensitive Structures

Some structures and utilities located near the Project may be particularly sensitive to vibration. A vibration goal which differs from the cosmetic damage goals presented in Section 5.2.1 may need to be adopted. Examples of such structures and utilities include:

- Tunnels
- Gas pipelines
- Fibre optic cables

The British Standard BS 7385-2:1993 'Evaluation and measurement for vibration in buildings - Part 2: Guide to damage levels from ground-borne vibration' notes that structures below ground are known to sustain higher levels of vibration and are very resistant to damage unless in very poor condition (British Standard BS 7385-2:1993, p5). Further guidance is taken from the German Standard DIN 4150: Part 3-1999.02 'Structural vibration in buildings - Effects on Structures'. Section 5.3 of DIN 4150: Part 3 sets out guideline values for vibration velocity to be used when evaluating the effects of vibration on buried pipework.

The table below presents the initial reference guideline for utilities and other buried pipework to evaluate the effects of short-term vibration impact. Specific vibration goals will be determined on a case-by-case basis as part of the CNVIS for each work site.

Table 5.10: DIN 4150-3 Guideline values for vibration velocity to be used when evaluating the effects of short-term vibration on buried pipework

Line	Pipe Material	Guideline values for vibration velocity measured on the pipe
1	Steel (including welded pipes)	100 mm/s
2	Clay, concrete, reinforced concrete, pre-stressed concrete, metal (with or without flange)	80 mm/s
3	Masonry, plastic	50 mm/s

Note 1. Rock breaking/hammering and sheet piling activities are considered to have the potential to cause dynamic loading in some structures and it may therefore be appropriate to reduce the transient values by 50%.

We note that there are gas pipelines in the vicinity of the site. A target vibration level of 20mm/s at the pipeline will be adopted until alternative thresholds are advised by the utility provider.

5.2.5 Vibration Disturbance to Buildings Occupants / Human Comfort

Vibration impacts on people (human comfort) is also typically considered when examining construction vibration.

While criteria are not identified in the planning approval conditions nor in Chapter 10 of the EIS, they are addressed in section 3.1.7 of the document *Technical Paper 2 – Noise and Vibration* by SLR dated 28 April 2016, which formed an appendix to the EIS.

Technical Paper 2 identifies the EPA's 'Assessing Vibration; a technical guideline' (DECC, 2006), and recommends the following criteria to be adopted in the assessment of construction vibration on human comfort:

Table 5.11: Acceptable Vibration Dose Values for Intermittent Vibration ($m/s^{1.75}$)

Location	Daytime ¹		Night-time ¹	
	Preferred value	Maximum value	Preferred value	Maximum value
Critical areas ²	0.10	0.20	0.10	0.20
Residences	0.20	0.40	0.13	0.26
Offices, schools, educational institutions and places of worship	0.40	0.80	0.40	0.80
Workshops	0.80	1.60	0.80	1.60

- Notes:
1. Daytime is 7:00am to 10:00pm and night-time is 10:00pm to 7:00am
 2. Examples include hospital operating theatres and precision laboratories where sensitive operations are occurring. These criteria are only indicative, and there may be a need to assess intermittent values against the continuous of impulsive criteria for critical areas.
Source: BS 6472-1992

6 Construction Noise Assessment, Mitigation and Monitoring.

Given that this report relates solely to the ISD construction of the stations, it is feasible to make detailed (numerical) predictions of construction noise impact.

This section is prepared in satisfaction of:

- Condition E32 (obligation to mitigate noise impacts);
- Condition E33 (a Construction Noise and Vibration Impact Statement)
- Condition E34 (timetabling of works impacting noise sensitive development).
- Condition E35 (alternative method of rock hammering) and
- Examination of feasible/reasonable noise mitigation (an EPA Interim Construction noise guideline requirement, as reported in EIS Chapter 10). This will include consideration of:
 - Condition E32 (application of mitigation principles from the *Sydney Metro Southwest Construction Noise and Vibration Strategy*).
 - Conditions E37 and E38 (examination of necessity for respite periods to address excessive internal noise levels).
 - Condition E39 – Assessment of Cumulative Noise Impacts.

6.1 Proposed works

The ISD development consists of the construction of the following items:

- Platform/concourse levels (basement up to ground floor).
- Plant rooms/risers/air plenums and ancillary spaces – Mezzanine up to podium levels.

We note that primary demolition and excavation work at the two sites is undertaken as part of a separate contract (and not a part of this Management Plan). The only demolition and excavation works the subject of this report is capping beam demolition and detailed excavation:

- Detailed excavation is expected intermittently over a 60 working day period (estimated commencement on 11 January 2021).
- Capping beam demolition occurs early in the construction phase. Duration is 2-4 weeks, commenced after completion of B1 slab.

As such, it is the construction works for the ISD building alone that are the subject of this plan. Key works items to be addressed are therefore the basement and surface level structural works (concrete work), fit out work and ancillary items to these activities (work zones, crane usage etc)

6.2 Proposed construction noise sources

The schedule of items of plant and equipment likely to be used during the construction of the proposed development is presented in the table below.

Table 6.1: Typical construction equipment & sound power levels, dB(A)

Plant item	Plant description	Sound power levels
Phase – Station Construction		
1.	Delivery/Concrete Trucks	106 (typical) Up to 112 permitted in CNVS)
2..	Powered Hand tools (façade work, form working, internal works etc)	100
3.	Concrete Pump/Vibrators	105
4.	Tower Crane (Electric)	100
5.	Generator	100 (typical) Up to 105 permitted in CNVS)
6.	Mobile Crane	105 (typical) Up to 110 permitted in CNVS)
7.	Excavator with Hydraulic Hammer	120

The sound power levels for the majority of construction plant and equipment presented in the above table are based on maximum noise levels given in Table A1 of Australian Standard 2436 - 2010 'Guide to Noise Control on Construction, Demolition and Maintenance Sites', the Interim Construction Noise Guideline (ICNG), information from past projects and/or information held in our library files.

6.3 Predicted Noise Levels and Commentary

Noise levels at any receiver location resulting from construction works would depend on the location of the receiver with respect to the area of construction, shielding from intervening topography and structures, and the type and duration of construction being undertaken. Furthermore, noise levels at receivers would vary significantly over the total construction program due to the transient nature and large range of plant and equipment that could be used.

The table below presents noise levels likely to be experienced at the nearby affected receivers based on the construction activities and plant and equipment associated with the proposed site.

Noise levels were calculated taking into consideration the distance between the construction works and the receiver locations using noise prediction software for this project. Intervening structures have been included in the model.

The model calculates the contribution of each noise source at identified sensitive receiver locations.

Predicted noise levels and assessment with reference to noise emission criteria is presented below.

Table 6.2: Noise Emission Assessment – South Building

Noise Criteria (ICNG)	Time	Criteria Noise Levels (dB(A) $L_{eq}(15min)$)					
		Residential*			Commercial Receivers*		
		R1	R2	R3	C1	C2	C3
Noise Management Level	Mon-Fri – 7:00am to 6:00pm	74	74	74	70	70	70
	Sat – 8:00am to 6:00pm	74	74	74	70	70	70
Highly Noise Affected Level	Any	75	75	75	N/A	N/A	N/A
Plant Item	Plant Description	Predicted Construction Noise Levels (dB(A) $L_{eq}(15min)$)					
		Residential*			Commercial Receivers*		
		R1	R2	R3	C1	C2	C3
1	Delivery/Concrete Trucks	65-75	65-75	65-75	65-75	65-75	65-75
2	Powered Hand tools (façade work, internal works etc)						
	<ul style="list-style-type: none"> Basement Levels Above Ground Levels 	<60 60-80	<55 55-65	<60 60-80	<60 60-80	<60 60-80	<55 55-65
3	Concrete Pump/Vibrators						
	<ul style="list-style-type: none"> Basement Levels Above Ground Levels 	<65 65-85	<60 60-70	<65 65-85	<65 65-85	<65 65-85	<60 60-70
4	Tower Crane (Electric)	60-65	60-65	60-65	60-65	60-65	60-65
5	Generator	70	70	70	70	70	70
6	Mobile Crane	65-70	65-70	65-70	65-70	65-70	65-70
7	Excavator with Hydraulic Hammer	80-100	75-85	80-100	80-100	80-100	75-85

*Refer to section 2.3 for identification of noise receivers.

Table 6.3: Noise Emission Assessment – North Building

Noise Criteria (ICNG)	Time	Criteria Noise Levels (dB(A) _{Leq(15min)})					
		Residential*		Commercial Receivers*			
		R4	R5	C4	C5	C6	C7
Noise Management Level	Mon-Fri – 7:00am to 6:00pm	73	73	70	70	70	70
	Sat – 8:00am to 6:00pm	73	73	70	70	70	70
Highly Noise Affected Level		75	75	N/A	N/A	N/A	N/A
Plant Item	Plant Description	Predicted Construction Noise Levels (dB(A) _{Leq(15min)})					
		Residential*		Commercial Receivers*			
		R4	R5	C4	C5	C6	C7
1	Delivery/Concrete Trucks	65-75	65-75	65-75	65-75	65-75	65-75
2	Powered Hand tools (façade work, internal works etc)						
	<ul style="list-style-type: none"> Basement Levels Above Ground Levels 	<60	<55	<60	<60	<60	<55
3	Concrete Pump/Vibrators						
	<ul style="list-style-type: none"> Basement Levels Above Ground Levels 	<65	<60	<60	<65	<60	<60
4	Tower Crane (Electric)	60-60	60-65	55-60	60-65	60-65	60-65
5	Generator	60-65	65-70	60-65	65-70	65-70	65-70
6	Mobile Crane	60-65	65-70	60-65	65-70	65-70	65-70
7	Excavator with Hydraulic Hammer	80-100	75-85	75-85	80-100	75-85	75-85

*Refer to section 2.3 for identification of noise receivers.

A discussion of the predicted construction noise levels is presented below. This is then used to develop reasonable and feasible noise mitigation measures, as detailed in section 6.4. With respect to the predicted construction noise generation:

- For Residential Receivers R1, R3, R4:
 - These are residential developments directly adjoining the sites.
 - When working adjacent to the residential property boundaries, noise levels are predicted to exceed the Noise Management Level (69dB(A) weekdays, 64dB(A) weekends),
 - The noise levels typically do not exceed the 75dB(A) Highly Noise Affected threshold, except when using a hydraulic hammer (capping beam demolition and detailed excavation) and when working within approximately 10m of the common property boundary. Work close to property boundaries would occur would be during concrete pours (use of vibrators) and use of powered hand tools (form working and façade construction). During use of a hydraulic hammer, and when using powered tools within 10m of the property boundary there is an exceedance of both:
 - The ICNG “Highly Noise Affected” target (75dB(A)), and

- The 80dB(A) external noise target (which would in turn cause potential exceedance of the 60dB(A) internal noise goal in condition E37 (refer to table 5.6). An exceedance of the goal in condition E37 is a “trigger” for the consideration of respite periods.
- For Residential Receivers R2, R5:
 - These are residential receivers separated from the site by a roadway (Pitt Street/Park Street – moderately busy roads), and are generally either compliant or only marginally exceeding the Noise Management Level (and do not exceed the Highly Noise Affected Level). Noise at these receivers would also be compliant with the 60dB(A) internal noise goal of condition E37.
- For Commercial Receivers C1, C2, C5:
 - These are commercial developments directly adjoining the site.
 - When working on the adjoining property boundaries, noise levels are predicted to exceed the Noise Management Level (70dB(A)),
 - The noise levels typically do not exceed the 75dB(A) Highly Noise Affected threshold, except when working within approximately 10m of the common property boundary.
- For Commercial Receivers C3, C4, C6, C7:
 - These are commercial receivers separated from the site by a roadway and are generally either compliant or only marginally exceeding the Noise Management Level.

In addition:

- The noise predictions and discussion presented above applies to above ground works. Noise from construction works in basement areas will typically be compliant with Noise Management Goals.
- **Ground Borne Noise:**
 - Use of a hydraulic hammer (capping beam demolition, detailed excavation) within 10-15m of a nearby building will potentially create ground borne noise levels within adjacent buildings exceeding 45dB(A) (the ground borne noise daytime threshold detailed in the performance objectives in EIS Chapter 1.
 - Typically, however, ground borne noise is of greatest concern for tunnel excavation or similar, when airborne noise from excavation works is shielded.
 - These works, however, are located at surface level, and the airborne noise impact on a receiver will be higher than any ground borne noise impact.
 - The only exception to this is Receiver C5 (250 Pitt Street), which has a blank masonry wall in some locations facing the site (meaning ground borne noise component may exceed the airborne noise). See Appendix F for proposed monitoring.

In light of the predicted exceedances of Noise Management Levels, it is required that a feasible and reasonable approach towards noise mitigation measures be applied to reduce noise levels as much as possible to mitigate the impact from construction noise. This is discussed below.

6.4 Construction noise mitigation measures.

6.4.1 General engineering noise controls and *Sydney Metro Southwest Construction Noise and Vibration Strategy* principles.

The table presents noise control methods, practical examples and expected noise reductions according to AS2436 and according to Renzo Tonin & Associates professional opinion based on experience with past projects.

Table 6.4: Relative effectiveness of various forms of noise control

Noise control method	Practical examples	Typical noise reduction possible in practice, dB(A)		Maximum noise reduction possible in practice, dB(A)	
		AS 2436	Renzo Tonin & Assoc.	AS 2436	Renzo Tonin & Assoc.
Distance	Doubling of distance between source and receiver	6	6	6	6
Screening	Acoustic barriers such as temporary or permanent noise barriers where barrier breaks line-of-sight between the source and receiver	5 to 10	5 to 10	15	15
Acoustic Enclosures	Engine casing lagged with acoustic insulation and plywood	15 to 25	10 to 20	50	30
Engine Silencing	Residential class mufflers	5 to 10	5 to 10	20	20
Substitution by alternative process	Use electric motors in preference to diesel or petrol	-	15 to 25	-	40

The Renzo Tonin & Associates' listed noise reductions are conservatively low and should be referred to in preference to those of AS2436.

In addition, the *Sydney Metro Southwest Construction Noise and Vibration Strategy* provides guidance on practical noise mitigation measures, as detailed below:

Table 6.5: Additional Airborne Noise Mitigation Guidelines (as per Sydney Metro Southwest Construction Noise and Vibration Strategy)

Time Period		Mitigation Measures			
		Predicted LAeq(15minute) Noise Level Above Background (RBL)			
		0 to 10 dB	10 to 20 dB	20 to 30 dB	> 30 dB
Standard	Mon-Fri (7.00 am - 6.00 pm)	-	-	M, LB,	M, LB
	Sat (8.00 am - 1.00 pm)				
	Sun/Pub Hol (Nil)				
OOHW	Mon-Fri (6.00 pm - 10.00 pm)	-	LB	M, LB	M, IB, LB, PC, RO, SN
	Sat (1.00 pm - 10.00 pm)				
	Sun/Pub Hol (8.00 am - 6.00 pm)				
OOHW	Mon-Fri (10.00 pm - 7.00 am)	-	M, LB,	M, IB, LB, PC, RO, SN	AA, M, IB, LB, PC, RO, SN
	Sat (10.00 pm - 8.00 am)				
	Sun/Pub Hol (6.00 pm - 7.00 am)				

LB = Letter box drops

SN = Specific notifications

RO = Project specific respite offer

V = Verification monitoring

IB = individual briefing

AA = Alternative accommodation

Note:

- The table above represents the *Sydney Metro Southwest Construction Noise and Vibration Strategy* as written.
- We note that the 1pm-6pm Saturday period is considered standard hours in the Conditions of Approval. Mitigation measures in the 1pm-6pm Saturday period will be proposed assumed they are considered as standard hours.

The mitigation options outlined above are taken into account where determining reasonable and feasible noise mitigation measures.

Site specific noise mitigation measures are detailed below.

6.5 Site Specific Noise Management Measures

For the most part, construction works for the Station Box are proposed during standard hours (7am-6pm Weekdays, 8am-6pm Saturdays as per condition E36 in MOD 9). In the event that emergency or outside of hours works are proposed (including materials deliveries) – this would be addressed by following the procedures outlined in Section 8.

While there is one demolition item (capping beam) and some detailed excavation, primary works do not involve usage of significant amounts of equipment that is considered intrusive (hydraulic hammers, driven/sheet piling, vibration compaction works). Noise typically emitted would be consistent with that on any other construction site (once demolition and excavation works are completed).

We note that the noise impact on residences is generally expected to be compliant with ICNG “Highly Noise Affected” Noise Management Levels, except when working on site boundaries immediately adjacent to adjoining residences, and during capping beam demolition and detailed excavation.

During use of a hydraulic hammer, and when using powered tools close to residential property boundaries, some work activities are likely to generate noise levels exceeding the 75dB(A) Highly Noise Affected threshold of the ICNG and the 60dB(A) internal noise goal of condition 37 (a trigger to consider respite periods).

Taking this into account, and applying the mitigation methods considered in the section above (in particular the *Sydney Metro Southwest Construction Noise and Vibration Strategy* hierarchy as set out in Table 6.6), the following site specific noise management practices are required:

- Neighbour notification:
 - Notification (letterbox drop) to be made to developments physically adjoining the site.
 - The notification will advise of expected dates of concrete pours (as this will be the activity with risk of a sustained period where noise levels exceeding the 60dB(A) internal noise threshold may occur). The notification will advise if it is expected that the pour may need to start before 7am or finish after 6pm.
- Respite periods:
 - Use of concrete vibrators and powered hand tools (facade work and form working) in very close proximity to residential properties boundaries have a risk in creating noise levels exceeding 60dB(A) within residences. Use of hydraulic hammers anywhere on the site is likely to result in a noise level exceeding 60dB(A) inside a residential property adjoining the site.
 - Use of a hydraulic hammer will potentially result in an exceedance of the 60dB(A) internal noise goal regardless of where it is conducted on the site. There are no viable alternative means of detailed excavation.
 - This 60dB(A) internal noise level is a trigger for the consideration of respite periods, as per Condition of Approval E37.
 - Respite periods during use of hydraulic hammers will be considered, as required by Condition of Approval E38. Respite periods will be agreed (if possible) in consultation with the occupants of:
 - Southern Site – Receiver R1 (304-308 Pitt Street), Receiver R3 (137-139 Pitt Street) and Receiver C1 (209 & 213 Castlereagh Street).
 - Northern Site - Receiver R4 (167 Castlereagh Street) and Receiver C5 (250 Pitt Street).

If no agreement can be reached, respite periods are required such that there would be no more than 6.5 hours of use of a hydraulic hammer in an external area any 7am-8pm period (as per condition E38).

- Introduction of respite periods for other works is not recommended, initially, because:
 - In the case of a concrete pour, it is not typically feasible to start and stop concreting works. Further, pours are not conducted every day and there will be only a small number of pours that will bring the construction work to close proximity to a given residence. Other pours will typically be further way on the floor plate, or two or more levels above or below the apartment, and the exceedance of the 60dB(A) target would not occur.
 - Concrete pours are typically sized such that the pour can be accommodated within typical work hours. Work with the potential to be done OOH is as follows:
 - There may be instances where pours may need to go outside of these typical hours such as emergency situations (E44b) or oversized concrete pours (taking greater than 14 hours). In either case, the appropriate notifications and approvals in accordance with the conditions of approval will be adhered to. These are expected to occur by exception.
 - Slab finishing work may extend after 6pm. This is typically weather dependant (colder weather increases the change that slab finishing will extend after 6pm. This will consist of helicopter floats. The noise from the float would be expected to exceed a "BG+5" goal when working immediately adjacent to a residential development (residences R1 (304-308 Pitt Street,), R4 (167 Castlereagh Street) and to a lesser degree R3 (137-139 Park Street). Concrete pours would not typically be constructed on consecutive nights (as form working is required beforehand). Notification of days of concrete pours and the possibility that helicopter floats may be used post 6pm (depending on weather) can mitigate this impact. Pours to be sized to minimise the chance of finishing works extending past 6pm to the extent that this is reasonable and feasible.
 - In the case of powered hand tools (form working and façade work) – this work is typically intermittent in nature in any event. The benefits in respite would be relatively small and need to be balanced with the prolonging of the work period that will occur if they are introduced for this activity. Further, as is the case with concrete pours, the duration of work immediately adjacent to a particular apartment would be expected to be quite small.
 - Further, it is unlikely that the noise from the above activities would exceed 60dB(A) with residences *for more than 6.5 hours per day* (the trigger for respite periods in condition E38,
- In the event of sustained complaint (more than two complaints, not vexatious and related to the works) - a respite period can be negotiated with the adjoining residents (Receivers R1, R3 for South Site, R4 for North Site) . Potential respite periods may limit work on residential property boundaries before 8am. (This is suggested given that after 8am it would be likely

that many residents would no longer be at home. However negotiation is required given the possibility that more occupants maybe home at this time compared to typical as a result of increased numbers working at home as a result of Covid-19).

- Trucks/bobcat/machinery engines will be turned off, as opposed to idling, if feasible (not always possible for concrete trucks).
- Non-tonal reversing beacons for trucks and bobcats will be considered if feasible (depending on OH&S requirements).
- In the event that a generator is required to operate outside of standard work hours, manufacturers details of any proposed generator will be provided to determine if any form of acoustic enclosure is required,
- Use of electric cranes, as opposed to diesel, if feasible.
- These are required to be produced pursuant to condition E33.
- All employees, contractors and subcontractors are to receive site induction and toolbox talks and ongoing training so that the above noise management measures are implemented accordingly. Content within toolboxes will include: location of nearest sensitive receivers; relevant project specific and standard noise and vibration mitigation measures; permissible hours of work, truck route and truck loading restrictions and construction employee parking areas.

6.5.1 Verification measurements/noise monitoring

- Construction Noise Monitoring is proposed generally in accordance with Appendix A of the Sydney Metro Construction Noise and Vibration Strategy.
- An on-site attended noise measurement will be conducted of:
 - Typical noise levels generated during formworking
 - Typical noise level generated during a concrete pour.
 - Typical noise level generated during detailed excavation.

to verify if the noise impact is consistent with what has been predicted in this report. In the event that noise levels are significantly higher than anticipated (3dB(A) or higher), further mitigation is to be investigated. This will involve:

- Identification if a higher than expected noise level is expected to be consistent or a one off event.
- If expected to be ongoing, identification of additional mitigation measures such as alternative equipment or respite periods.
- Results of measurement and recommendations to be included in measurement report (see reporting requirements in Appendix F).

- On-going unattended noise monitoring is not recommended in the first instance as:
 - The noise impact of the works is expected to be relatively small.
 - Attended noise measurements will be more effective in determining suitable mitigation options.
 - This will be re-evaluated in preparation of Construction Noise and Vibration Impact Statements, where the noise impact of each construction scenario is examined.
- In the event that either attended or long term noise monitoring is conducted, the procedures outlined in Appendix B are to be adopted.
- Refer to Appendix F for Noise Monitoring Program.

6.6 Additional Noise Considerations (Construction Traffic and Cumulative Noise Impacts)

Condition E34 (Timetabling of Works to take into account community religious, educational, community institutions and noise sensitive businesses)

The sites are adjoined by residential and commercial development. Commercial development consists of office space (Receiver C5) and a pub (C2). These items do not have periods of heightened noise/vibration sensitivity over and above typical construction noise/vibration limits.

The need for timetabling of works will be specific to particular construction activities which will be examined as part of Construction Noise and Vibration Impact Statements for the Main Works.

Condition E35 (Alternatives to Rock Hammering and Blasting)

Blasting is not proposed on the site.

It is unlikely that an alternative to rock hammering will be viable for detailed excavation.

For capping beam demolition, use of rock saws and concrete pulverisers (which are both less vibration intensive than hydraulic hammers) will be reviewed in the event they are feasible. This will be the subject of detailed review in the CNVIS for the Main Works.

Construction Traffic.

When construction related traffic moves on the public road network, the Construction Traffic criteria from table 5.6 are applied.

Based on the proposed activities, operations and time of day, construction traffic noise is not likely to be significant.

In the event deliveries are required to the site outside of standard construction hours, the procedures in section 8.2 and 8.3 will apply.

Cumulative Noise Impacts.

Condition E39 requires the Proponent to consult with proponents of other construction works in the vicinity and take reasonable steps to coordinate works to minimise cumulative impacts of noise and vibration and maximise respite for affected sensitive receivers.

With respect to the other Contractors on the Pitt Street Metro Station site itself (Line Wide Contractor, TSOM and the Over Station Development Contractor):

- The noisiest works associated with the Station Box (erection of structure) would not occur at the same time as the noisy works associated with the tunnel (bulk excavation, which would be complete prior to ISD commencing structure).
- Similarly, the Station Box structure would be complete prior to commencement of construction of structure of the Over Station Development Component.

As such, there would be little prospect to cumulative noise impact from the different Metro Contractors – their noisy work phases are unlikely to coincide.

Other unrelated construction activities may occur within the vicinity of Sydney Metro works. CPB community consultation team to liaise with proponents of other sites in the vicinity to minimise cumulative noise impacts and maximise respite periods to the extent that it is reasonable and feasible.

7 Construction Vibration Assessment, Mitigation and Monitoring

This section addresses:

- Vibration impacts and mitigation methods.
- Identifies at risk properties to be notified and targeted for vibration monitoring (as required by conditions E29 and E30).

In addition to the criteria outlined in section 5, the *Sydney Metro Southwest Construction Noise and Vibration Strategy* provides guidance on practical mitigation measures ground borne noise or vibration are predicted to exceed the ground borne noise levels set out in sections 5.1.5 and vibration human comfort targets set out in section 5.2.5. The additional mitigation measures are set out below, and will be taken into account when proposing vibration management strategies.

Note – when applying additional mitigation measures:

- The tables above represents the *Sydney Metro Southwest Construction Noise and Vibration Strategy* as they are written.
- We note that the 1pm-6pm Saturday period is considered standard hours in the Conditions of Approval. Mitigation measures in the 1pm-6pm Saturday period will be proposed assumed they are considered as standard hours.

Table 7.1: Additional Ground-borne Noise Mitigation Guidelines (as per *Sydney Metro Southwest Construction Noise and Vibration Strategy*)

Time Period		Mitigation Measures		
		Predicted LAeq(15minute) Noise Level Exceedance		
		0 to 10 dB	10 to 20 dB	> 20 dB
Standard	Mon-Fri (7.00 am - 6.00 pm)	LB	LB	M, LB, SN,
	Sat (8.00 am - 1.00 pm)			
	Sun/Pub Hol (Nil)			
OOHW	Mon-Fri (6.00 pm - 10.00 pm)	LB	M, LB, SN,	M, IB, LB, PC, RO, SN
	Sat (1.00 pm - 10.00 pm)			
	Sun/Pub Hol (8.00 am - 6.00 pm)			
OOHW	Mon-Fri (10.00 pm - 7.00 am)	M, LB, SN,	AA, M, IB, LB, PC, RO, SN	AA, M, IB, LB, PC, RO, SN
	Sat (10.00 pm - 8.00 am)			
	Sun/Pub Hol (6.00 pm - 7.00 am)			

Table 7.2: Additional Vibration Mitigation Guidelines (as per *Sydney Metro Southwest Construction Noise and Vibration Strategy*)

Time Period		Mitigation Measures
		Predicted Vibration Levels Exceed Maximum Levels
Standard	Mon-Fri (7.00 am - 6.00 pm)	M, LB, RP
	Sat (8.00 am - 1.00 pm)	
	Sun/Pub Hol (Nil)	
OOHW	Mon-Fri (6.00 pm - 10.00 pm)	M, IB, LB, PC, RO, SN
	Sat (1.00 pm - 10.00 pm)	
	Sun/Pub Hol (8.00 am - 6.00 pm)	
OOHW	Mon-Fri (10.00 pm - 7.00 am)	AA, M, IB, LB, PC, RO, SN
	Sat (10.00 pm - 8.00 am)	
	Sun/Pub Hol (6.00 pm - 7.00 am)	

Where:

- M refers to monitoring.
- LB refers to letter box drops.
- IB refers to Individual Briefings.
- PC refers to Phone Calls.
- RO refers to Respite Offer.
- RP refers to Respite Period.
- SN refers to specific notifications.
- AA refers to Alternative Accommodation.

7.1 Vibration Impact Analysis

The vibration generated from construction works will vary depending on the level and type of activity carried out.

Activities with the highest potential for vibration generation (rock excavation, piling), have been approved under separate Construction Noise Management Plans.

As such, the activities with the greatest potential vibration impact during the ISD works are as follows:

- Use of concrete vibrators. This is expected to have low vibration generation, given there is no rigid connection between the equipment item and the nearby development.
- Use of hydraulic hammers or vibratory compactors. These are not anticipated to be widely used, however will be required in relation to capping beam demolition, detailed excavation, ground services installation/diversion, paving or similar.

Potential vibration generated at receivers for this project will be dependent on separation distances, the intervening soil and rock strata, dominant frequencies of vibration and the receiver building's construction and structure.

The recommended minimum working distances for vibration intensive plant are presented in the table below.

Table 7.3: Recommended minimum working distances for vibration intensive equipment

Plant item	Minimum working distance, m			
	Cosmetic damage			Human disturbance
	Commercial and industrial buildings ¹	Dwellings and similar structures ¹	Sensitive structures (e.g. heritage) ¹	Residences Day ²
Pneumatic Hammer	5	5	10	5
Vibratory Roller	5	10	15	5
Concrete Vibrator	Avoid contact with structure	Avoid contact with structure	Avoid contact with structure	Avoid contact with structure

Notes: 1. Criteria referenced from DIN 4150 Structural Damage - Safe Limits for Short-term Building Vibration.
2. Daytime is 7 am to 10 pm;

Site specific buffer distances presented above for vibration significant plant items cannot be predicted exactly and must therefore be measured on site.

Given the proximity of residential and heritage buildings to the sites, vibration monitoring is required, as detailed below.

7.2 Vibration Mitigation Measures and Monitoring

The following vibration mitigation measures are required to minimise vibration impact from construction activities to the nearest affected receivers:

- Dilapidation surveys must be conducted at all receivers within close proximity of the construction site.
- Notification by letterbox drop would be carried out for all buildings in the vicinity of the construction site. These measures are to address potential community concerns that perceived vibration may cause damage to property. Notification is to be provided to all occupants prior to any works that may cause vibration.

- Properties adjoining the site have a risk of being exposed to vibration levels exceeding the screening criteria in section 5.2.1 and 5.2.2.
 - In satisfaction of condition E29, Notification (letter box drop) will be provided to occupants/management of any building that shares a common boundary with the sites (Receivers R1, R3, R4, C1, C2 and C5 as detailed in section 2).
 - As required by condition E59, these properties will be offered a building condition survey.
- Vibration Monitoring:
 - Vibration monitors will be installed at the heritage buildings sharing a common boundary with the site (Receivers C1, C2, C5 and R4). This will be maintained during vibration intensive works (excavation, demolition, compaction). Removal of monitors to be determined in consultation with acoustic consultant.
 - As per condition E30, these monitors will be used to establish minimum safe working distances to heritage items. In the event that vibration levels are predicted to exceed Heritage Building cosmetic building damage triggers, construction methods will be reviewed.
 - As per condition E31, advice from a heritage consultant will be required with respect to the installation of vibration monitoring equipment on heritage sites (location / method of fixing vibration sensor)
 - Location, number of monitors and duration of monitoring will be re-evaluated in preparation of Construction Noise and Vibration Impact Statements, where the vibration impact of each construction scenario is examined.
 - In the event that use of hydraulic hammers or vibratory rollers is required, vibration monitoring will be conducted at receivers R1 and R3 in addition to those detailed above. Given these buildings are not heritage buildings, this can potentially be done in the event of complaint by occupants
 - In the event that there is percussive excavation equipment (hydraulic hammers) used on the Station Platform/Concourse (below Street level in the basement levels located between the North and South Sites), monitoring would also be required at locations C3 and C7.
 - Monitors will have real time SMS warning capability. SMS warning notification will be sent to the Contractor and their Acoustic Consultant in the event that the following thresholds are reached:
 - 3mm/s Peak Particle Velocity for monitors at a Heritage Building.
 - 8mm/s Peak Particle Velocity for monitors on other buildings.
 - In the event that the construction works produce vibration levels well below the triggers outlined above, and there is no more vibration intensive equipment proposed, monitoring can cease (to be determined by Renzo Tonin & Associates).

- In the event that monitoring indicates exceedances of project criteria, vibration mitigation is to be investigated. Options in this regard are:
 - If significant additional bulk excavation using hydraulic hammer is anticipated, first investigate the use of rock rippers and excavator with bucket (less vibration intensive).
 - In the event that only hydraulic hammers are feasible, use a rock saw to create a saw cut around the perimeter of the heritage building (as deep as feasible), prior to use of the hydraulic hammer.
 - In the event that this does not produce the required vibration reduction, a series of additional saw cuts would typically be made (a 90 degrees to the cut around the perimeter). This will effectively divide the rock into blocks which can then typically be removed using the hydraulic hammer but with less vibration generated.
 - With respect to ground compaction (if required for paving works or backfilling after installation of ground services or similar) – in the event that exceedances of vibration goals occurs, options such as plate compactors or non-vibratory rollers are to be considered.

Plant and equipment vibration measurement procedure is further detailed in **Appendix C**.

Refer to Appendix F for Vibration Monitoring Program.

8 Emergency Works, Changes in Work Hours and Outside of Hours Works Protocol.

8.1 Emergency Works (Condition of Approval E45).

As per condition E45, in the event that emergency works are required outside of approved construction hours:

- Notification will be made to the Acoustic Adviser/Environmental Representative and EPA (if the site is subject to an Environmental Protection Licence) as soon as practicable. We note, however that the site is not subject to an Environmental Protection Licence.
- Notification of any residential development in proximity to the site (Receivers R1, R2 and R3 for the South Site, R4 and R5 for the North Site) as soon as practicable.

8.2 Changes in Permitted Work Hours

Condition E44 outlines situations in which works can be conducted outside of the permitted construction hours (as per condition E36).

Circumstances in which a change in work hours are permitted are:

- Delivery of material to site if required by Police or similar for safety reasons.
- In case of emergency (in which case E45 (see section 9.1) applies).
- If permitted under an Environmental Protection Licence.
- If the associated noise and vibration complies with the EPA documents *Interim Construction Noise Guidelines* (after hours criteria) and *Assessing Vibration: A Technical Guideline* are met. If this is proposed, the expected compliance with this would be determined by review of the proposed works by an acoustic consultant.
- If approved pursuant to an Outside of Hours Work Protocol (see below).

8.3 Outside of Hours Work Protocol (Condition of Approval E47).

Condition of consent E47 sets out the requirements for the preparation of an Outside of Hours Work Protocol. We note that there is already Outside of Hours Work Strategy/Protocol in place for this project (*City & Southwest Out of Hours Work Strategy/Protocol*, ref SM-17-00005396 version 5.1 dated 11/5/2020).

The *Outside of Hours Work Protocol* requires that the Contractor provide a statement to justify any proposed outside of hours works. This statement is submitted to Sydney Metro/Acoustics Adviser/Environmental Representative who:

- Assesses the noise and vibration risk level (low and high risk, relating the probability of exceedance of the after hours construction noise goals, as set out in Table 5.6, which is based on the EPA ICNG and Planning Approval condition E41/E42).
- The Acoustic Adviser/Environmental Representative is then able to endorse the application if
 - The activities are deemed low risk or
 - They are considered high risk but cease at 9pm.
- In the event there are high risk activities they must be conducted after 9pm, this would have to be approved by the Secretary or under an Environmental Protection Licence.

Any Outside of Hours application/statement by the Contractor is to address:

- The activities proposed.
- The noise and vibration goals that apply at the time of the proposed works.
- Identification of reasonable and feasible noise and vibration mitigation that is proposed, inclusive of proposed community notification and verification measurements.
- Identify if despite the mitigation, the night time noise goals are still expected to exceed the criteria in Table 5.6.

In the event that outside of hours works is required, is high risk and must be conducted after 9pm, section 8.3.1 will apply.

8.3.1 Short-term OOHW residual impacts

Construction of the Pitt Street Station is anticipated to be largely carried out during standard construction hours, however it is necessary to consider the possibility of the need for late night, noisy works.

Night time construction noise management levels are:

- 58dB(A)_{L_{eq}(15min)} measured externally (ICNG requirement).
- 45dB(A)_{L_{eq}(15min)} measured internally (Approval Condition 42 requirement).

All reasonable and feasible mitigation must be explored mitigate noise to meet these management levels. A residual impact occurs when there will still be an exceedance of the Noise Management Levels, despite applying reasonable and feasible mitigation.

Short term residual impacts are managed based on the level of exceedance of the management level:

- For noise exceeding the Noise Management Level but below the “alternative accommodation: trigger, management measures are to include consideration of Respite Offers. Given this project is essentially following on from works that have been undertaken as part of the TSE contract, a consistent approach to the management measures for residual noise impacts will be adopted for Pitt St to that which has been undertaken by the TSE Contractor. Where noise emissions exceed rating background noise levels by 20dB(A), respite offers will be made (as is consistent with the Sydney Metro Southwest Construction Noise and Vibration Strategy). These offers will be the subject of negotiation with the specific occupants, however could include provision of ear plugs, vouchers or respite periods (breaks in work).
- The noise level exceeds Noise Management Level AND the “alternative accommodation” trigger - consideration will be given to offering alternative accommodation for the duration of the noise or vibration impact where this occurs over more than 2 consecutive nights.

9 Consultation and Complaints Handling

9.1 Consultation

9.1.1 Communication Generally

Communication with nearby land users to be conducted as follows:

- It is to include interested parties from adjacent developments.
- Conduct a meeting prior to commencement of works and agree as to the frequency of ongoing meetings from that point on. This consultation will typically update interested parties of upcoming works and get ongoing feedback on noise/vibration impacts.
- Provide interested parties of 24 hour contact details to enable complaints to be made.

9.1.2 Communication Required By Conditions of Consent.

Conditions of Approval require notification of neighbours as follows:

- Conditions E29 – owners of properties at risk of cosmetic building damage.

These properties have been identified (based on anticipated noise impacts as detailed in section 6) as follows:

- Prior to commencement of works - Residential Receivers R4 and commercial Receivers C1, C2, C5.
- In the event that vibratory compaction or use of hydraulic hammers is proposed within the North/South Sites – Residential Receivers R1, R3, R4 and Commercial Receivers C1, C2, C5.
- In the event that vibratory compaction or use of hydraulic hammers is proposed within the Station, below ground between the North and South Sites –Commercial Receivers C3 and C7.

Initial communication to be provided by letterbox drop, with ongoing consultation to be agreed between the parties.

- Condition E33. Nearby receivers to the sites are (as identified in section 2) are to be consulted when determining noise mitigation strategies in any Construction Noise and Vibration Impact Statements.
- Condition E38 – owners of properties at risk of experiencing internal noise levels exceeding $60\text{dB(A)}_{L_{\text{eq}}(15\text{min})}$.

These properties have been identified as follows:

- Residential Receivers R1, R3, R4 and Commercial Receivers C1, C2, C5.

Initial communication to be provided by letterbox drop, with ongoing consultation to be agreed between the parties.

While notification of these property owners is required, it is unlikely that respite periods will be required. This is because the works with a potential to create noise levels of this order are limited to use of concrete vibrators or powered hand tools in very close proximity to the site/receiver common boundary. It is unlikely that the noise would exceed 60dB(A) for more than 6.5 hours per day (the trigger for respite periods in condition E38. This will be determined in the Construction Noise and Vibration Impact Statement for the site.

Consultation with affected receivers identified above will take place prior to the works commencing and will include discussion on mitigation measures including agreed respite periods (if any) and community contact details.

9.1.3 Consultation with Government Agencies

Approval Condition C3 requires relevant council(s) to be consulted for each CEMP sub-plan.

Agencies to be consulted are as follows:

- City of Sydney Council (with respect to this Construction Noise and Vibration Management Sub-Plan).
- EPA (with respect to this Construction Noise and Vibration Management Sub-Plan and Noise and Vibration Monitoring Program).

Consultation with these agencies has been commenced by CPB. Outcome of consultation to be included in Appendix I of the CEMP. This Construction Noise and Vibration Management Sub-Plan (once finalised) will be provided to the above agencies.

9.2 Complaints Management

A complaint is defined as any communication received from a stakeholder expressing dissatisfaction. This is a purposely broad definition and is used to ensure that matters of concern to stakeholders are addressed promptly.

Stakeholders will be able to register enquiries and complaints through several channels including:

- 24-hour, 1800 community information line (1800 171 386 which is run by Sydney Metro for the Project as a whole)
- Dedicated website www.sydneymetro.info

- Post
- Sydney Metro and TSE complaints systems (if operational during construction phase).

In the event that Sydney Metro Complaint records are available to CPB, these will be utilised when reviewing any complaint.

Specific details on the above communication channels are made available within the project Community Communication Strategy. Complaints may be received directly or referred by Sydney Metro or other contractors.

All calls to the 1800-number will be answered and responded to 24 hours a day, seven days a week. A call centre reception service managed by Sydney Metro records contact details and basic information about the nature and location of the complaint. The complainant is made aware that an on-call officer will contact them shortly to address the issue. With this approach, the caller is not placed on hold or referred to a recorded message. If the rostered officer cannot receive a call (e.g. they are on the phone responding to another caller), calls can be directed to an alternate rostered on-call officer. Translators will be arranged if a stakeholder or community member is unable to communicate their concerns in English. Email and other contact options will assist those with disabilities.

Specific protocols and procedures have been arranged to ensure a consistent approach to managing enquires and complaints, including systems for recording and monitoring stakeholder contact. All staff and work crews will be informed that all contact from the community must be referred to the community relations team for action. To facilitate this everyone will be provided with community contact cards to direct enquiries to the community information line or email address.

Each stakeholder contact is an opportunity to build understanding about the Project and allay concerns. Complaints provide important feedback to improve project processes and mitigation measures to avoid or minimise further complaints. All reasonable measures will be taken to prevent the reoccurrence of stakeholder and community complaints. The strategic approach to managing complaints consists of:

- Courtesy
- Accessibility
- Responsiveness
- Delegation of authority to resolve the issue
- Access to accurate information.

All employees and subcontractors are required to respond to stakeholders with courtesy and professionalism. This will be reinforced during Project inductions. Specific toolbox talks will further consolidate the approach.

The Contractor will immediately report all environmental complaints to the Project Environment Manager and relevant Environment Co-ordinator to confirm any required action, including but not limited to:

- Noise, and/or vibration monitoring.
- Subject to monitoring results consideration of options to reduce impacts including:
 - Scheduling activities to minimise impacts
 - Targeted inspection to determine if it is reasonable and to install additional controls (i.e. noise barriers)
 - Respite offers (for example, coffee vouchers, movie tickets, meal vouchers or alternative accommodation)
- Site visit with complainant to assist in understanding our operations and mitigation strategies.

The complaint is escalated to the Contractor Project Director and Sydney Metro representative if the complainant remains unsatisfied. Further escalation will be in line with the Sydney Metro Overarching Community Communications Strategy (Sydney Metro Document Reference: A5732897) and the Sydney Metro Construction Complaints Management System and may include the:

- Environmental Representative required under Project Planning Approval Condition A22,
- Acoustic Advisor required under Project Planning Approval Condition A25,
- Community Complaints Commissioner required under Project Planning Approval Conditions B11 to B14 or
- Independent Property Impact Assessment Panel (IPIAP) required under Project Planning Approval Condition E62 as appropriate.

10 Noise Impacts on Workers (Condition E43)

Condition E43 prohibits worker exposure to noise levels greater than $85\text{dB(A)}L_{\text{eq}(8\text{hr})}$ (being a National Standard with respect to occupational noise environments).

While the level of exposure is unlikely to occur, workers using or in close proximity to powered hand tools or machinery will be provided with the ability to implement hearing protection (ear plugs/muffs).

Management of worksite noise to be in accordance with the projects Workplace Health and Safety Plan.

11 Conclusion

This Construction Noise and Vibration Management Sub Plan has been prepared by Renzo Tonin & Associates for the proposed Pitt Street Metro Station Box development.

This report:

- Addresses the Noise and Vibration Sub-Plan reporting requirements, as set out in condition C4.
- Provides a site specific construction noise and vibration assessment and mitigation methods, as required by condition E35.
- Identifies procedures with respect to ongoing noise and vibration monitoring, community consultation/complaints handling, procedures for outside of hours works, as required by Conditions of Approval.

In adopting this report:

- The construction noise and vibration management goals of the EIS documentation are met and
- The requirements of the conditions of approval are met.

In satisfaction of condition E33, Subsequent to this Construction Noise and Vibration Management Sub-Plan, site specific Construction Noise and Vibration Impact Statements are to be prepared quantifying noise impacts from individual construction activities and determining site specific noise mitigation measures and identifying the need for respite periods where triggers as per Conditions of Approval E37 and E38. It is anticipate that there will be two Construction Noise and Vibration Impact Statements – one for early works and one for main works.

APPENDIX A Glossary of terminology

The following is a brief description of the technical terms used to describe noise to assist in understanding the technical issues presented.

Adverse weather	Weather effects that enhance noise (that is, wind and temperature inversions) that occur at a site for a significant period of time (that is, wind occurring more than 30% of the time in any assessment period in any season and/or temperature inversions occurring more than 30% of the nights in winter).
Ambient noise	The all-encompassing noise associated within a given environment at a given time, usually composed of sound from all sources near and far.
Assessment period	The period in a day over which assessments are made.
Assessment point	A point at which noise measurements are taken or estimated. A point at which noise measurements are taken or estimated.
Background noise	Background noise is the term used to describe the underlying level of noise present in the ambient noise, measured in the absence of the noise under investigation, when extraneous noise is removed. It is described as the average of the minimum noise levels measured on a sound level meter and is measured statistically as the A-weighted noise level exceeded for ninety percent of a sample period. This is represented as the L90 noise level (see below).
Decibel [dB]	The units that sound is measured in. The following are examples of the decibel readings of every day sounds: 0dB The faintest sound we can hear 30dB A quiet library or in a quiet location in the country 45dB Typical office space. Ambience in the city at night 60dB CBD mall at lunch time 70dB The sound of a car passing on the street 80dB Loud music played at home 90dB The sound of a truck passing on the street 100dB The sound of a rock band 115dB Limit of sound permitted in industry 120dB Deafening
dB(A)	A-weighted decibels. The A-weighting noise filter simulates the response of the human ear at relatively low levels, where the ear is not as effective in hearing low frequency sounds as it is in hearing high frequency sounds. That is, low frequency sounds of the same dB level are not heard as loud as high frequency sounds. The sound level meter replicates the human response of the ear by using an electronic filter which is called the "A" filter. A sound level measured with this filter switched on is denoted as dB(A). Practically all noise is measured using the A filter.
dB(C)	C-weighted decibels. The C-weighting noise filter simulates the response of the human ear at relatively high levels, where the human ear is nearly equally effective at hearing from mid-low frequency (63Hz) to mid-high frequency (4kHz), but is less effective outside these frequencies.
Frequency	Frequency is synonymous to pitch. Sounds have a pitch which is peculiar to the nature of the sound generator. For example, the sound of a tiny bell has a high pitch and the sound of a bass drum has a low pitch. Frequency or pitch can be measured on a scale in units of Hertz or Hz.
Impulsive noise	Having a high peak of short duration or a sequence of such peaks. A sequence of impulses in rapid succession is termed repetitive impulsive noise.
Intermittent noise	The level suddenly drops to that of the background noise several times during the period of observation. The time during which the noise remains at levels different from that of the ambient is one second or more.
L _{Max}	The maximum sound pressure level measured over a given period.
L _{Min}	The minimum sound pressure level measured over a given period.

L ₁	The sound pressure level that is exceeded for 1% of the time for which the given sound is measured.
L ₁₀	The sound pressure level that is exceeded for 10% of the time for which the given sound is measured.
L ₉₀	The level of noise exceeded for 90% of the time. The bottom 10% of the sample is the L90 noise level expressed in units of dB(A).
L _{eq}	The "equivalent noise level" is the summation of noise events and integrated over a selected period of time.
Reflection	Sound wave changed in direction of propagation due to a solid object obscuring its path.
SEL	Sound Exposure Level (SEL) is the constant sound level which, if maintained for a period of 1 second would have the same acoustic energy as the measured noise event. SEL noise measurements are useful as they can be converted to obtain L _{eq} sound levels over any period of time and can be used for predicting noise at various locations.
Sound	A fluctuation of air pressure which is propagated as a wave through air.
Sound absorption	The ability of a material to absorb sound energy through its conversion into thermal energy.
Sound level meter	An instrument consisting of a microphone, amplifier and indicating device, having a declared performance and designed to measure sound pressure levels.
Sound pressure level	The level of noise, usually expressed in decibels, as measured by a standard sound level meter with a microphone.
Sound power level	Ten times the logarithm to the base 10 of the ratio of the sound power of the source to the reference sound power.
Tonal noise	Containing a prominent frequency and characterised by a definite pitch.

APPENDIX B Specification for Construction Noise Monitoring

B.1 Scope

This document specifies methods for undertaking noise monitoring during the construction phase of the project.

B.2 Referenced Standards and Guidelines

- Australian Standard AS IEC 61672.1 2004 '*Electroacoustics - Sound Level Meters - Specifications*'
- Australian Standard AS 1259.2-1990 '*Acoustics - Sound Level Meters*'
- Australian Standard AS 1055-1997 '*Acoustics - Description and Measurement of Environmental Noise*'
- NSW '*Interim Construction Noise Guideline*' (Department of Environment and Climate Change 2009)
- NSW '*Industrial Noise Policy*' (Environment Protection Authority 2000)

B.3 Testing Procedures

The following procedures are to be followed by personnel suitably qualified and experienced in undertaking acoustic measurements.

All noise monitoring equipment used must be at least Type 2 instruments as described in AS 1259.2-1990 and calibrated to standards that are traceable to Australian Physical Standards held by the National Measurement Laboratory (CSIRO Division of Applied Physics). The calibration of the monitoring equipment shall also be checked in the field before and after the noise measurement period, and in the case of long-term noise monitoring, calibration levels shall be checked at minimum weekly intervals.

Long-term noise monitoring equipment or Noise Loggers, consist of sound level meters housed in weather resistant enclosures. The operator may retrieve the data at the conclusion of each monitoring period in person or remotely if the logger is fitted with mobile communications.

All environmental noise measurements shall be taken with the following meter settings:

- Time constant: FAST (ie 125 milliseconds)
- Frequency weightings: A-weighting
- Sample period: 15 minutes

All outdoor noise measurements shall be undertaken with a windscreen over the microphone. Windscreens reduce wind noise at the microphones.

Measurements of noise should be disregarded when it is raining and/or the wind speed is greater than 5m/s (18km/h).

B.4 Long-Term (Unattended) Noise Monitoring

Noise monitoring shall be undertaken in accordance with the environmental noise measurement Noise monitoring equipment shall be placed at positions which have unobstructed views of general site activities, while acoustically shielded as much as possible from non-construction site noise (eg. road traffic, rail noise and other surrounding noise).

Noise levels are to be recorded at a minimum rate of 10 samples per second. Every 15 minutes, the data is to be processed statistically and stored in memory. The minimum range of noise metrics to be stored in memory for later retrieval is the following A-weighted noise levels: L_{min} , L_{90} , L_{eq} , L_{10} , L_1 and L_{max} .

Where the noise monitors are placed within 3.5 metres of building facades, walls or cliffs, then a reflection correction of up to -2.5dB(A) shall be applied to remove the effect of increased noise due to sound reflections from such structures. Presence of impulsive and tonal noise, and subsequent penalty, is to be determined in accordance with the provisions of Table 4.1 Modifying Factor Corrections of INP. Attended measurements may be required to determine modifying factor corrections in the first instance.

Meteorological conditions including wind velocity, wind direction and rainfall shall be monitored over the entire noise monitoring period, either on site or recorded from the nearest weather station to the project site.

B.5 Short-Term (Attended) Monitoring

Where noise complaints or requests from relevant authorities are received, attended short-term noise monitoring shall also be conducted at the requested location and at any other relevant noise receiver location with closest proximity to the construction activities.

Short-term noise monitoring shall be used to supplement long-term noise monitoring undertaken at nearby locations, and to establish whether noise levels measured by the long-term noise monitors are determined by construction activities carried out on site.

All attended short-term noise monitoring shall be recorded over 15 minute sample intervals. Noise levels are to be recorded at a minimum rate of 10 samples per second. Every 15 minutes, the data is to be processed statistically and stored in memory. The minimum range of noise metrics to be stored in memory and reported is the following A-weighted noise levels: L_{min} , L_{90} , L_{eq} , L_{10} , L_1 and L_{max} .

In addition to measuring and reporting overall A-weighted noise levels, statistical L_{90} , L_{eq} , L_{10} noise levels shall be measured and reported in third-octave band frequencies from 31.5Hz to 8kHz.

Where the noise monitors are placed within 3.5 metres of building facades, walls or cliffs, then a reflection correction of up to -2.5dB(A) shall be applied to remove the effect of increased noise due to

sound reflections from such structures. Presence of impulsive and tonal noise, and subsequent penalty, is to be determined in accordance with the provisions of Table 4.1 Modifying Factor Corrections of INP.

Outdoor noise monitoring is to be undertaken with the microphone at a height of 1.2 – 1.5m from the ground, unless noise measurements are taken from a balcony or veranda, in which case the same microphone height shall apply off the floor.

Noise measurements inside buildings should be at least 1m from the walls or other major reflecting surfaces, 1.2 m to 1.5m above the floor, and 1.5m from windows.

Noise monitoring shall be undertaken in accordance with the environmental noise measurement requirements stipulated in the reference standards and documents listed above.

The following information shall be recorded:

- Date and time of measurements;
- Type and model number of instrumentation;
- Results of field calibration checks before and after measurements;
- Description of the time aspects of each measurement (ie sample times, measurement time intervals and time of day);
- Sketch map of area;
- Measurement location details and number of measurements at each location;
- Weather conditions during measurements, including wind velocity, wind direction, temperature, relative humidity and cloud cover;
- Operation and load conditions of the noise sources under investigation;
- An estimate of the construction noise generated by the site. Any estimation to take into account:
 - Any adjustment made for presence or absence of nearby reflecting surfaces; and
 - The contribution of noise due to other sources (eg. traffic, aircraft, trains, dogs barking, insects, etc.).

APPENDIX C Specification for Construction Vibration Monitoring

C.1 Scope

This document specifies methods for undertaking vibration monitoring during the construction phase of the project, where it may be deemed to be required. The vibration monitoring shall be conducted in accordance with DIN 4150.3 Structural Vibration in Buildings – Effects on Structures.

Monitoring specification have been developed with reference to Appendix A of Sydney Metro City Southwest Construction Noise and Vibration Strategy.

C.2 Referenced Standards and Guidelines

- AS 2775 Mechanical Mounting of Accelerometers
- AS 2670.2 Part 2: Evaluation of human exposure to whole body vibration
- DECC NSW Assessing Vibration: A Technical Guideline
- DIN 4150.3 Structural Vibration in Buildings – Effects on Structures
- BS 7385:1 Evaluation and Measurement for Vibration in Buildings – Part 1: Guide for measurement of vibrations and evaluation of their effects on buildings
- BS 7385:2 Evaluation and Measurement for Vibration in Buildings – Part 2: Guide to Damage Levels from Groundborne Vibration
- ISO 4866 Mechanical Vibration & Shock – Vibration of Buildings – Guidelines for the Management of the Vibrations and Evaluation of their Effects on Buildings

C.3 Testing Procedures

The following procedures are to be followed by personnel suitably qualified and experienced in undertaking vibration measurements.

All vibration monitoring equipment used must be calibrated at least once every two years to standards that are traceable to Australian Physical Standards held by the National Measurement Laboratory (CSIRO Division of Applied Physics). The monitoring system should also have a measurement frequency range down to 1Hz.

C.3.1 Short-Term (Attended) Monitoring

Vibration monitoring shall be undertaken over the following period(s):

- for plant operating within the 'buffer distances', during the commencement of use of each plant on site until site-specific minimum working distances are established; and

- for complaints or requests from relevant authorities, during the of use of requested plant until site-specific minimum working distances are established.

All attended short-term vibration monitoring shall be recorded over 15 minute sample intervals. The magnitude of vibration is to be recorded at a minimum rate of 10 samples per second. The minimum range of vibration metrics to be stored in memory and reported are the following:

- Vibration Dose Values (VDVs)
- root-mean-square (rms) – maximums and statistical levels
- peak-particle velocity (ppv) – maximums and statistical levels.

In addition to measuring and reporting overall vibration, statistical vibration shall also be measured and reported in third-octave band frequencies from 1Hz to 250Hz.

Vibration monitoring shall be undertaken in accordance with the vibration measurement requirements stipulated in the reference Standards and documents listed above. The following notes of importance are included here:

- vibration monitoring equipment shall be placed outside at the footings or foundations of the building of interest, closest to the vibrating plant;
- the surface should be solid and rigid in order to best represent the vibration entering the structure of the building under investigation;
- the vibration sensor or transducer shall not be mounted on loose tiles, loose gravel or other resilient surfaces;
- the vibration sensor or transducer shall be directly mounted to the vibrating surface using either bees wax or a magnetic mounting plate onto a steel washer, plate or bracket which shall be either fastened or glued to the surface of interest; and
- where a suitable mounting surface is unavailable, then a metal stake of at least 300mm in length shall be driven into solid ground adjacent to the building of interest, and the vibration sensor or transducer shall be mounted on that.

The following information shall be recorded:

- Date and time of measurements;
- Type and model number of instrumentation;
- Description of the time aspects of each measurement (i.e. sample times, measurement time intervals and time of day);
- Sketch map of area;
- Measurement location details and number of measurements at each location;

- Operation and load conditions of the vibrating plant under investigation; and
- Possible vibration influences from other sources (eg domestic vibrations, other mechanical plant, traffic, etc).

C.3.2 Long-Term (Unattended) Monitoring

Vibration monitoring shall be undertaken at vibration sensitive locations determined to fall within the 'minimum working distances' established for each item of plant during the commencement of use of each plant on site.

Vibration monitoring shall be undertaken over the following period(s):

- continuously whilst the vibrating plant is operational within the pre-determined 'minimum working distance' from the potentially affected building.

Vibration monitoring equipment shall be placed outside at the footings or foundations of the building of interest, closest to the vibrating plant.

Vibration is to be recorded at a minimum rate of 10 samples per second. The data is to be processed statistically and stored in memory. The minimum range of vibration metrics to be stored in memory for later retrieval is the following:

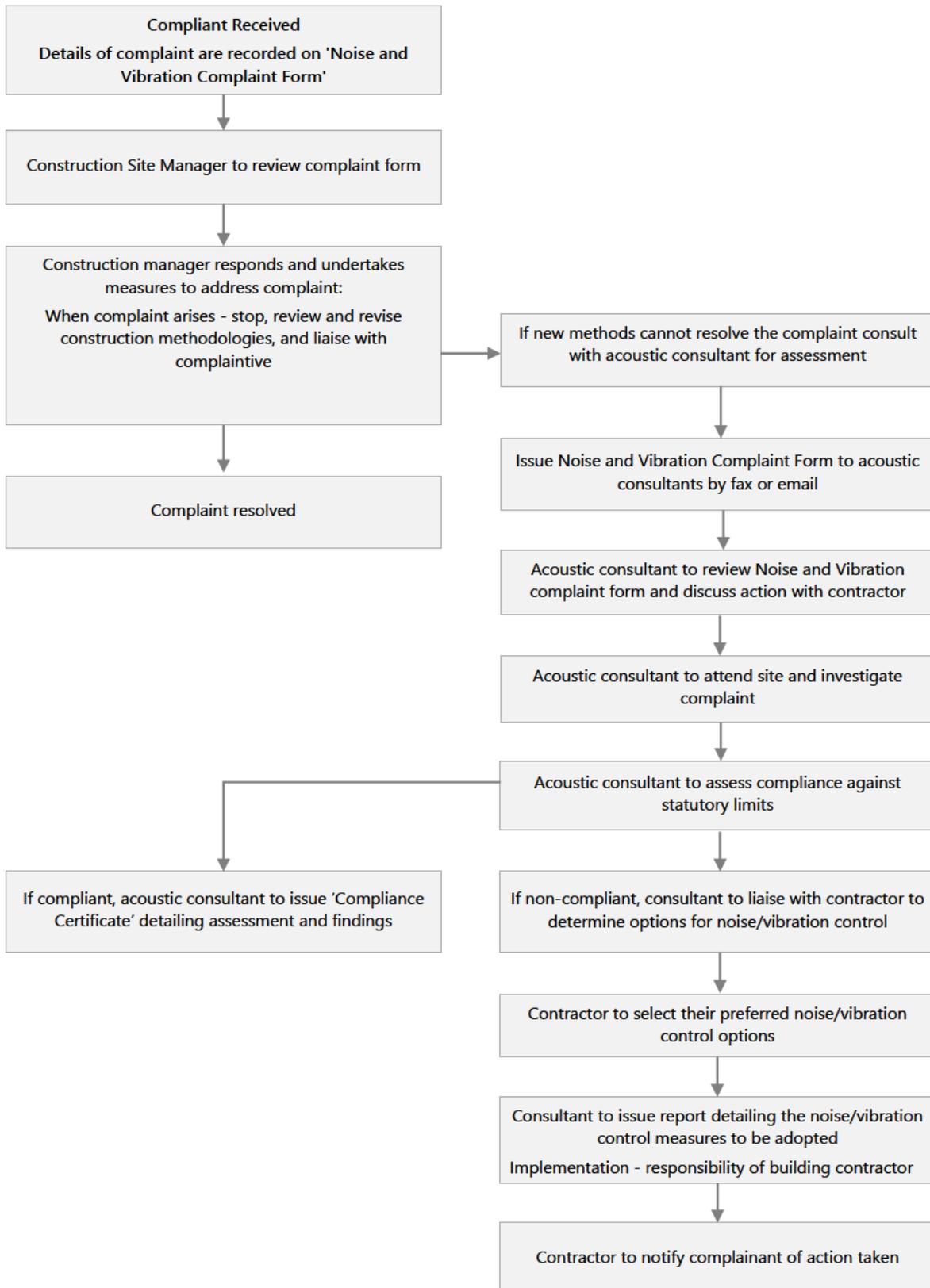
- Vibration Dose Values (VDVs)
- vector-sum root-mean-square (rms) – maximums and statistical metrics; and
- vector-sum peak-particle velocity (ppv) – maximums and statistical metrics.

Vibration monitoring shall be undertaken in accordance with the vibration measurement requirements stipulated in the reference Standards and documents listed above. The following notes of importance are included here:

- vibration monitoring equipment shall be placed outside at the footings or foundations of the building of interest, closest to the vibrating plant;
- the surface should be solid and rigid in order to best represent the vibration entering the structure of the building under investigation;
- the vibration sensor or transducer shall not be mounted on loose tiles, loose gravel or other resilient surfaces;
- the vibration sensor or transducer shall be directly mounted to the vibrating surface using bees wax or a magnetic mounting plate onto a steel plate or bracket either fastened or glued to the surface of interest;
- where a suitable mounting surface is unavailable, then a metal stake of at least 300mm in length shall be driven into solid ground adjacent to the building of interest, and the vibration sensor or transducer shall be mounted on that; and

- a flashing light alarm should be attached in a visible position from the construction work area. When vibration exceeds the set threshold, the light will flash notifying the operator that works in that area should cease immediately.

APPENDIX D Noise/Vibration Complaint Management Procedure



NOISE/ VIBRATION COMPLAINT FORM (Example)

Project title: _____ **Date:** _____

Site contractor: _____ **Phone:** _____

Site contact: _____ **Email:** _____

Complaint details

Received by (circle): Phone / Email / In person / Other: _____

Name: _____ **H Ph:** _____

Address: _____ **W Ph** _____

Email: _____ **M Ph** _____

Describe when the problem occurred (date and time), what equipment caused the complaint (if known) and where person was standing when he/she experienced the noise/vibration:

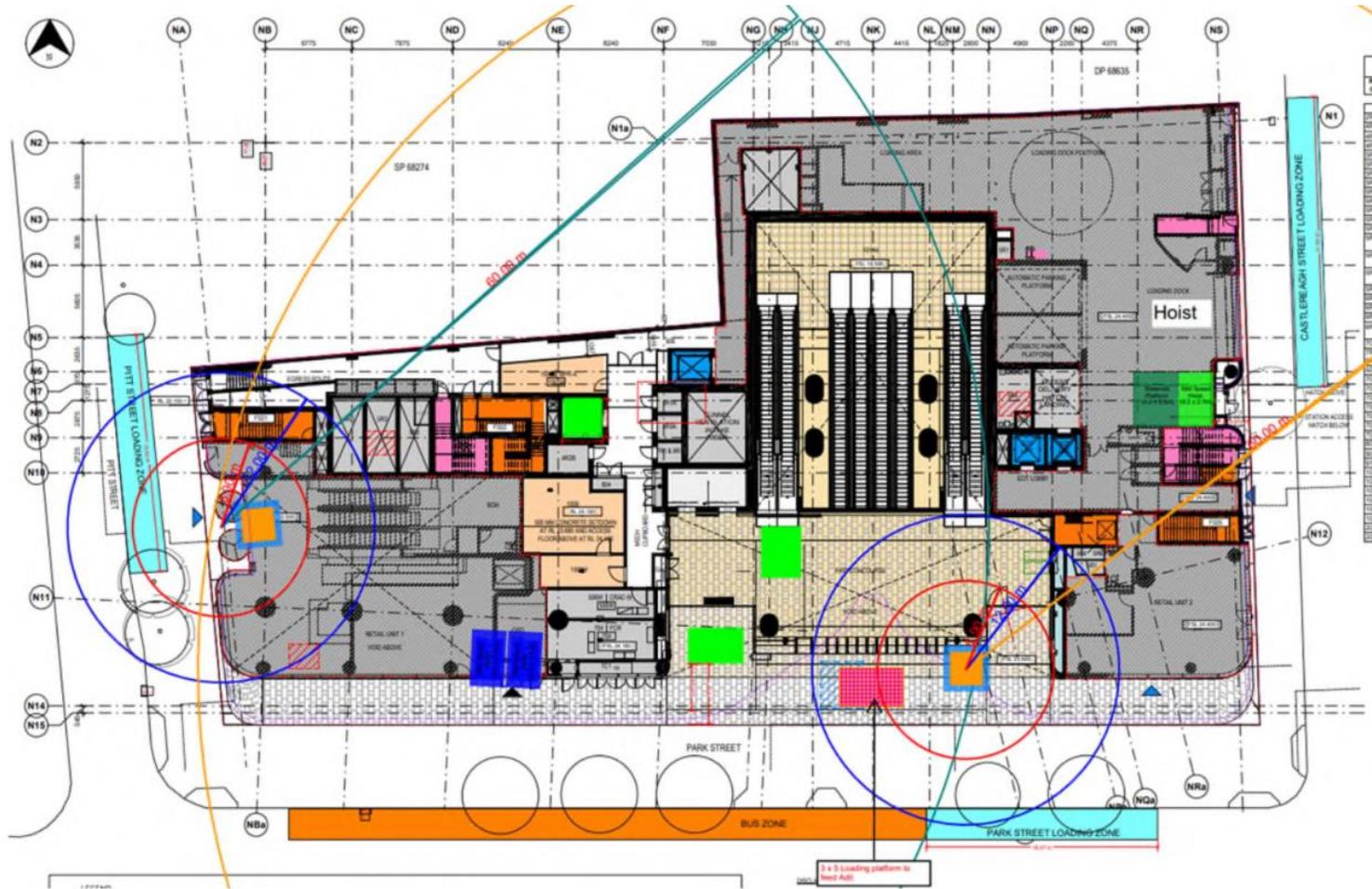
Investigation

Question foreman responsible on site and obtain information on what equipment or processes would most likely have caused the complaint:

Following approval from the Project Manager, email/fax this form to Renzo Tonin & Associates

APPENDIX E Construction Site Plan

North Site



South Site



APPENDIX F Construction Noise and Vibration Monitoring Program

The Construction Noise and Vibration Monitoring Program is to address conditions of consent C9-17:

CONSTRUCTION MONITORING PROGRAMS

- C9 The following **Construction Monitoring Programs** must be prepared in consultation with the relevant government agencies identified for each **Construction Monitoring Program** to compare actual performance of construction of the CSSI against predicted performance.

	Required Construction Monitoring Programs	Relevant government agencies to be consulted for each Construction Monitoring Program
(a)	Noise and Vibration	EPA and Relevant Council(s)
(b)	Blasting	EPA and Relevant Council(s)
(c)	Water Quality	EPA and Relevant Council(s)
(d)	Groundwater	DPI Water

- C10 Each **Construction Monitoring Program** must provide:

- (a) details of baseline data available;
- (b) details of baseline data to be obtained and when;
- (c) details of all monitoring of the project to be undertaken;
- (d) the parameters of the project to be monitored;
- (e) the frequency of monitoring to be undertaken;
- (f) the location of monitoring;
- (g) the reporting of monitoring results;
- (h) procedures to identify and implement additional mitigation measures where results of monitoring are unsatisfactory; and
- (i) any consultation to be undertaken in relation to the monitoring programs.

- C11 The **Noise and Vibration Construction Monitoring Program** and **Blast Construction Monitoring Program** must include provision of real time noise and vibration monitoring data. The real time data must be available to the construction team, Proponent, ER and AA **in real time**. The Department and EPA must be provided with access to the real time monitoring data **in real time**.

- C12 The **Construction Monitoring Programs** must be developed in consultation with relevant government agencies as identified in Condition C9 of this approval and must include, to the written satisfaction of the Secretary, information requested by an agency to be included in a **Construction Monitoring Programs** during such consultation. Details of all information requested by an agency including copies of all correspondence from those agencies, must be provided with the relevant **Construction Monitoring Program**.

- C13 The **Construction Monitoring Programs** must be endorsed by the ER (or AA in regards to the **Noise and Vibration Construction Monitoring Program**) and then submitted to the Secretary for approval at least one (1) month before commencement of construction or within another timeframe agreed with the Secretary.

- C14 Construction must not commence until the Secretary has approved all of the required **Construction Monitoring Programs**, and all relevant baseline data for the specific construction activity has been collected.

- C15 The **Construction Monitoring Programs**, as approved by the Secretary including any minor amendments approved by the ER (or AA in regards to the **Noise and Vibration Construction Monitoring Program**), must be implemented for the duration of construction and for any longer period set out in the monitoring program or specified by the Secretary, whichever is the greater.
- C16 The results of the **Construction Monitoring Programs** must be submitted to the Secretary for information, and relevant regulatory agencies, for information in the form of a **Construction Monitoring Report** at the frequency identified in the relevant **Construction Monitoring Program**.
- C17 Where a relevant **CEMP sub-plan** exists, the relevant **Construction Monitoring Program** may be incorporated into that **CEMP sub-plan**.

The monitoring programs below have been developed with reference to the *Sydney Metro City Southwest Construction Noise and Vibration Strategy v4* Appendix A.

Noise Monitoring Program.

- Unattended noise monitoring:
 - Parameters to be measured are $L_{eq(15min)}$, L_{90} and (if measuring at night time) L_{max} .
 - Noise monitors to be located, at a minimum, at R1 and R4 (the closest noise receivers to the site - refer to property identification in section 2). Precise location to be shown in aerial photo in any monitoring report. Monitoring locations to be reevaluated in production of CNVISs based on specific construction scenarios.
 - Monitoring to commence 2 days before the start of detailed excavation. Monitors to be retained, at a minimum, until completion of excavation and capping beam demolition. Monitoring to cease following approval by Acoustic Consultant, ER and AA.
 - Equipment technical requirements are detailed in Appendix B.
 - Noise monitoring results are to be made available in real-time to Sydney Metro, ER, AA, DPIE and EPA (access via website link – website link to be created as part of CNVISs for specific monitor locations/work activities).
 - A detailed monthly N/V Report is provided by Renzo Tonin to CPB, which is issued to the ER and AA for information. Information from this report is then collated and summarised into a Monitoring Report which is issued to SM, ER, AA, EPA and City of Sydney as well as DPIE on a six-monthly basis.
 - In the event that noise logging indicates a significant departure in ambient conditions measured previously, as reported in Section 4, noise emission goals to be updated.
- Attended noise monitoring:
 - Attended construction noise measurements are recommended at the commencement of key activities (detailed excavation, concrete pumping/use of vibrators, formworking). Location to be measured, at a minimum, are R1, R2, R3, R4, C2 and C5.
 - Attended measurement of ground borne noise to be conducted at C5 during detailed excavation of the north site.
- Reporting to present:
 - Relevant equipment details such as make, model, serial number, date of last NATA accredited laboratory calibration, photo of equipment in use.

- Details of baseline data (L_{90} and $L_{eq(15min)}$) as available in EIS documentation (or subsequent data if available)..
- Details of ambient (L_{90} and $L_{eq(15min)}$) and construction noise ($L_{eq(15min)}$) as measured during the construction monitoring period. Commentary with respect to other (non-construction) noise source or meteorological conditions if relevant (to the extent that they impact any construction noise measurement).
- Assess noise levels with respect to the criteria identified in section 5.1.5.
- In the event of exceedances of criteria, and if the exceedances are expected to be ongoing, identify further noise mitigation measures to be implemented.

At the completion of the construction unattended noise and vibration monitoring the results are to be provided to Sydney Metro on a disk / drive.

Ground borne noise monitoring is not proposed and tunnelling works at the site are complete and the only vibration intensive activity proposed are from surface works.

Vibration Monitoring Program

- Parameters to be measured are Peak Particle Velocity in any orthogonal direction.
- Vibration monitoring shall be undertaken:
 - at the commencement of operation for each plant or activity on site, which has the potential to generate significant vibration levels, so to refine the indicative minimum working distances and provide a site-specific table of minimum working distances
 - vibration sensitive locations determined to fall within the 'buffer distances' established for each item of plant. Areas likely to require vibration monitoring are identified in this report; and
 - where vibration complaints or requests from relevant authorities, at the requested location and at any other relevant vibration receiver location with closest proximity to the.
 - This is expected to be required recommended only for the detailed excavation period. Other works are not expected to generate high levels of vibration. This would be determined when conducting detailed review of all construction methods, as will occur in the Main Works Construction Noise and Vibration Impact Statement.
- Subject to access, vibration monitors will be installed at the heritage buildings sharing a common boundary with the site (Receivers C1, C2, C5 and R4). Method of securing monitor/geophone to be reviewed by Heritage Consultant if attaching to Heritage fabric, in satisfaction of Condition of Approval E31.
- In the event that use of hydraulic hammers or vibratory rollers is required, vibration monitoring will be conducted at receivers R1 and R3 in addition to those detailed above. Given R1 and R3 are not heritage buildings, monitor can potentially be conducted by attended measurement at the commencement of detailed excavation, and ongoing monitoring conducted only in the event that vibration levels appear likely to reach annoyance levels.
- Monitoring to commence 2 days before the start of detailed excavation.

- In the event that the construction works produce vibration levels well below the triggers outlined above, and there is no more vibration intensive equipment proposed, monitoring can cease (to be determined by Acoustic Consultant and approved by ER/AA).
- Equipment technical requirements are detailed in Appendix C.
- Vibration monitoring results are to be made available in real-time to Sydney Metro, ER, AA DPIE and EPA (access via website link – website link to be created as part of CNVISs for specific monitor locations/work activities).
- Monitors will have real time SMS warning capability. SMS warning notification will be sent to the Contractor and their Acoustic Consultant in the event that the following thresholds are reached:
 - 2.5mm/s Peak Particle Velocity for monitors at a Heritage Building.
 - 8mm/s Peak Particle Velocity for monitors on other buildings.
 - In the event of exceedance of these triggers, monitor is to recorded waveforms.These triggers are more stringent than the thresholds adopted in section 5.5 of the SM CNVS.
- A detailed monthly N/V Report is provided by Renzo Tonin to CPB, which is issued to the ER and AA for information. Information from this report is then collated and summarised into a Monitoring Report which is issued to SM, ER, AA, EPA and City of Sydney as well as DPIE on a quarterly basis.
- Reporting to present:
 - Monitoring Location.
 - Relevant equipment details such as make, model, serial number, date of last NATA accredited laboratory calibration, photo of equipment in use.
 - Graphs of Peak Particle Velocity as measured during the construction monitoring period.
 - Assess noise levels with respect to the criteria identified in tables 5.7 and 5.9.
 - In the event of exceedances of criteria, and if the exceedances are expected to be ongoing, identify further noise mitigation measures to be implemented.
 - At the completion of the construction noise and vibration monitoring the results are to be provided to Sydney Metro on a disk / drive.

APPENDIX G Noise Logging Data

APPENDIX H Revised Environmental Management Measures - Acoustic Analysis

Revised Environmental Management Measures

No.	Requirement	Proposed actions	Responsible Key Contributor	Timing	Relevant CNVMP section
NV1	<p>The Construction Noise and Vibration Strategy would be implemented with the aim of achieving the noise management levels where feasible and reasonable.</p> <p>This would include the following example standard mitigation measures where feasible and reasonable:</p> <ol style="list-style-type: none"> (1) Provision of noise barriers around each construction site (2) Provision of acoustic sheds at Chatswood dive site, Crows Nest, Victoria Cross, Barangaroo, Martin Place, Pitt Street, Waterloo and Marrickville dive site (3) The coincidence of noisy plant working simultaneously close together would be avoided (4) Offset distances between noisy plant and sensitive receivers would be increased (5) Residential grade mufflers would be fitted to all mobile plant (6) Dampened rock hammers would be used (7) Non-tonal reversing alarms would be fitted to all permanent mobile plant (8) High noise generating activities would be scheduled for less sensitive period considering the nearby receivers (9) The layout of construction sites would consider opportunities to shield receivers from noise. <p>This would also include carrying out the requirements in relation to construction noise and vibration monitoring.</p>	<p>Neighbour notification, non-tonal reversing beacons where permitted by OH&S, community consultation, attended noise and vibration measurements if necessary, on-going vibration monitoring if necessary.</p>	Construction Manager	Construction	Refer to sections 6 and 7.
NV3	<p>Where vibration levels are predicted to exceed the screening criteria, a more detailed assessment of the structure and attended vibration monitoring would be carried out to ensure vibration levels remain below appropriate limits for that structure.</p> <p>For heritage items, the more detailed assessment would specifically consider the heritage values of the structure in consultation with a heritage specialist to ensure sensitive heritage fabric is adequately monitored and managed.</p>	<p>While exceedances are unlikely given the limited scope of works (construction of ISD building, bulk no excavation), at-risk properties have been identified and a vibration monitoring system proposed.</p>	<p>Construction Managers Project Noise and Vibration Consultant Heritage Consultant</p>	<p>Prior to the start of structural work and in the event further excavation is required.</p>	Refer to section 7.2

No.	Requirement	Proposed actions	Responsible Key Contributor	Timing	Relevant CNVMP section
NV4	Feasible and reasonable measures would be implemented to minimise ground-borne noise where exceedances are predicted.	Exceedances are unlikely given the limited scope of works (construction of ISD building, no bulk excavation). Monitoring protocol specified in the event of unforeseen excavation or vibratory compaction works.	Construction Managers Project Noise and Vibration Consultant	In the event of use of hydraulic hammers or vibratory rollers.	Refer to section 7.2
NV6	Transport for NSW would engage an Independent Acoustic Advisor to act independently of the design and construction teams and provide oversight of construction methods, construction noise and vibration planning, management and mitigation, and construction noise and vibration monitoring and reporting. The key responsibilities of the Independent Acoustic Advisor would include: <ul style="list-style-type: none"> Assurance of contractor noise and vibration planning, modelling, management and monitoring practices Verification of compliance with relevant guidelines and approval requirements Audit noise and vibration management practices 	Independent Acoustic Advisor engaged by Sydney Metro.	N/A	N/A	N/A
NV7	Alternative demolition techniques that minimise noise and vibration levels would be investigated and implemented where feasible and reasonable. This would include consideration of: <ul style="list-style-type: none"> The use of hydraulic concrete shears in lieu of hammers/rock breakers Sequencing works to shield noise sensitive receivers by retaining building wall elements Locating demolition load out areas away from the nearby sensitive receivers Providing respite periods for noise intensive works Methods to minimise structural-borne noise to adjacent buildings including separating the structural connection prior to demolition through saw-cutting and propping, using hand held splitters and pulverisers or hand demolition Installing sound barrier screening to scaffolding facing noise sensitive neighbours Modifying demolition works sequencing/hours to minimise impacts during peak pedestrian times and/or adjoining neighbour outdoor activity periods. 	The only demolition works proposed are for the demolition of a capping beam. Potential demolition methods will involve use of concrete saws and hydraulic hammers. Saws to be used to the extent feasible to minimise vibration generation.	Construction Manager Project Environment Manager Demolition Subcontractor	Prior to construction commencement	Section 8.2

9. References

NSW Government Transport for NSW *Environmental Impact Statement: Sydney Metro City & Southwest Chatswood to Sydenham* (May 2016) including the various Technical Papers (1 – 9).

NSW Government Department of Planning and Environment *State Significant Infrastructure Assessment: Sydney Metro City and Southwest - Chatswood to Sydenham SSI 7400* (December 2016)

NSW Government Department of Planning and Environment *Critical State Significant Infrastructure Sydney Metro City & Southwest Chatswood to Sydenham Conditions of Approval SSI 15_7400* (January 2017)

NSW Government Transport for NSW *Sydney Metro City & Southwest Chatswood to Sydenham Staging Report* (July 2019)

Appendix A – Environmental ISO14001 Certification

Certificate AU14/4487



The management system of

CPB Contractors Pty Limited

Level 18, 177 Pacific Highway North Sydney, NSW 2060, Australia

has been assessed and certified as meeting the requirements of

ISO 14001:2015

For the following activities

The provision of project management and related services including design, procurement, construction, traffic management at roadworks, completion, commissioning and maintenance of civil infrastructure (including site preparation, road and bridge construction, non-building construction, plant hire and leasing), building, rail, water, utilities, tunnelling, energy, marine, mine infrastructure, structural, mechanical, piping and electrical engineering and related industries delivered under varying forms of contract including joint ventures and alliances. The scope of registration also includes the maintenance and repair of fixed and mobile plant and the manufacture of precast concrete units for major infrastructure works.

This certificate is valid from 26 December 2022 until 30 November 2025 and remains valid subject to satisfactory surveillance audits.

Issue 13. Certified since 06 December 1995

Certified activities performed by additional sites are listed on subsequent pages.

Last certificate expiry date 30 November 2022

Recertification audit date 21 October 2022

Authorised by
Sham McAulley
Authorised Officer

SGS Australia Pty. Ltd.
10/585 Blackburn Road Notting Hill VIC 3168
t (61-3) 9574 3200 - www.au.sgs.com



This document is an authentic electronic certificate for Client business purposes use only. Printed version of the electronic certificate are permitted and will be considered as a copy. This document is issued by the Company subject to SGS General Conditions of certification services available on [Terms and Conditions](#) | SGS. Attention is drawn to the limitation of liability, indemnification and jurisdictional clauses contained therein. This document is copyright protected and any unauthorized alteration, forgery or fabrication of the content or appearance of this document is unlawful.



Certificate AU14/4487, continued
CPB Contractors Pty Limited



ISO 14001:2015

Issue 13
Sites
<u>Business Unit Operation</u>
CPB Contractors Pty Limited Level 18, 177 Pacific Highway North Sydney, NSW 2060, Australia
CPB Contractors Pty Limited Level 2, 177 Pacific Highway, North Sydney, NSW 2060, Australia
CPB Contractors Pty Limited Level 6, 567 Collins Street, Melbourne, VIC 3000, Australia
CPB Contractors Pty Limited Level 6, HQ South Tower, 520 Wickham Street, Fortitude Valley, QLD 4006, Australia
CPB Contractors Pty Limited 202 Pier Street, Perth, WA 6000, Australia
CPB Contractors Pty Limited Level 1, 167 Denham Street, Townsville, QLD 4810, Australia
CPB Contractors Pty Limited 136 Frome Street, Adelaide, SA 5000, Australia
CPB Contractors Pty Limited Level 2, 19 Hargreaves Street, Auckland, 1011, New Zealand
CPB Contractors Pty Limited 14-64 Industrial Avenue, Bohle, QLD 4818, Australia
<u>Plant Facilities</u>
CPB Contractors Pty Limited 8a Hereford Street, Berkeley Vale, NSW 2261, Australia
CPB Contractors Pty Limited 67 Bernoulli Street, Darra, QLD 4076, Australia
CPB Contractors Pty Limited 158 Cherry Lane, Laverton North, VIC 3026, Australia



This document is an authentic electronic certificate for Client business purposes use only. Printed version of the electronic certificate are permitted and will be considered as a copy. This document is issued by the Company subject to SGS General Conditions of certification services available on [Terms and Conditions](#) | SGS. Attention is drawn to the limitation of liability, indemnification and jurisdictional clauses contained therein. This document is copyright protected and any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful.



Certificate AU14/4487, continued

CPB Contractors Pty Limited



ISO 14001:2015

CPB Contractors Pty Limited 19-21 Casino Street, Welshpool, WA 6106, Australia
<u>Pre-cast facility</u>
CPB Contractors Pty Limited Comer Engineering & Industrial Drive, North Boambee, NSW 2450, Australia



This document is an authentic electronic certificate for Client business purposes use only. Printed version of the electronic certificate are permitted and will be considered as a copy. This document is issued by the Company subject to SGS General Conditions of certification services available on [Terms and Conditions](#) | SGS. Attention is drawn to the limitation of liability, indemnification and jurisdictional clauses contained therein. This document is copyright protected and any unauthorized alteration, forgery or fabrication of the content or appearance of this document is unlawful.



Page 3 / 3

Appendix B1: CPB Contractors Environment Policy



Environment Policy

Purpose

This Policy sets out our environmental management commitments for managing environmental risks, exceeding our environmental compliance obligations, and avoiding environmental impacts.

Application

This Policy applies to all employees, and third parties controlled by the business, including alliances, joint ventures and consortia where the business exerts management control. It applies to all sections of the organisation.

To achieve our environmental management objectives, we will:

- Demonstrate a visible commitment to our One HSE Cultural Framework and take all reasonably practicable measures to prevent pollution and protect the environment.
- Ensure adequate environmental management resources are assigned, and continually improve the CPB Management System and our environmental performance.
- Set environmental objectives, targets and key performance indicators that are monitored at least annually.
- Identify, document, control, and monitor our Significant Environmental Aspects.
- Procure goods and services to maximise sustainable opportunities and innovate to reduce greenhouse gas emissions and implement climate change mitigation
- Evaluate our environmental performance through regular inspections and audits.
- Measure, record and optimise energy & water re-use efficiencies, together with maximising circular economy opportunities.
- Report and investigate environmental incidents with the aim of preventing a recurrence.
- Implement contingency planning and emergency response strategies to avoid environmental damage.
- Communicate and educate our teams to enable a good understanding of their environmental legal obligations.

Policy Information

Owner:	Group Manager, Environment, CPB Contractors
Approved By:	General Manager – SHEQS & Rail Safety, CPB Contractors
Effective date:	31 August 2022

Title: Environment Policy
ID: MSID-7-150 Version: 5.0 Date Published: 06/09/2022
Pitt Street Integrated Station Development / N01070 - Uncontrolled Document when Printed





PSISD Environment and Sustainability Policy

CPB Contractors will work collaboratively with Sydney Metro to ensure sustainable outcomes through integration of environmental, social and governance factors into everything we do.

Employees, subcontractors, suppliers and consultants will strive together to identify and implement excellence and innovation throughout design, procurement and construction of Pitt Street Integrated Station Development.

This policy reflects CPB Contractor's commitment to:

- Industry leadership in the delivery of infrastructure sustainability with project's senior leadership promoting a culture to support innovation and accountability for sustainability outcomes, knowledge sharing and skills development.
- Deliver a Design and As Built Green Star rating using the Sydney Metro Rating Tool to achieve a five-star rating and target a six-star rating
- Develop our sustainability approach based on the project's sustainability objectives and targets and the broader TfNSW objectives as defined in the City & Southwest Sustainability Strategy
- Reduce the projects carbon footprint from business-as-usual-practices in selecting key materials informed by life-cycle assessments, and optimising design and energy management through modelling of electricity consumption throughout design
- Enhance the projects resilience to climate change by identifying associated risks to inform design and implement adaptation measures in the delivery phase
- Use construction materials efficiency, maximise opportunities to use recycled materials and industrial waste products and minimise generation of wastes for landfill disposal
- Deliver a workforce legacy by providing skills development and employment opportunities, increasing workforce diversity and inclusion and engagement with local businesses and participation of SME's.
- Implement social sustainability initiatives to provide tangible benefits for local community groups during construction and broader community beyond the construction phase
- Seek compliance with all environment legislation and regulations and the laws and regulations from developing countries associated with high impact materials, the International Labour Organization's Fundamental Conventions and "Ten Principles" of the UN Global Compact.
- Apply construction methods and scheduling of works to minimise impacts on the local community, including traffic and pedestrian access
- Minimise potable water use in operational fixtures, construction methods and non-potable water substitution such as for concrete requirements
- Provide sustainability training for our high impact suppliers. Where these suppliers are from developing countries a risk-based assessment will be undertaken
- Ensure sustainability aspects are evaluated in the supplier selection process.
- Seeking opportunities to collaborate with the supply chain to drive innovation and shared value.
- Implementing sustainable procurement initiatives that provide environmental and social improvement in line with ISO20400: 2017 Sustainable Procurement
- Continuous improve environmental and sustainability performance using the CPB management systems to regularly monitor, audit, review and report to senior management to track performance and identify areas for improvement.

A handwritten signature in blue ink, appearing to be a stylized name, positioned above the text "PSISD Delivery Director".

PSISD Delivery Director

Appendix C: Environmental Roles and Responsibilities

	Project Director	Project Environmental Rep.	Engineering Manager	Engineers	Senior Project Engineer	Supervisors	Line Manager	HR Manager	Commercial Manager	Comm. & S. hold Manager	H&S Manager	Other positions
Element 1: Leadership, Accountability and Culture												
1.1. Environmental accountabilities, roles and responsibilities for managers, staff, employees and subcontractors are clearly defined, documented and communicated	C	C					C	R				
1.2. Environmental leadership and commitment is demonstrated through measurable participation in environmental management	R	C			C	C	C					
1.3. Environmental expectations are clearly defined with appropriate reward and disciplinary processes in place.	R	C			C		C	C				
Element 2: Planning												
2.1. Adequate resources are provided to effectively implement the EMP	R	C						C	C			
2.2. Business systems are defined and established		R										C
2.3. Environmental Sub-Plans are prepared and maintained for Significant Environmental Hazards		R			C							
Element 3: Legal and Other Requirements												
3.1. Relevant legal, contractual and other requirements are identified and maintained in a legal and other obligations register	C	R										
3.2. All necessary environmental approvals are obtained prior to commencing relevant works and surrendered on completion	C	R		C								
3.3. Work is planned and executed to ensure compliance		C	C	C	R	C						
3.4. Inspections, observations and monitoring are performed to ensure compliance is maintained		R		C		R						
3.5. All non-compliances are reported as incidents		R		C	C	C				C	C	
3.6. All energy and greenhouse data are collected and entered into JDE	C	R							C			
3.7. Personnel on the site have access to current versions of relevant legislation, standards and codes of practice		C										R
3.8. Compliance tracking and reporting is performed as per contract requirements		R		C								
Element 4: Risk and Opportunity Management												
4.1. Systematic processes are defined and implemented for identifying environmental risks and opportunities at all stages of the Project	R	C	C	C		C						
4.2. Identified risks and opportunities are analysed and evaluated according to agreed criteria and recorded in a risk register	R	C		C	C							C
4.3. Environmental controls appropriate to the level of risk are identified, documented and implemented	C	C		C	C							R
4.4. Feasible opportunities are implemented		R										C
4.5. Identified environmental risks and controls are communicated to all relevant personnel	R	C		C		C	C		C			C
4.6. Regular inspections and monitoring are conducted to check effectiveness of controls	C	R		C		C						
4.7. Environmental risks and controls are regularly reviewed.	R	C		C								
Element 5: Change Management												
5.1. Changes to planned operations that have potential environmental consequences are identified	R	C	C	C		C						
5.2. Risks associated with identified changes are assessed and controlled before changes are implemented	R	C				C						C
5.3. All changes with environmental consequences are authorised before they are implemented	R	C	C			C	C					
5.4. Controls associated with change are communicated to all affected personnel							C					R
Element 6: Communication and Consultation												
6.1. External environmental stakeholders are identified		C										R
6.2. Relationships with external stakeholders are effectively managed		C	R									C
6.3. Internal consultative forums are established with regular meetings scheduled, conducted, documented and communicated		R	C									C
6.4. Environmental complaints and enquiries are recorded and responded to appropriately		C	C									R
6.5. The effectiveness of internal and external stakeholder engagement is evaluated and improved.		R	C									C

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 Date Published: 25/09/2019

Management System - Uncontrolled Document when Printed

	Project Director	Project Environmental Rep.	Engineering Manager	Engineers	Senior Project Engineer	Supervisors	Line Manager	HR Manager	Commercial Manager	Comm. & S' hold Manager	H&S Manager	Other positions
Element 7: Training and Competency												
7.1. All personnel have completed an induction containing relevant environmental information before they are authorised to work on the Project	R							C				C
7.2. A training plan is developed and documented	R							C				
7.3. Personnel are trained and assessed according to the training plan	R	C						C				
7.4. Training records are maintained and accessible to relevant personnel.	C							R				
Element 8: Subcontractor Relationships												
8.1. Selection processes ensure that subcontractors meet CPB Contractors' minimum environmental requirements	C		C							R		
8.2. Planning requirements of all subcontractor work scopes are completed and communicated prior to commencing work	C		R							C		
8.3. Compliance requirements for high risk environmental activities are identified and enforced	C		R							C		
8.4. Subcontractor documentation is submitted and reviewed to meet Project requirements	R		C							C		
8.5. Changes to the scope of work are managed as a Project change								C		R		
8.6. Subcontractors actively participate in environmental management and training on the Project	C		C							R		C
8.7. Subcontractors are reviewed to assess their performance and compliance with our minimum environmental requirements.	R		C		C							
Element 9: Incident Management												
9.1. All incidents are followed by appropriate response and notification	R	C		C		C						C
9.2. All incidents are entered and managed in Synergy	C	R										
9.3. Incident investigations are conducted appropriate to the type of incident	R	C		C		C						
9.4. All personnel conducting incident investigations are trained to competently perform the task	R											
9.5. Corrective and preventive actions are taken after incidents and lessons are shared with other projects	R	C										
9.6. High potential and repeat incidents are regularly reviewed by the project management team	C	R										
Element 10: Emergency Planning and Response												
10.1. Potential emergencies are identified using a formal risk assessment process	R	C										
10.2. Emergency response plans and procedures are developed and regularly reviewed	R	C										C
10.3. Adequate resources are provided to effectively implement emergency response plans and procedures	R	C										C
10.4. Environmental emergency response drills are conducted	R	C										C
10.5. Employees, contractors and visitors are given appropriate emergency response training.	C								R			C
Element 11: Document and Record Management												
11.1. Current versions of all relevant documents and records are available and controlled.	C	R										
11.2. Relevant documents and records will be maintained using corporate business applications and systems	R	C										C
Element 12: Auditing, Review and Improvement												
12.1. Environmental performance trends are identified and corrective actions are implemented as required	R	C										
12.2. A monthly environmental report is produced and distributed	C	R										
12.3. Regular management reviews are conducted to determine the continuing suitability, adequacy and effectiveness of then Environmental Management System	R	C										C
12.4. Audits are undertaken to ensure compliance with the requirements of the EMP	R	C										C
12.5. All audits are undertaken by suitably qualified and experienced personnel												R

R = Responsible, C = Key Contributor

Appendix D1: Legal Requirements

Legislation	Key requirements	Relevance to PS
Commonwealth Requirements		
Environment Protection and Biodiversity Conservation Act, 1999	<p>This Act provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places. These matters are referred to as matters of national environmental significance (NES). The EPBC Act requires the assessment of whether the Project is likely to significantly impact on matters of NES or Commonwealth land.</p> <p>Heritage places are listed on the National Heritage List (NHL) for their 'outstanding heritage value to the nation' which are owned by a variety of constituents</p>	<p>The EPBC Act requires the assessment of whether the Proposal is likely to significantly impact on matters of NES or Commonwealth land. These matters were considered in the project REF.</p> <p>The REF ecology assessment determined that it would not impact on any matters of NES or on Commonwealth land. Accordingly, a referral to the Commonwealth Minister for the Environment was not required.</p> <p>A further ecological assessment was undertaken by Area Environmental in September 2019, which identifying an EEC on the site that is listed under the EPBC Act. The EEC is White Box - Blakely's Red Gum - Yellow Box grassy woodland of the NSW South Western Slopes which is listed as critically endangered. A MNES assessment was however undertaken and the EEC did not meet the criteria. Accordingly, a referral to the Commonwealth Minister for the Environment was not required.</p>
National Greenhouse and Energy Reporting (NGER) Act 2007 (Cth)	<p>This Act provides data and accounting in relation to greenhouse gas emissions and energy consumption and production and:</p> <ul style="list-style-type: none"> ▪ Underpin the carbon price mechanism ▪ Inform policy-making and the Australian public ▪ Meet Australia's international reporting obligations, and <p>Provide a single national reporting framework for energy and emissions reporting.</p>	<p>CPB will undertake reporting of the PS greenhouse gas emission and energy production and consumption under the NGER Act, inclusive of 'material' and Subcontractor works.</p> <p>The emissions and energy produced and consumed as part of the Project will be reported in accordance with CPB's management system requirements.</p>
NSW Requirements		
Biodiversity Conservation Act 2016	<p>For the purposes of the EP&A Act, the Minister for Planning and Infrastructure is the consent authority for any development application made under that Act for any clearing of native vegetation that requires development consent because of this Act.</p> <p>Requires any threatened plant or animal species, populations or ecological communities associated with a proposed development to be identified and that acceptable recovery and management strategies are implemented if a likely significant impact would occur.</p>	<p>Impacts on native vegetation have been assessed under Part 5.1 of the EP&A Act and Part C Flora and Fauna Sub-plan in Part C of the CEMP identifies areas of potential impact and mitigation measures associated with management of Flora and Fauna.</p> <p>No impacts on threatened plant or animal species, populations or ecological communities are identified in the EIS (as relevant to PS contract scope).</p>
Contaminated Land Management Act, 1997	<p>Provides a regime for investigating and, where appropriate, remediating land affected by contamination, which represents a significant risk of harm to human health or the environment.</p> <p>Under this Act EPA has the power to</p> <ul style="list-style-type: none"> ▪ Declare an investigation site and order an investigation ▪ Declare a remediation site and order remediation to take place <p>Agree to a voluntary Project to investigate or remediate a site.</p>	<p>CoA 32 requires a stage 2 detailed site investigation be undertaken prior to Construction commencing.</p> <p>If contamination is identified within the Site, CPB will determine whether there is a duty to report under section 60 of the <i>Contaminated Land Management Act 1997</i> (NSW) and the ESSG guidelines.</p>
Dangerous Goods (Road and Rail Transport) Act 2008	<p>The purpose of this Act is to regulate the transport of Dangerous Goods by road and rail in order to promote public safety and protect property and the environment. A licence is required for the storage (SafeWork NSW) and/or transport (EPA) of prescribed quantities of dangerous goods. Both vehicle and driver are required to be appropriately licenced.</p>	<p>The Project is unlikely to trigger exceedance of licensable quantities of dangerous goods. In the event that this changes, the appropriate licence shall be obtained.</p>

Legislation	Key requirements	Relevance to PS
Environmental Planning and Assessment Act, 1979	<p>Depending on the quantities being transported, the Act outlines specific requirements for including appropriate placards on the transport vehicle, emergency procedures, PPE, manifest documentation and fire extinguishers.</p> <p>Planning Approval granted under Part 5.1 of the Environmental Planning and Assessment Act 1979. Approval of reports, studies and plans as required by the Project Planning Approvals.</p>	Environmental approvals will be applied for if needed.
Heritage Act, 1977	<p>The Heritage Act makes provisions for the conservation of NSW's non Aboriginal environmental heritage.</p> <p>Section 146 requires that the Heritage Council be notified if a relic is uncovered, where it is reasonable to believe that the Heritage Council is unaware of the location of the relic.</p>	<p>Heritage impact in accordance with the Heritage Act 1977 is assessed under Part 5.1 of the EP&A Act, therefore permits are not required. The Heritage Management Plan identifies areas of potential impact and mitigation measures.</p> <p>The Heritage Council would be notified in writing (by SM) of relics uncovered during construction, in accordance with the requirements of section 146.</p>
National Parks and Wildlife Act, 1974	<p>The National Parks and Wildlife Act provides for the protection of Aboriginal objects (sites, objectives and cultural material) and Aboriginal places. Aboriginal Heritage sites are managed under this Act by the Office of Environment and Heritage (OEH). Unexpected finds of Heritage require stop work proceedings and approval through OEH to disturb site.</p>	<p>As the project is assessed under Part 5.1 of the EP&A Act, it is exempt from approvals (under Part 4) and permits (under section 90).</p> <p>The Project is unlikely to disturb any Indigenous objects.</p> <p>If unexpected archaeological items or items of Indigenous heritage significance are discovered during the Construction of the Project, all works would cease, and appropriate advice sought.</p> <p>The Construction Heritage Management Plan identifies controls and mitigation measures.</p>
Native Vegetation Act 2003	<p>The Native Vegetation Act provides for the protection and improvement of the value of native vegetation.</p>	<p>As the project is assessed under Part 5.1 of the EP&A Act, it is exempt from section 12 authorisation to clear native vegetation. No native vegetation to be affected by PSISD works.</p>
Protection of the Environment Administration Act 1991	<p>Outlines principles of Ecologically Sustainable Development.</p>	<p>The project and all associated activities must be consistent with the principles of Ecologically Sustainable Development – refer to Sustainability Management Plan (SMC&SSPS-CPB-ALL-SU-PLN-000001)</p>
Protection of the Environment Operations Act 1997 (POEO Act)	<p>The POEO Act establishes the regulatory framework which includes licencing requirements for certain activities.</p> <p>The POEO Act also establishes the EPA. The objective of the EPA is to protect, restore and enhance the quality of the environment in NSW, having regard to the need to maintain ecologically sustainable development.</p> <p>The EPA is a statutory body representing the Crown and is generally subject to Ministerial control, but not in relation to:</p> <ul style="list-style-type: none"> ▪ the making of a report or recommendation to the Minister; ▪ the release of a state of the environment report (although the Minister can require more information in the report); and ▪ the making of a decision to institute criminal or related proceedings. <p>The POEO Act also outlines offences regarding the willful or negligent disposal, transport or storage of waste at a facility that cannot lawfully accept the waste</p>	<p>The PSISD scope of works does not require an EPL.</p> <p>CPB to ensure waste is disposed of, transported and stored in accordance with legislation.</p>

Legislation	Key requirements	Relevance to PS
Protection of the Environment Operations (General) Regulation 2009;	This Act provides for the administration of EPL's and prescribes requirements in respect of pollution incident response management plans as well as the appropriate regulatory authority for certain activities.	Any environmental approvals will be applied for if needed.
Protection of the Environment Operations (Waste) Regulation 2014;	This POEO relating to waste outlines the reporting and record keeping requirements for the transportation of waste and the tracking of certain types of waste classifications.	CPB will record and track waste as required for PS works.
Sydney Water Act 1994	Approval to discharge wastewater to sewer under a Trade Waste Agreement.	CPB will obtain approval to connect to sewer for any construction site.
Transport Administration Act 1988	This Act created TfNSW and defines its principal role. TfNSW is the proponent of the project under the EP&A Act.	TfNSW (Sydney Metro) is the proponent of the project.
Waste Avoidance and Recovery Act, 2001	Establishes the waste hierarchy. Promotes waste avoidance and resource recovery by developing waste avoidance and resource recovery strategies.	Provides requirements for waste avoidance and resource recovery which are addressed in the Waste Management and Recycling Management Plan. Waste targets are established under the Sustainability Management Plan and the Waste and Recycling Management Sub-plan.
Water Management Act 2000 and Water Act, 1912	The Water Management Act 2000 (WM Act) provides for the sustainable and integrated management of water resources. Aquifer interference approval requirements under the WM Act have not yet commenced, and regulation is managed under Part 5 of the Water Act 1912.	As the project is assessed under Part 5.1 of the EP&A Act, the project is exempt from obtaining water use approval (under section 89), a water management work approval (under section 90) or an activity approval (other than an aquifer interference approval under section 91). Groundwater is unlikely to be encountered during the works, and the works are therefore unlikely to impact upon water resources. Part C Soil, Water and Groundwater Management Sub-plan the CEMP addresses management of interaction with groundwater.

Appendix D2 Compliance Matrix

Appendix D2.1: Conditions of Approval

Condition No.	Condition Requirement:	Responsibility	Where Addressed	Section Ref	Timing
Part A Administrative Conditions					
A1	The CSSI must be constructed generally in accordance with the description of the CSSI in the EIS as amended by the: (a) description in the PIR; (b) Sydney Metro City and Southwest Chatswood to Sydenham Victoria Cross Station and Artarmon Substation Modification Report (Transport for NSW) as amended by the Victoria Cross and Artarmon Substation Modification Submission Report (Transport for NSW); (c) Sydney Metro City and Southwest Chatswood to Sydenham Sydenham Station and Sydney Metro Trains Facility South Modification Report (Transport for NSW) as amended by the Sydney Metro City and Southwest Chatswood to Sydenham Sydenham Station and Sydney Metro Trains Facility South Submissions Report (Transport for NSW); (d) Sydney Metro City and Southwest Chatswood to Sydenham Central Walk Modification Report (Transport for NSW) as amended by the Central Walk Modification Submission Report (Transport for NSW); (e) Sydney Metro City and Southwest Chatswood to Sydenham Martin Place Metro Station Modification Report as amended by the Sydney Metro City and Southwest Chatswood to Sydenham Martin Place Station Modification Submissions Report; (f) Sydney Metro City and Southwest Chatswood to Sydenham Blues Point Acoustic Shed Modification Report (Sydney Metro) as amended by the Response to Submissions (Sydney Metro) dated 2 October 2018; (g) Sydney Metro Chatswood to Sydenham, SSI_7400, Request for administrative modification (Sydney Metro) dated 12 December 2018; and (h) Sydney Metro correspondence dated 17 April 2020 requesting modification to Condition E100 and correspondence dated 12 June 2020 requesting modification to Condition E46; and (i) the terms of this approval.		CEMP(SMCSWSPS-CPB-ALL-EM-PLN-000001)	Element 3 Part C	At all times
A2	The CSSI must be carried out in accordance with all procedures, commitments, preventative actions, performance criteria and mitigation measures set out in the EIS as amended by the documents listed in A1, unless otherwise specified in, or required under, this approval.		CEMP(SMCSWSPS-CPB-ALL-EM-PLN-000001)	Element 3 Part C	At all times
A3	In the event of an inconsistency between the EIS as amended by the description in Chapters 2, 3 and 9 of the PIR, or any other document required under this approval, and a term of this approval, the term of this approval prevails to the extent of the inconsistency. For the purpose of this condition, there will be an inconsistency between a term of this approval and any document if it is not possible to comply with both the term and the document.		CEMP(SMCSWSPS-CPB-ALL-EM-PLN-000001)	Element 3 Part C	
A5	The Proponent must comply with all requirements of the Secretary in relation to: (a) the environmental performance of the CSSI; (b) any document or correspondence; (c) any notification given to the Secretary under the terms of this approval; (d) any audit of the construction or operation of the CSSI; (e) compliance with the terms of this approval (including anything required to be done under this approval); and (f) the carrying out of any additional monitoring or mitigation measures.		CEMP(SMCSWSPS-CPB-ALL-EM-PLN-000001)	Element 3 Part C	

Condition No.	Condition Requirement:	Responsibility	Where Addressed	Section Ref	Timing
A6	In the event that there are differing interpretations of the terms of this approval, including in relation to a condition of this approval, the Secretary's interpretation is final.		CEMP(SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part B Element 3	
A7	Where the terms of approval provide the Secretary the discretion to alter the requirements of the approval, the Proponent must provide supporting evidence so that the Secretary can consider the need, environmental impacts and consistency of the alteration.		CEMP(SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part B Element 12	
A8	Without limitation, all strategies, plans, programs, reviews, audits, report recommendations, protocols and the like required by the terms of this approval must be implemented by the Proponent and in accordance with all requirements issued by the Secretary from time to time in respect of them.		CEMP(SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part B Element 3	
A9	Where the terms of this approval require consultation with identified parties, details of the consultation undertaken, matters raised by the parties, and how the matters were considered must accompany the strategies, plans, programs, reviews, audits, protocols and the like submitted to the Secretary.		CEMP(SMCSWSPS-CPB-ALL-EM-PLN-000001) Parts B and D	Part B Element 6.2 Appendix I	

Condition No.	Condition Requirement:	Responsibility	Where Addressed	Section Ref	Timing
A11	The Proponent is responsible for any breaches of the conditions of this approval resulting from the actions of all persons that it invites onto any site, including contractors, sub-contractors and visitors.	Sydney Metro CPB	CEMP(SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part B Element 3	
A12	The CSSI may be constructed and operated in stages. Where staged construction or operation is proposed, a Staging Report (for either or both construction and operation as the case requires) must be prepared and submitted to the Secretary for information. The Staging Report must be submitted to the Secretary no later than one month before the commencement of construction of the first of the proposed stages of construction (or if only staged operation is proposed, one month before the commencement of operation of the first of the proposed stages of operation), or within another timeframe agreed with the Secretary.	Sydney Metro	Sydney Metro City & Southwest Chatswood to Sydenham - Staging Report (Rev 6)		
A13	The Staging Report must: (a) if staged construction is proposed, set out how the construction of the whole of the CSSI will be staged, including general details of work and other activities to be carried out in each stage and the general timing of when construction of each stage will commence; (b) if staged operation is proposed, set out how the operation of the whole of the CSSI will be staged, including general details of work and other activities to be carried out in each stage and the general timing of when operation of each stage will commence; (c) specify the relevant conditions of approval that apply to each stage and how compliance with those conditions will be achieved across and between each of the stages of the CSSI; and (d) set out mechanisms for managing any cumulative impacts arising from the proposed staging.	Sydney Metro	Sydney Metro City & Southwest Chatswood to Sydenham - Staging Report (Rev 6)		
A14	The CSSI must be staged in accordance with the Staging Report, as submitted to the Secretary.	Sydney Metro	Sydney Metro City & Southwest Chatswood to Sydenham - Staging Report (Rev 6)		During construction

Condition No.	Condition Requirement:	Responsibility	Where Addressed	Section Ref	Timing
A15	Where staging is proposed, the terms of this approval that apply or are relevant to the works or activities to be carried out in a specific stage must be complied with at the relevant time for that stage.	Sydney Metro	Sydney Metro City & Southwest Chatswood to Sydenham - Staging Report (Rev 6)		During construction
A16	Ancillary facilities that are not identified by description and location in the EIS as amended by the documents listed in A1, must meet the following criteria, unless otherwise approved by the Secretary: (a) the facility is development of a type that would, if it were not for the purpose of the CSSI, otherwise be exempt or complying development; or (b) the facility is located as follows: i. at least 50 metres from any waterway unless an erosion and sediment control plan is prepared and implemented so as not to adversely affect water quality in the waterway in accordance with Managing Urban Stormwater series; ii. within or adjacent to land upon which the CSSI is being carried out unless it can be demonstrated that performance criteria established in this approval can be met and that there will be a reduction in impact at other sites and a reduction in the construction program; iii. with ready access to a road network; iv. to prevent heavy vehicles travelling on local streets or through residential areas in order to access the facility, except as identified in the EIS and amended by the documents listed in A1; v. on level land; vi. so as to be in accordance with the Interim Construction Noise Guideline (DECC 2009) or as otherwise agreed in writing with affected landowners and occupiers; vii. so as not to require vegetation clearing beyond the extent of clearing approved under other terms of this approval except as approved by the ER as minor clearing; viii. so as not to have any impact on heritage items (including areas of archaeological sensitivity) beyond the impacts identified, assessed and approved under other terms of this approval; ix. so as not to unreasonably interfere with lawful uses of adjacent properties that are being carried out at the date upon which construction or establishment of the facility is to commence; x. to enable operation of the ancillary facility during flood events and to avoid or minimise, to the greatest extent practicable, adverse flood impacts on the surrounding environment and other properties and infrastructure; and xi. so as to have sufficient area for the storage of raw materials to minimise, to the greatest extent practicable, the number of deliveries required outside standard construction hours.		No further ancillary facilities are proposed by the project other than those covered in Table 7-6 of SMCSW EIS		
A17	Before establishment of any ancillary facility that satisfies the criteria in Condition A16, the Proponent must prepare an Ancillary Facilities Management Plan which outlines the environmental management practices and procedures to be implemented for the establishment and operation of the ancillary facility. The Ancillary Facilities Management Plan must be prepared in consultation with the relevant council(s) and submitted to the Secretary and EPA for information one month before installation of the relevant ancillary facilities. The Ancillary Facilities Management Plan must detail the management of the ancillary facilities and include: (a) a description of activities to be undertaken during construction (including scheduling of construction); (b) a program for ongoing analysis of the key environmental risks arising from the activities described in subsection (a) of this condition, including an initial risk assessment undertaken before the commencement of construction of the CSSI; and (c) details of how the activities described in subsection (a) of this condition will be carried out to: i. meet the performance outcomes stated in the EIS as amended by the documents listed in A1; and ii. manage the risks identified in the risk analysis undertaken in subsection (b) of this condition.		No further ancillary facilities are proposed by the project other than those covered in Table 7-6 of SMCSW EIS		
A18	Minor ancillary facilities comprising lunch sheds, office sheds, and portable toilet facilities, or the like, that are not identified in the EIS as amended by the documents listed in A1 and which do not satisfy the criteria set out in Condition A16 of this approval must satisfy the following criteria: (a) have no greater environmental and amenity impacts than those that can be managed through the implementation of environmental measures detailed in the CEMP required under Condition C1 of this approval; and (b) have been assessed by the ER to have: i. minimal amenity impacts to surrounding residences and businesses, after consideration of matters such as compliance with the Interim Construction Noise Guideline (DECC 2009), traffic and access impacts, dust and odour impacts, and visual (including light spill) impacts; ii. minimal environmental impact with respect to waste management and flooding; and iii. no impacts on biodiversity, soil and water, and heritage items beyond those already approved under other terms of this approval.		No further ancillary facilities are proposed by the project other than those covered in Table 7-6 of SMCSW EIS		

Condition No.	Condition Requirement:	Responsibility	Where Addressed	Section Ref	Timing
A19	Boundary fencing that incorporates screening must be erected around all ancillary facilities that are adjacent to sensitive receivers for the duration of construction unless otherwise agreed with Relevant Council(s), and affected residents, business operators or landowners.		Construction and Site Management Plan [SMCSWSPS-CPB-ALL-CM-PLN-00001]	Section 6.1.4 and 7.1.4	Prior to and during construction
A20	Boundary screening required under Condition A19 of this approval must minimise visual, noise and air quality impacts on adjacent sensitive receivers		Construction and Site Management Plan [SMCSWSPS-CPB-ALL-CM-PLN-00001]	Section 6.1.4 and 7.1.4	Prior to and during construction
A22	A suitably qualified and experienced Environmental Representative (ER) who is independent of the design and construction personnel must be nominated by the Proponent, approved by the Secretary and engaged for the duration of construction of the CSSI. Additional ERs may be engaged for the purpose of this condition in which case the obligations to be carried out by an ER under the terms of this approval may be satisfied by any ER that is approved by the Secretary. The details of nominated ER(s) must be submitted to the Secretary for approval no later than one month before the commencement of works, or within another timeframe agreed with the Secretary.	Sydney Metro	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part A Section 4.3	Prior to commencement of works
A23	Works must not commence until an ER nominated under Condition A22 of this approval in respect of such works has been approved by the Secretary.	Sydney Metro CPB	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part A Section 4.3	Prior to commencement of works

Condition No.	Condition Requirement:	Responsibility	Where Addressed	Section Ref	Timing
A24	<p>From commencement of construction until completion of construction, the approved ER must:</p> <p>(a) receive and respond to communications from the Secretary in relation to the environmental performance of the CSSI;</p> <p>(b) consider and inform the Secretary on matters specified in the terms of this approval;</p> <p>(c) consider and recommend any improvements that may be made to work practices to avoid or minimise adverse impact to the environment and to the community;</p> <p>(d) review documents identified in Conditions C1, C3 and C9 and any other documents that are identified by the Secretary, to ensure they are consistent with requirements in or under this approval and if so:</p> <p>i. make a written statement to this effect before submission of such documents to the Secretary (if those documents are required to be approved by the Secretary), or</p> <p>ii. make a written statement to this effect before the implementation of such documents (if those documents are required to be submitted to the Secretary for information or are not required to be submitted to the Secretary);</p> <p>(e) regularly monitor the implementation of environmental management related documents to ensure implementation is being carried out in accordance with what is stated in the document and the terms of this approval;</p> <p>(f) review the Proponent's notification of incidents in accordance with Condition A41 of this approval;</p> <p>(g) as may be requested by the Secretary, help plan, attend or undertake Department audits of the CSSI, briefings, and site visits;</p> <p>(h) if conflict arises between the Proponent and the community in relation to the environmental performance of the CSSI, follow the procedure in the Community Communication Strategy approved under Condition B3 of this approval to attempt to resolve the conflict, and if it cannot be resolved, notify the Secretary;</p> <p>(i) review any draft consistency assessment that may be carried out by the Proponent, and provide advice on any additional mitigation measures required to minimise the impact of the work;</p> <p>(j) consider any minor amendments to be made to the documents listed in Conditions C1, C3 and C9 and any document that requires the approval of the Secretary (excluding noise and vibration documents) that comprise updating or are of an administrative or minor nature, and are consistent with the terms of this approval and the documents listed in Conditions C1, C3 and C9 or other documents approved by the Secretary and, if satisfied such amendment is necessary, approve the amendment. This does not include any modifications to the terms of this approval;</p> <p>(k) assess the impacts of minor ancillary facilities as required by Condition A18 of this approval;</p> <p>and</p> <p>(l) prepare and submit to the Secretary and other relevant regulatory agencies, for information, a monthly Environmental Representative Report detailing the ER's actions and decisions on matters for which the ER was responsible in the preceding month (or other timeframe agreed with the Secretary). The Environmental Representative Report must be submitted within seven (7) days following the end of each month for the duration of works and construction of the CSSI, or as otherwise agreed with the Secretary.</p>	Sydney Metro CPB	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part A Section 4.3 Part B Element 3	Pre Construction During Construction
A25	<p>A suitably qualified and experienced Acoustics Advisor (AA), who is independent of the design and construction personnel, must be nominated by the Proponent and engaged for the duration of construction and for no less than six (6) months following operation of the CSSI. The details of the nominated AA must be submitted to the Secretary for approval no later than one (1) month before commencement of works, or within another timeframe as agreed with the Secretary. The Proponent may nominate additional suitably qualified and experienced persons to assist the lead Acoustics Advisor for the Secretary's approval. The Proponent must cooperate with the AA by: (a) providing access to noise and vibration monitoring activities as they take place; (b) providing for review of noise and vibration plans, assessments, monitoring reports, data and analyses undertaken; and (c) considering any recommendations to improve practices and demonstrating, to the satisfaction of the AA, why any recommendation is not adopted.</p>	Sydney Metro	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part A Section 4.4 Part B Element 3	
A26	<p>Any activities generating noise and vibration in excess of the Noise Management Level derived from the Interim Construction Noise Guideline must not commence until an AA, nominated under Condition A25 of this approval, has been approved by the Secretary.</p>	Sydney Metro	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part A Section 4.4	

Condition No.	Condition Requirement:	Responsibility	Where Addressed	Section Ref	Timing
A27	<p>The approved AA must:</p> <p>(a) receive and respond to communication from the Secretary in relation to the performance of the CSSI in relation to noise and vibration;</p> <p>(b) consider and inform the Secretary on matters specified in the terms of this approval relating to noise and vibration;</p> <p>(c) consider and recommend, to the Proponent, improvements that may be made to work practices to avoid or minimise adverse noise and vibration impacts;</p> <p>(d) review all noise and vibration documents required to be prepared under the terms of this approval and, should they be consistent with the terms of this approval, endorse them before submission to the Secretary (if required to be submitted to the Secretary) or before implementation (if not required to be submitted to the Secretary);</p> <p>(e) regularly monitor the implementation of all noise and vibration documents required to be prepared under the terms of this approval to ensure implementation is in accordance with what is stated in the document and the terms of this approval;</p> <p>(f) review the Proponent's notification of noise and vibration incidents in accordance with Condition A41 of this approval;</p> <p>(g) in conjunction with the ER (where required), the AA must:</p> <p>i. consider requests for out of hours construction activities and determine whether to endorse the proposed activities in accordance with Condition E47;</p> <p>ii. as may be requested by the Secretary or Complaints Mediator, help plan, attend or undertake audits of noise and vibration management of the CSSI including briefings, and site visits;</p> <p>iii. if conflict arises between the Proponent and the community in relation to the noise and vibration performance during construction of the CSSI, follow the procedure in the Community Communication Strategy approved under Condition B3 of this approval to attempt to resolve the conflict, and if it cannot be resolved, notify the Secretary;</p> <p>iv. consider relevant minor amendments made to any noise and vibration document approved by the Secretary that require updating or are of an administrative or minor nature, and are consistent with the terms of this approval and the document approved by the Secretary and, if satisfied such amendment is necessary, approve the amendment. This does not include any modifications to the terms of this approval;</p> <p>v. assess the noise impacts of minor ancillary facilities as required by Condition A18 of this approval; and</p> <p>vi. prepare and submit to the Secretary and other relevant regulatory agencies, for information, a monthly Noise and Vibration Report detailing the AAs actions and decisions on matters for which the AA was responsible in the preceding month (or other timeframe agreed with the Secretary). The Noise and Vibration Report must be submitted within seven (7) days following the end of each month for the duration of construction of the CSSI, or as otherwise agreed with the Secretary.</p>	Sydney Metro CPB	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001) OOHW Procedure (SMCSWSPS-CPB-ALL-CM-PRO-000001)	Part A Section 4.4 Part B Element 3 Part B Element 12 Part D Appendix H	Prior to and during construction
A28	A Compliance Tracking Program to monitor compliance with the terms of this approval must be prepared, taking into consideration any staging of the CSSI that is proposed in a Staging Report submitted in accordance with Condition A12 and Condition A13 of this approval.	Sydney Metro	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part B Element 3.8	During construction
A29	The Compliance Tracking Program must be endorsed by the ER then submitted to the Secretary for information before the commencement of works or within another timeframe agreed with the Secretary.	Sydney Metro	CEMP Compliance Matrix	Part B Element 3.8	

Condition No.	Condition Requirement:	Responsibility	Where Addressed	Section Ref	Timing
A30	The Compliance Tracking Program in the form required under Condition A28 of this approval must be implemented for the duration of construction and for a minimum of one (1) year following commencement of operation, or for a longer period as determined by the Secretary based on the outcomes of independent environmental audits, Environmental Representative Reports and regular compliance reviews submitted through Compliance Reports. If staged operation is proposed, or operation is commenced of part of the CSSI, the Compliance Tracking Program must be implemented for the relevant period for each stage or part of the CSSI.	Sydney Metro CPB	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001) Compliance Matrix	Part B Element 3.8	During Construction
A31	A Pre-Construction Compliance Report must be prepared and submitted to the Secretary for information no later than one month before the commencement of construction or within another timeframe agreed with the Secretary.	Sydney Metro CPB	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001) Compliance Matrix	Part B Element 3.8 Compliance Tracking Program	Prior to construction
A32	The Pre-Construction Compliance Report must include: (a) details of how the terms of this approval that must be addressed before the commencement of construction have been complied with; and (b) the commencement date for construction.	Sydney Metro CPB	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001) Compliance Matrix	Part B Element 3.8 Compliance Tracking Program	Prior to construction
A33	Construction must not commence until the Pre-Construction Compliance Report has been submitted to the Secretary.	Sydney Metro CPB	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part A Section 3.2	Prior to construction

Condition No.	Condition Requirement:	Responsibility	Where Addressed	Section Ref	Timing
A34	<p>Construction Compliance Reports must be prepared and submitted to the Secretary for information every six (6) months from the date of the commencement of construction or within another timeframe agreed with the Secretary, for the duration of construction. The Construction Compliance Reports must include:</p> <p>(a) a results summary and analysis of environmental monitoring; (b) the number of any complaints received, including a summary of main areas of complaint, action taken, response given and proposed strategies for reducing the recurrence of such complaints; (c) details of any review of, and minor amendments made to, the CEMP as a result of construction carried out during the reporting period; (d) a register of any consistency assessments undertaken and their status; (e) results of any independent environmental audits and details of any actions taken in response to the recommendations of an audit; (f) a summary of all incidents notified in accordance with Condition A41 and Condition A44 of this approval; and (g) any other matter relating to compliance with the terms of this approval or as requested by the Secretary.</p>	Sydney Metro CPB	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part B Element 3.8 Part D Appendix E MIRRA schedule	Every 6 months during construction
A35	<p>A Pre-Operation Compliance Report must be prepared and submitted to the Secretary for information no later than one month before the commencement of operation or within another timeframe agreed with the Secretary. The Pre-Operation Compliance Report must include:</p> <p>(a) details of how the terms of this approval that must be addressed before the commencement of operation have been complied with; and (b) the commencement date for operation.</p>	Sydney Metro CPB	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part B Element 3	Prior to Operation
A37	<p>An Environmental Audit Program for independent annual environmental auditing against the terms of this approval must be prepared in accordance with AS/NZS ISO 19011:2014 - Guidelines for Auditing Management Systems and submitted to the Secretary for information no later than one month before the commencement of construction or within another timeframe agreed with the Secretary.</p>	Sydney Metro CPB to provide information	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part B Element 12 Part D Appendix E MIRRA schedule	Prior to construction
A38	<p>The Environmental Audit Program, as submitted to the Secretary, must be implemented for the duration of construction.</p>	Sydney Metro CPB	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part B Element 12 Part D Appendix E MIRRA schedule	During Construction

Condition No.	Condition Requirement:	Responsibility	Where Addressed	Section Ref	Timing
A39	All independent environmental audits of the CSSI conducted under Conditions A35 and A36 must be conducted by a suitably qualified, experienced and independent team of experts in auditing and be documented in an Environmental Audit Report which: (a) assesses the environmental performance of the CSSI, and its effects on the surrounding environment; (b) assesses whether the project is complying with the terms of this approval; (c) reviews the adequacy of any document required under this approval; and (d) recommends measures or actions to improve the environmental performance of the CSSI, and improvements to any document required under this approval.	Sydney Metro CPB	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part B Element 12 Part D Appendix E MIRRA schedule	During Construction
A40	The Proponent must submit a copy of the Environmental Audit Report to the Secretary with a response to any recommendations contained in the audit report within six (6) weeks of completing the audit, or within another timeframe agreed with the Secretary.	Sydney Metro CPB	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part B Element 3.8 Part B Element 12	During Construction
A41	The Secretary must be notified as soon as possible and in any event within 24 hours of any incident.	Sydney Metro CPB	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part B Element 3 Part B Element 9 Incident reporting process Synergy SM Procedure	During Construction
A42	Notification of an incident under Condition A41 of this approval must include the time and date of the incident, details of the incident and must identify any non-compliance with this approval.	Sydney Metro CPB	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part B Element 9 Incident reporting process Synergy	During Construction

Condition No.	Condition Requirement:	Responsibility	Where Addressed	Section Ref	Timing
A43	Any requirements of the Secretary or Relevant Public Authority (as determined by the Secretary) to address the cause or impact of an incident reported in accordance with Condition A41 of this approval, must be met within the timeframe determined by the Secretary or relevant public authority.	Sydney Metro CPB	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part B Element 9 Incident reporting process Synergy	During Construction
A44	If statutory notification is given to the EPA as required under the POEO Act in relation to the CSSI, such notification must also be provided to the Secretary for information within 24 hours after the notification was given to the EPA.	Sydney Metro CPB	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part B Element 9 Incident reporting process Synergy	During Construction
Part B Community Information and Reporting					
B1	A Community Communication Strategy must be prepared to facilitate communication between the Proponent, and the community (including Relevant Councils, adjoining affected landowners and businesses, and others directly impacted by the CSSI), during the design and construction of the CSSI and for a minimum of 12 months following the completion of construction of the CSSI.	Sydney Metro / CPB	Community Communications Strategy (SMCSWSPS-CPB-ALL-CL-PLN-000001)	CCS Entirety	At least 1 Month prior to commencement of construction
B2	The Community Communication Strategy must: (a) identify people or organisations to be consulted during the design and construction phases; (b) set out procedures and mechanisms for the regular distribution of accessible information about or relevant to the CSSI; (c) identify opportunities to provide accessible information regarding regularly updated site construction activities, schedules and milestones at each construction site including use of construction hoardings to provide information regarding construction, specific to the location; (d) identify opportunities for the community to visit construction sites (taking into consideration workplace, health and safety requirements); (e) involve construction personnel from each construction site in engaging with the local community; (f) provide for the formation of issue or location-based community forums that focus on key environmental management issues of concern to the relevant community(ies) for the CSSI; (g) set out procedures and mechanisms: i. through which the community can discuss or provide feedback to the Proponent; ii. through which the Proponent will respond to enquiries or feedback from the community; and iii. to resolve any issues and mediate any disputes that may arise in relation to environmental management and delivery of the CSSI.	Sydney Metro / CPB	Community Communications Strategy (SMCSWSPS-CPB-ALL-CL-PLN-000001)	Section 1.2 Section 7 Section 9 Section 4.5 Section 5 Section 8.2 Section 10	1 Month prior to commencement of construction

Condition No.	Condition Requirement:	Responsibility	Where Addressed	Section Ref	Timing
B3	The Community Communication Strategy must be submitted to the Secretary for approval no later than three months from the date of this approval or one (1) month before commencement of any work, whichever is the latter.	Sydney Metro / CPB	Community Communications Strategy (SMCSWSPS-CPB-ALL-CL-PLN-000001)		1 Month prior to commencement of construction
B4	Work for the purposes of the CSSI must not commence until the Community Communication Strategy has been approved by the Secretary, or within another timeframe agreed with the Secretary.	Sydney Metro / CPB	Community Communications Strategy (SMCSWSPS-CPB-ALL-CL-PLN-000001)	CCS Entirety	1 Month prior to commencement of construction
B5	The Community Communication Strategy, as approved by the Secretary, must be implemented for the duration of the works and for 12 months following the completion of construction.	CBP	Community Communications Strategy (SMCSWSPS-CPB-ALL-CL-PLN-000001)	Section 3	During and Post Construction - min. 12 months post completion
B6	A Complaints Management System must be prepared before the commencement of any works in respect of the CSSI and be implemented and maintained for the duration of works and for a minimum for 12 months following completion of construction of the CSSI.	Sydney Metro / CPB	Community Communications Strategy (SMCSWSPS-CPB-ALL-CL-PLN-000001)	Section 10	During and Post Construction - min. 12 months post completion

Condition No.	Condition Requirement:	Responsibility	Where Addressed	Section Ref	Timing
B7	<p>The Complaints Management System must include a Complaints Register to be maintained recording information on all complaints received about the CSSI during the carrying out of any works associated with the CSSI and for a minimum of 12 months following the completion of construction. The Complaints Register must record the:</p> <p>(a) number of complaints received; (b) number of people affected in relation to a complaint; and (c) nature of the complaint and means by which the complaint was addressed and whether resolution was reached, with or without mediation</p>	Sydney Metro / CPB	Community Communications Strategy (SMCSWSPS-CPB-ALL-CL-PLN-000001)	Section 10	During and Post Construction - min. 12 months post completion
B8	The Complaints Register must be provided to the Secretary upon request, within the timeframe stated in the request.	Sydney Metro / CPB	Community Communications Strategy (SMCSWSPS-CPB-ALL-CL-PLN-000001)	Section 10	Prior to commencement of construction
B9	<p>The following facilities must be available within one (1) month from the date of this approval and for 12 months following the completion of construction and appropriately broadcast to collect community enquiries and complaints:</p> <p>(a) a 24 hour telephone number for the registration of complaints and enquiries about the CSSI; (b) a postal address to which written complaints and enquires may be sent; (c) an email address to which electronic complaints and enquiries may be transmitted; and (d) place-based community manager for each of the station locations available to meet with community members on request.</p>	Sydney Metro / CPB	Community Communications Strategy (SMCSWSPS-CPB-ALL-CL-PLN-000001)	Section 10.5	Prior commencement for construction and operation
B10	The telephone number, postal address and email address required under Condition B9 of this approval must be published in a newspaper circulating in the local area and on site hoarding at each construction site before commencement of construction and published in the same way again before commencement of operation. This information must also be provided on the website required under Condition B15 of this approval.	Sydney Metro / CPB	Community Communications Strategy (SMCSWSPS-CPB-ALL-CL-PLN-000001)	Section 10.5	Within 1 month of approval date

Condition No.	Condition Requirement:	Responsibility	Where Addressed	Section Ref	Timing
B11	A Community Complaints Mediator that is independent of the design and construction personnel must be nominated by the Proponent, approved by the Secretary and engaged during all works associated with the CSSI. The nominated Community Complaints Mediator must be submitted to the Secretary for approval within one month of the date of this approval or within another timeframe agreed with the Secretary.	Sydney Metro / CPB	Community Communications Strategy (SMCSWSPS-CPB-ALL-CL-PLN-000001)	Section 5.2	Within 28 days of request
B12	The role of the Community Complaints Mediator must address any complaint where a member of the public is not satisfied by the Proponent's response. Any member of the public that has lodged a complaint which is registered in the Complaints Management System identified in Condition B6 may ask the Community Complaints Mediator to review the Proponent's response. The application must be submitted in writing and the Community Complaints Mediator must respond within 28 days of the request being made or other specified timeframe agreed between the Community Complaints Mediator and the member of the public.	Sydney Metro / CPB	Community Communications Strategy (SMCSWSPS-CPB-ALL-CL-PLN-000001)	Section 5.2	-
B13	The Community Complaints Mediator will: (a) review the Proponent's unresolved disputes between the project and members of the public if the procedures and mechanisms under Condition B2(g)(iii) do not satisfactorily address complaints; and (b) make recommendations to the Proponent to satisfactorily address complaints, resolve disputes or mitigate against the occurrence of future complaints or disputes.	Sydney Metro / CPB	Community Communications Strategy (SMCSWSPS-CPB-ALL-CL-PLN-000001)	Section 5.2	
B14	The Community Complaints Mediator will not act before the Proponent has provided an initial response to a complaint and will not consider issues such as property acquisition where other dispute processes are provided for in this approval, or clear government policy and resolution processes are available, or matters which are not within the scope of the CSSI.	Sydney Metro / CPB	Community Communications Strategy (SMCSWSPS-CPB-ALL-CL-PLN-000001)	Section 5.2	Prior to commencement of construction, 12 months post construction

Condition No.	Condition Requirement:	Responsibility	Where Addressed	Section Ref	Timing
B15	<p>A website providing information in relation to the CSSI must be established before commencement of works and maintained for the duration of construction, and for a minimum of 12 months following the completion of construction or other timeframe as agreed with the Secretary. The following up-to-date information (excluding confidential, private and commercial information or other documents as agreed to by the Secretary) must be published prior to the relevant works commencing, or in the case of documents prepared in accordance with E66 and E67 when finalised in accordance with the requirements of this approval, and maintained on the website or dedicated pages:</p> <p>(a) information on the current implementation status of the CSSI; (b) a copy of the documents listed in Condition A1 and Condition A2 of this approval, and any documentation relating to any modifications made to the CSSI or the terms of this approval; (c) a copy of this approval in its original form, a current consolidated copy of this approval (that is, including any approved modifications to its terms), and copies of any approval granted by the Minister to a modification of the terms of this approval; (d) a copy of any Environment Protection Licence obtained in relation to the CSSI or link to any existing Environment Protection Licence applied to the CSSI; and (e) a current copy of each document required under the terms of this approval must be published within one week of its endorsement / approval or before the commencement of any works to which they relate or before their implementation as the case may be.</p> <p>Note: Environment Protection Licences relevant to each stage of the project need to be clearly differentiated to identify how and where they specifically apply.</p>	Sydney Metro / CPB	<p>Community Communications Strategy (SMCSWSPS-CPB-ALL-CL-PLN-000001)</p> <p>Website address https://pittstreetsydneymetroisd.com.au/</p>	Section 10.5	Prior to commencement of construction
Part C Construction Environmental Management					
C1	A Construction Environmental Management Plan (CEMP) must be prepared in accordance with the Construction Environmental Management Framework (CEMF) included in the PIR and the Department's Guideline for the Preparation of Environmental Management Plans to detail how the performance outcomes, commitments and mitigation measures specified in Chapter 11 of the PIR, as amended by the documents listed in A1, will be implemented and achieved during construction.	CPB	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	CEMP (entirety)	CEMP Development
C2	<p>The CEMP must provide:</p> <p>(a) a description of activities to be undertaken during construction (including the scheduling of construction);</p> <p>(b) details of environmental policies, guidelines and principles to be followed in the construction of the CSSI;</p> <p>(c) a schedule for compliance auditing;</p> <p>(d) a program for ongoing analysis of the key environmental risks arising from the activities described in subsection (a) of this condition, including an initial risk assessment undertaken before the commencement of construction of the CSSI;</p> <p>(e) details of how the activities described in subsection (a) of this condition will be carried out to:</p> <p>i. meet the performance outcomes stated in the EIS as amended by the documents listed in A1; and</p> <p>ii. manage the risks identified in the risk analysis undertaken in subsection (d) of this condition;</p> <p>(f) an inspection program detailing the activities to be inspected and frequency of inspections;</p> <p>(g) a protocol for managing and reporting any:</p> <p>i. incidents; and</p> <p>ii. non-compliances with this approval and with statutory requirements;</p>	CPB	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	<p>CEMP (entirety)</p> <p>Part A Section 2.1</p> <p>Part A Section 2.2, 2.3 and Part B Element 3:</p> <p>Part B Element 12:</p> <p>Part B Element 4:</p> <p>Part A Section 2.5.1 and Part C</p> <p>Part A Section 5 and Part B Element 4</p> <p>Part D Appendix E</p> <p>Part B Element 9:</p> <p>Part B Element 3</p>	CEMP Development

Condition No.	Condition Requirement:	Responsibility	Where Addressed	Section Ref	Timing
	<p>(h) procedures for rectifying any non-compliance with this approval identified during compliance auditing, incident management or at any time during construction;</p> <p>(i) a list of all the CEMP sub-plans required in respect of construction, as set out in Condition C3. Where staged construction of the CSSI is proposed, the CEMP must also identify which CEMP sub-plan applies to each of the proposed stages of construction;</p> <p>(j) a description of the roles and environmental responsibilities for relevant employees and their relationship with the ER;</p> <p>(k) for training and induction for employees, including contractors and sub-contractors, in relation to environmental and compliance obligations under the terms of this approval;</p> <p>(l) for periodic review and update of the CEMP and all associated plans and programs.</p>			<p>Part B Element 3</p> <p>Part A Section 1</p> <p>Part A Section 4 Part D Appendix C</p> <p>Part B Element 7:</p> <p>Part B Element 12</p>	
C3	<p>The following CEMP sub-plans must be prepared in consultation with the relevant government agencies identified for each CEMP sub-plan and be consistent with the CEMF and CEMP referred to in Condition C1.</p> <p>(a) Noise and vibration - Relevant Council(s)</p> <p>(b) Biodiversity - OEH and Relevant Council(s)</p> <p>(c) Air quality - N/A</p> <p>(d) Soil and Water - DPI Water, Relevant Council(s), OEH, SES, NSW Fire and Rescue</p> <p>(e) Groundwater - DPI Water</p> <p>(g) Heritage - Heritage Council (or its delegate) and Relevant Council(s)</p> <p><i>Note - (f) and (h) is no longer required</i></p>	CPB	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	<p>Part C Section 1.3.4, Section 3, Section 4.3.4, and Section 8</p> <p>Part D Appendix I</p>	CEMP Development
C4	<p>The CEMP sub-plans must state how:</p> <p>(a) the environmental performance outcomes identified in the EIS as amended by the documents listed in A1 will be achieved;</p> <p>(b) the mitigation measures identified in the EIS as amended by documents listed in A1 will be implemented;</p> <p>(c) the relevant terms of this approval will be complied with; and</p> <p>(d) issues requiring management during construction, as identified through ongoing environmental risk analysis, will be managed.</p>	CPB	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part C Sections 1, 3,4,7 and 8	CEMP Development
C5	<p>The CEMP sub-plans must be developed in consultation with relevant government agencies. Where an agency(ies) request(s) is not included, the Proponent must provide the Secretary justification as to why. Details of all information requested by an agency to be included in a CEMP sub-plan as a result of consultation and copies of all correspondence from those agencies, must be provided with the relevant CEMP sub-plan.</p>	CPB	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	<p>Part C Section 1.3.4, Section 3, Section 4.3.4, and Section 8</p> <p>Part D Appendix I</p>	CEMP Development
C6	<p>Any of the CEMP sub-plans may be submitted to the Secretary along with, or subsequent to, the submission of the CEMP but in any event, no later than one (1) month before commencement of construction.</p>	Sydney Metro / CPB	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part A Section 1	CEMP Development

Condition No.	Condition Requirement:	Responsibility	Where Addressed	Section Ref	Timing
C7	The CEMP must be endorsed by the ER and then submitted to the Secretary for approval no later than one (1) month before the commencement of construction or within another timeframe agreed with the Secretary.	Sydney Metro / CPB	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part A Section 1	CEMP Development
C8	Construction must not commence until the CEMP and all CEMP sub-plans have been approved by the Secretary. The CEMP and CEMP sub-plans, as approved by the Secretary, including any minor amendments approved by the ER (or AA in regards to the Noise and Vibration sub-plan), must be implemented for the duration of construction. Where the CSSI is being staged, construction of that stage is not to commence until the relevant CEMP and sub-plans have been approved by the Secretary.	Sydney Metro / CPB	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part A Section 3.2	CEMP Development
C9	The following Construction Monitoring Programs must be prepared in consultation with the relevant government agencies identified for each Construction Monitoring Program to compare actual performance of construction of the CSSI against predicted performance. (a) Noise and Vibration - EPA and Relevant Council(s) (b) Blasting - EPA and Relevant Council(s) (c) Water Quality - EPA and Relevant Council(s) (d) Groundwater - DPI Water	CPB	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part C Section 1.6 Section 8 Part D Appendix E	CEMP Development
C10	Each Construction Monitoring Program must provide: (a) details of baseline data available; (b) details of baseline data to be obtained and when; (c) details of all monitoring of the project to be undertaken; (d) the parameters of the project to be monitored; (e) the frequency of monitoring to be undertaken; (f) the location of monitoring; (g) the reporting of monitoring results; (h) procedures to identify and implement additional mitigation measures where results of monitoring are unsatisfactory; and (i) any consultation to be undertaken in relation to the monitoring programs.	CPB	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part C Section 1.6 Section 8 Part D Appendix E	CEMP Development

Condition No.	Condition Requirement:	Responsibility	Where Addressed	Section Ref	Timing
C11	The Noise and Vibration Construction Monitoring Program and Blast Construction Monitoring Program must include provision of real time noise and vibration monitoring data. The real time data must be available to the construction team, Proponent, ER and AA in real time. The Department and EPA must be provided with access to the real time monitoring data in real time.	CPB Renzo Tonin	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part C Section 8 Noting no blasting will be carried out for the Station Works	CEMP Development
C12	The Construction Monitoring Programs must be developed in consultation with relevant government agencies as identified in Condition C9 of this approval and must include, to the written satisfaction of the Secretary, information requested by an agency to be included in a Construction Monitoring Programs during such consultation. Details of all information requested by an agency including copies of all correspondence from those agencies, must be provided with the relevant Construction Monitoring Program.	CPB	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part C Section 1 and 8 Part D Appendix E	CEMP Development
C13	The Construction Monitoring Programs must be endorsed by the ER (or AA in regards to the Noise and Vibration Construction Monitoring Program) and then submitted to the Secretary for approval at least one (1) month before commencement of construction or within another timeframe agreed with the Secretary.	Sydney Metro / CPB	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part C Section 1 and 8 Part D Appendix E	CEMP Development
C14	Construction must not commence until the Secretary has approved all of the required Construction Monitoring Programs, and all relevant baseline data for the specific construction activity has been collected.	Sydney Metro / CPB	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part A Section 3.2	Prior to commencement of construction
C15	The Construction Monitoring Programs, as approved by the Secretary including any minor amendments approved by the ER (or AA in regards to the Noise and Vibration Construction Monitoring Program), must be implemented for the duration of construction and for any longer period set out in the monitoring program or specified by the Secretary, whichever is the greater.	CPB	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part C Part D Appendix E	During Construction

Condition No.	Condition Requirement:	Responsibility	Where Addressed	Section Ref	Timing
C16	The results of the Construction Monitoring Programs must be submitted to the Secretary for information, and relevant regulatory agencies, for information in the form of a Construction Monitoring Report at the frequency identified in the relevant Construction Monitoring Program.	Sydney Metro / CPB	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part C Sections 1.6.4 and 8 (Appendix F) Part D Appendix E	During Construction
C17	Where a relevant CEMP sub-plan exists, the relevant Construction Monitoring Program may be incorporated into that CEMP sub-plan.	CPB	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part C Sections 1 and 8	CEMP Development
Part D Operational Environmental Management					
D9	The Proponent must nominate, for the Secretary's approval, a ground-borne noise specialist who is independent of the design and construction personnel, to review: (a) the appropriateness of the proposed design (noise) objectives for ground-borne noise sensitive receivers; and (b) predictions for operational ground-borne noise impacts, before the installation of track, in order to confirm the appropriate track attenuation required to meet the design (noise) objectives identified in (a). The ground borne noise specialist must be submitted for the Secretary's approval before the review commences and the review must be submitted to the Secretary at least one month before the installation of track.	Sydney Metro / CPB	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part B Element 3	1 month prior to track installation
Part E Key Issue Conditions					
E2	Utilities, services and other infrastructure potentially affected by construction must be identified before works affecting the item, to determine requirements for access to, diversion protection, and/or support. The relevant owner and/or provider of services must be consulted to make suitable arrangements for access to diversion, protection, and/or support of the affected infrastructure as required. The Proponent must ensure that disruption to any service is minimised and be responsible for advising local residents and businesses affected before any planned disruption of service.	TSE / CPB	Construction and Site Management Plan (SMCSWSPS-CPB-ALL-CM-PLN-000001)	Section 9	During Construction
E3	All excavations adjacent to RMS road infrastructure must meet the requirements of RMS Technical Direction (GTD 2012/0001) Excavation adjacent to RMS infrastructure.	Not Applicable All Roads surrounding the project site are City of Sydney Council assets			

Condition No.	Condition Requirement:	Responsibility	Where Addressed	Section Ref	Timing
E4	<p>Dangerous goods, as defined by the Australian Dangerous Goods Code, must be stored and handled strictly in accordance with:</p> <p>(a) all relevant Australian Standards; (b) for liquids, a minimum bund volume requirement of 110% of the volume of the largest single stored volume within the bund; (c) Storing and Handling Liquids: Environmental Protection – Participants Manual (Department of Environment and Climate Change, May 2007); and (d) the Environmental Compliance Report: Liquid Chemical Storage, Handling and Spill Management – Part B Review of Best Practice and Regulation (Department of Environment and Conservation (NSW), 2005).</p> <p>In the event of an inconsistency between the requirements listed from (a) to (d) above, the most stringent requirement shall prevail to the extent of the inconsistency.</p>	CPB	<p>CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)</p> <p>Safety and Health Management Plan (SHMP) (SMCSWSPS-CPB-ALL-HS-PLN-000001)</p>	<p>Part C Section 1.5 (CEMP)</p> <p>Section 7 (SHMP)</p>	During Construction
E5	<p>In addition to the performance outcomes, commitments and mitigation measures specified in PIR, all reasonably practicable measures must be implemented to minimise the emission of dust and other air pollutants during the construction and operation of the CSSI.</p>	CPB	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part C Section 7.5	During Construction
E6	<p>The CSSI must be designed to retain as many trees as possible and provide replacement trees such that there a net increase in the number of trees. The Proponent must commission an independent, experienced and suitably qualified arborist to prepare a comprehensive Tree Report before removing any trees as detailed in the EIS, as amended by the documents listed in A1. The Tree Report must include:</p> <p>(a) a description of the conditions of the tree(s) and its amenity and visual value; (b) consideration of all options to avoid tree removal, including relocation of services, redesign or relocation of ancillary components (such as substations, fencing etc.) and reduction of standard offsets to underground services; and (c) measures to avoid tree removal, minimise damage to, and ensure the health and stability of those trees to be retained and protected. This includes details of any proposed canopy or root pruning, root protection zone, excavation, site controls on waste disposal, vehicular access, materials storage and protection of public utilities.</p> <p>In the event that tree removal cannot be avoided, then replacement trees are to be planted within, or in close proximity to the CSSI or other location in consultation with the Relevant Councils and agreed by the Secretary. The size of the replacement trees will be determined in consultation with the relevant Council. A copy of the Tree Report must be submitted to the Secretary before the removal, damage and/or pruning of any trees, including those affected by the site establishment works. All recommendations of the Tree Report must be implemented by the Proponent, unless otherwise agreed by the Secretary.</p> <p>The Tree Report may be prepared for the entire CSSI or separate reports may be prepared for individual areas where tree removal and/or pruning is proposed.</p>	CPB Sydney Metro	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part C Sections 4.5	During Construction
E8	<p>Measures identified in Chapter 11 of the PIR to maintain or improve flood characteristics, as amended by the documents listed in A1, must be incorporated into the detailed design of the CSSI. The incorporation of these measures into the detailed design, including modelling, must be reviewed and endorsed by a suitably qualified and experienced person in consultation with directly affected landowners and businesses, Sydney Water, DPI Water, OEH, NSW State Emergency Service (SES) and Relevant Councils.</p>	CPB	<p>Civil Design Report Stage 3 (SMCSWSPS-AUR-STA-CE-REP-000001)</p> <p>Flood Impact Assessment (SWCSWSPS-AUR-ALL-CE-REP-000002)</p>	<p>Section 2</p> <p>Section 2</p>	Design

Condition No.	Condition Requirement:	Responsibility	Where Addressed	Section Ref	Timing
E9	Flood information including flood reports, models and geographic information system outputs, and work as executed information from a registered surveyor certifying finished ground levels and the dimensions and finished levels of all structures within the flood prone land, must be provided to the relevant Councils, Sydney Water, OEH and the SES. The Relevant Councils, Sydney Water, OEH and the SES must be notified in writing that the information is available no later than one month following the completion of construction and be provided with that information. Information requested by the relevant Council, Sydney Water, OEH or the SES must be provided no later than six months following the completion of construction or within another timeframe agreed with the Relevant Council(s), Sydney Water, OEH and the SES.	CPB	Civil Design Report Stage 3 (SMCSWSPS-AUR-STA-CE-REP-000001) Works as Executed drawings		Post Construction - No later than 1 month following completion of construction
E10	The Proponent must not destroy, modify or otherwise physically affect any Heritage item not identified in documents referred to in Condition A1.	CPB	CEMP Part C Section 3 CHMP (SMCSWSPS-CPB-ALL-HE-PLN-000001)	Part A Section 6.1	Pre Construction Construction Post Construction
E13	The Proponent must prepare a Heritage Archival Recording Report, including photographic recording of the heritage items identified in documents referred to in Condition A1. Archival recording must include but not be limited to the following heritage items: (a) any component of the Blues Point Waterfront Group and the McMahons Point South heritage conservation area to be directly affected or altered, including vegetation and significant landscape features; (b) Hickson Road wall in the vicinity of proposed ventilation risers and skylights for Barangaroo Station or any other project elements to be located in front of the Hickson Road wall; (c) Martin Place, between Elizabeth and Castlereagh Streets, Sydney; (d) the Rolling Stock Officers' Garden, Rolling Stock Officers' Building and Cleaners' Amenities Building in Sydney Yard and any other component of the Sydney Terminal and Central Railway Stations group to be removed or altered; (e) any component of Sydenham Station or Sydenham Pit and Pumping Station to be removed or altered; (f) views from Mortuary Station before construction of the Sydney Yard Access Bridge; and (g) Former "Metro Goldwyn Mayer" building including interior, 22-28 Chalmers Street, Surry Hills. The archival recording must be undertaken by a suitably qualified heritage specialist and prepared in accordance with NSW Heritage Office's How to Prepare Archival Records of Heritage Items (1998) and Photographic Recording of Heritage Items Using Film or Digital Capture (2006). Within two (2) years of completing the archival recording, or any other later time agreed by the Secretary, the Proponent must submit the Heritage Archival Recording Report to the Department, the OEH, Heritage Council of NSW, Relevant Council(s), relevant local libraries and local historical societies in the respective local government area(s).	Sydney Metro CPB	CEMP Part C Section 3 CHMP (SMCSWSPS-CPB-ALL-HE-PLN-000001))	Part A Section 6.5	Within 2 years of archival recording completion
E17	The Archaeological Assessment Research Design Report (AARD) in the documents listed in A1 must be implemented. Final Archaeological Method Statements must be prepared in consultation with the Heritage Council of NSW (or its delegate) before commencement of archaeological excavation works. The final methodology must: (a) provide for the detailed analysis of any heritage items discovered during the investigations; (b) include detailed site specific archaeological management and artefact management strategies; (c) include cored soil samples for soil and pollen for the Pitt Street site within the Tank Stream Valley; and (d) provide for a sieving strategy.	TSE CPB /Heritage consultant	CEMP Part C Section 3 CHMP (SMCSWSPS-CPB-ALL-HE-PLN-000001)	Section 6	Prior to commencement of archaeological excavation

Condition No.	Condition Requirement:	Responsibility	Where Addressed	Section Ref	Timing
E18	<p>Before excavation of archaeological management sites, the Proponent must nominate a suitably qualified Excavation Director who complies with the Heritage Council of NSW's Criteria for Assessment of Excavation Directors (July 2011) to oversee and advise on matters associated with historic archaeology and advise the Department and OEH.</p> <p>Where archaeological excavation is required, the Excavation Director must be present to oversee excavation and advise on archaeological issues. The Excavation Director must be given the authority to advise on the duration and extent of oversight required as informed by the provisions of the approved AARD and Excavation Methodology.</p> <p>A final archaeological report must be submitted to the Heritage Council of NSW within two (2) years of the completion of archaeological excavation on the project. The report must include information on the entire historical archaeological program relating to the CSSI.</p>	TSE CPB /Heritage consultant	CEMP Part C Section 3 CHMP (SMCSWSPS-CPB-ALL-HE-PLN-000001)	Section 6	Prior to excavation of archaeological management sites
E19	<p>An Unexpected Heritage Finds Procedure must be prepared:</p> <p>(a) to manage unexpected heritage finds in accordance with any guidelines and standards prepared by the Heritage Council of NSW or OEH; and (b) by a suitably qualified and experienced heritage specialist.</p> <p>The procedure must be included in the AARD and must be implemented for the life of the project.</p>	Sydney Metro CPB to implement	CEMP Part C Section 3 CHMP (SMCSWSPS-CPB-ALL-HE-PLN-000001)	Part A Section 6.2 Part C Appendix C1	During Construction
E20	<p>In the event that a potential relic/s is/are discovered, relevant construction must cease in the affected area and the Excavation Director must be notified and assess the significance level of the find/s and provide mitigation advice according to the significance level and the impact proposed. The Excavation Director must attend the site in accordance with E18 to oversee the excavation where relics of State significance are found.</p> <p>The Secretary must be notified at the same time as the Heritage Council of NSW (or its delegate) of any relic of State significance found.</p> <p>An Archaeological Relic Management Plan specific to the relic of State significance must be prepared in consultation with the Heritage Council of NSW (or its delegate) to outline measures to be implemented to avoid and/or minimise harm to and/or salvage the relic of State significance.</p> <p>Construction in the vicinity of the discovery must not recommence until the requirements of the ARMP have been implemented, in consultation with the Excavation Director. The Proponent must notify the Secretary in writing of the outcome of consultation on the Archaeological Relic Management Plan with the Heritage Council of NSW.</p>	CPB/Heritage Consultant / Sydney Metro	CEMP Part C Section 3 CHMP (SMCSWSPS-CPB-ALL-HE-PLN-000001)	Part A Section 6.2 Part C Appendix C1	If required during construction
E21	<p>The Proponent must prepare a Heritage Interpretation Plan which identifies and interprets the key Aboriginal and Non-Aboriginal heritage values and stories of heritage items and heritage conservation areas impacted by the CSSI. The Heritage Interpretation Plan must inform the Station Design and Precinct Plan referred to in Condition E101. The Heritage Interpretation Plan must be prepared in accordance with the NSW Heritage Manual, the NSW Heritage Office's Interpreting Heritage Places and Items: Guidelines (August 2005), and the NSW Heritage Council's Heritage Interpretation Policy and include, but not be limited to:</p> <p>(a) a discussion of key interpretive themes, stories and messages proposed to interpret the history and significance of the affected heritage items and sections of heritage conservation areas including, but not limited to the Sydney Terminal and Central Railway Stations Group, Martin Place Station, Sydenham Station and Sydenham Pit and Drainage Pumping Station Precincts; (b) identification and confirmation of interpretive initiatives implemented to mitigate impacts to archaeological Relics, heritage items and conservation areas affected by the CSSI including: i. use of interpretative hoardings during construction ii. community open days iii. community updates iv. station and precinct design; and (c) Aboriginal cultural and heritage values of the project area including the results of any archaeological investigations undertaken.</p> <p>The Heritage Interpretation Plan must be prepared in consultation with the Heritage Council of NSW (or its delegate), Relevant Councils and Registered Aboriginal Parties, and must be submitted to the Secretary before commencement of construction.</p>	CPB/Heritage Consultant	Heritage Interpretation Plan (SMCSWSPS-GBA-STA-HE-REP-000002) Consultation Records	HIP	Prior to commencement of construction

Condition No.	Condition Requirement:	Responsibility	Where Addressed	Section Ref	Timing
E23	The Proponent must take all reasonable steps so as not to harm, modify or otherwise impact any Aboriginal object associated with the CSSI except as authorised by this approval.	CPB	CEMP Part C Section 3 CHMP (SMCSWSPS-CPB-ALL-HE-PLN-000001)	Part Section 6.1 and Part B Element 4	During Construction
E24	Before excavation, the Proponent must implement the Aboriginal Cultural Heritage Assessment prepared for the CSSI and included in the PIR. Excavation and/or salvage must be undertaken by a qualified archaeologist in consultation with the Registered Aboriginal Parties for the CSSI.	CPB	CEMP Part C Section 3 CHMP (SMCSWSPS-CPB-ALL-HE-PLN-000001)	Part A Section 6.2 Part C Appendix C1	Prior to excavation
E25	Where previously unidentified Aboriginal objects are discovered during construction of the CSSI, construction must stop in the vicinity of the affected area and a suitably qualified and experienced Aboriginal heritage expert must be contacted to provide specialist heritage advice, before works recommence. The measures to consider and manage this process must be specified in the Heritage Management sub-plan required by Condition C3 and, where relevant, include registration in the OEH's Aboriginal Heritage Information Management System (AHIMS).	CPB	CEMP Part C Section 3 CHMP (SMCSWSPS-CPB-ALL-HE-PLN-000001) Unexpected Finds Procedure	Part A Section 6.2 Part C Appendix C1	
E26	This approval does not allow the Proponent to harm, modify, or otherwise impact human remains uncovered during the construction and operation of the CSSI, except in accordance with the Exhumation Management Plan (Condition E27).	CPB	CEMP Part C Section 3 CHMP (SMCSWSPS-CPB-ALL-HE-PLN-000001) Unexpected Finds Procedure	Part A Section 6.2 Part C Appendix C1	

Condition No.	Condition Requirement:	Responsibility	Where Addressed	Section Ref	Timing
E27	<p>An Exhumation Management Plan must be prepared to guide the relocation of recovered human remains. The Exhumation Management Plan must be prepared:</p> <p>(a) in consultation with, and meeting the requirements of, the OEH and NSW Health; and (b) in accordance with the Guidelines for Management of Human Skeletal Remains (NSW Heritage Office, 1998b) and NSW Health Policy Directive – Exhumation of human remains (December, 2013), and other relevant guidelines and standards prepared by the Heritage Council of NSW or OEH.</p> <p>The Exhumation Management Plan must be provided to the Secretary for information before the commencement of excavation works.</p> <p><i>Note: Human remains that are found unexpectedly during works are under the jurisdiction of the NSW State Coroner and must be reported to the NSW Police immediately.</i></p>	Sydney Metro CPB to implement if required	<p>CEMP Part C Section 3 CHMP (SMCSWSPS-CPB-ALL-HE-PLN-000001)</p> <p>Unexpected Finds Procedure</p>	Part A Section 6.1 Part C Appendix C1	
E28	The Proponent must ensure that vibration from construction activities does not exceed the vibration limits set out in the British Standard BS 7385-2:1993 Evaluation and measurement for vibration in buildings. Guide to damage levels from groundborne vibration.	CPB Advise from acoustics consultant	CEMP Part C Section 8 CNVMP (SMCSWSPS-CPB-ALL-EM-PLN-000004)	Table 3.1 Section 5	During Construction
E29	Owners of properties at risk of exceeding the screening criteria for cosmetic damage must be notified before construction that generates vibration commences in the vicinity of those properties. The management of construction works in the vicinity of properties at risk of exceeding the screening criteria for cosmetic damage must be considered in the Noise and Vibration management sub plan required by Condition C3.	CPB Advise from Acoustic Consultant	CEMP Part C Section 8 CNVMP (SMCSWSPS-CPB-ALL-EM-PLN-000004)	Table 3.1 Section 7 and 10	During Construction
E30	The Proponent must conduct vibration testing before and during vibration generating activities that have the potential to impact on heritage items to identify minimum working distances to prevent cosmetic damage. In the event that the vibration testing and monitoring shows that the preferred values for vibration are likely to be exceeded, the Proponent must review the construction methodology and, if necessary, implement additional mitigation measures.	CPB Advise from Acoustic Consultant	CEMP Part C Section 8 CNVMP (SMCSWSPS-CPB-ALL-EM-PLN-000004)	Table 3.1 Section 7	During Construction

Condition No.	Condition Requirement:	Responsibility	Where Addressed	Section Ref	Timing
E31	The Proponent must seek the advice of a heritage specialist on methods and locations for installing equipment used for vibration, movement and noise monitoring of heritage-listed structures.	CPB Advise from Acoustic Consultant	CEMP Part C Section 8 CNVMP (SMCSWSPS-CPB-ALL-EM-PLN-000004)	Table 3.1 Section 2.3 and 7	During Construction
E32	The Proponent must review the Sydney Metro City and Southwest Construction Noise and Vibration Strategy in the PIR during detailed construction planning to consider scale and duration of impacts, the requirements of this approval and all measures to limit construction noise impacts to sensitive receivers including: (a) at property or architectural treatment; (b) relocation; and (c) other forms of mitigation where impacts are predicted to be long term and significant. The revised Sydney Metro City and Southwest Construction Noise and Vibration Strategy must be submitted to the Secretary for approval at least one (1) month before construction commences.	CPB Advise from Acoustic Consultant	CEMP Part C Section 8 CNVMP (SMCSWSPS-CPB-ALL-EM-PLN-000004)	Table 3.1 Section 6 and 7	During Construction
E33	Construction Noise and Vibration Impact Statements must be prepared for each construction site before construction noise and vibration impacts commence and include specific mitigation measures identified through consultation with affected sensitive receivers.	CPB / Acoustic Consultant	CEMP Part C Section 8 CNVMP (SMCSWSPS-CPB-ALL-EM-PLN-000004) CNVIS	Table 3.1 Section 6 and 7	Prior to issue of 109R1
E34	Noise generating works in the vicinity of potentially-affected, religious, educational, community institutions and noise and vibration-sensitive businesses and critical working areas (such as theatres, laboratories and operating theatres) must not be timetabled within sensitive periods, unless other reasonable arrangements to the affected institutions are made at no cost to the affected institution or as otherwise approved by the Secretary.	CPB Advise from Acoustic Consultant	CEMP Part C Section 8 CNVMP (SMCSWSPS-CPB-ALL-EM-PLN-000004) CNVIS	Table 3.1 Section 6	During Construction

Condition No.	Condition Requirement:	Responsibility	Where Addressed	Section Ref	Timing
E35	The Proponent must review alternative methods to rock hammering and blasting for excavation as part of the detailed construction planning with a view to adopting methods that minimise impacts on sensitive receivers. Construction Noise and Vibration Impact Statements must be updated for each location or activity to adopt the least impact alternative in any given location unless it can be demonstrated, to the satisfaction of the AA, why it should not be adopted.	CPB Advise from Acoustic Consultant No blasting required for the station works	CEMP Part C Section 8 CNVMP (SMCSWSPS-CPB-ALL-EM-PLN-000004) CNVIS	Table 3.1	During Construction
E36	Construction, except as allowed by Condition E48 (excluding cut and cover tunnelling), must only be undertaken during the following standard construction hours: (a) 7:00am to 6:00pm Mondays to Fridays, inclusive; (b) 8:00am to 6:00pm Saturdays; and (c) at no time on Sundays or public holidays.	CPB	CEMP Part C Section 8 CNVMP (SMCSWSPS-CPB-ALL-EM-PLN-000004) CNVIS CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Table 3.1 Section 2 Part A Section 5.2	During Construction
E37	The Proponent must identify all receivers likely to experience internal noise levels greater than Leq(15 minute) 60 dB(A) inclusive of a 5 dB penalty, if rock breaking or any other annoying activity likely to result in regenerated (ground-borne) noise or a perceptible level of vibration is planned (including works associated with utility adjustments), between 7am – 8pm at: (a) Crows Nest, Victoria Cross, Blues Point, Barangaroo, Martin Place, Pitt Street, and Central; and (b) Marrickville, Newtown, St Peters, Sydenham and Tempe for works specified in SSI 7400_MOD 4 referenced in Condition A1 (c).	CPB Advice from acoustic Consultant	CEMP Part C Section 8 CNVMP (SMCSWSPS-CPB-ALL-EM-PLN-000004) CNVIS	Table 3.1 Section 6	During Construction
E38	The Proponent must consult with all receivers identified in accordance with Condition E37 with the objective of determining appropriate hours of respite so that construction noise (including ground-borne noise), does not exceed internal noise levels of: (a) Leq(15 minute) 60 dB(A) inclusive of a 5 dB penalty if rock breaking or any other annoying activity likely to result in ground-borne noise or a perceptible level of vibration is planned between 7am – 8pm for more than 50 percent of the time; and (b) Leq(15 minute) 55 dB(A) inclusive of a 5 dB penalty if rock breaking or any other annoying activity likely to result in ground-borne noise or a perceptible level of vibration is planned between 7am – 8pm for more than 25 percent of the time, unless an agreement is reached with those receivers. This condition does not apply to noise associated with the cutting surface of a TBM as it passes under receivers. Note This condition requires that noise levels be less than Leq(15 minute) 60 dB(A) for at least 6.5 hours between 7am and 8pm, of which at least 3.25 hours must be below Laeq(15 minute) 55 dB(A). Noise equal to or above Leq(15 minutes) 60 dB(A) is allowed for the remaining 6.5 hours between 7am and 8pm.	CPB Advice from acoustic Consultant	CEMP Part C Section 8 CNVMP (SMCSWSPS-CPB-ALL-EM-PLN-000004) CNVIS	Table 3.1 Section 6 and 10	During Construction

Condition No.	Condition Requirement:	Responsibility	Where Addressed	Section Ref	Timing
E39	The Proponent must consult with proponents of other construction works in the vicinity of the CSSI and take reasonable steps to coordinate works to minimise cumulative impacts of noise and vibration and maximise respite for affected sensitive receivers.	CPB Advice from acoustic Consultant	CEMP Part C Section 8 CNVMP (SMCSWSPS-CPB-ALL-EM-PLN-000004) CNVIS	Table 3.1 Section 6	During Construction
E40	The Proponent must ensure all works (including utility works associated with the CSSI where undertaken by third parties) are coordinated to provide the required respite periods identified in accordance with the terms of this approval.	CPB	CEMP Part C Section 8 CNVMP (SMCSWSPS-CPB-ALL-EM-PLN-000004) CNVIS	Table 3.1 Section 6	During Construction
E41	The Proponent must ensure that residential receivers, located in non-residential zones, likely to experience an internal noise level exceeding Leq(15 minute) 60 dB(A) between 8pm and 9pm or Leq(15 minute) 45 dB(A) between 9pm and 7am (inclusive of a 5 dB penalty if rock breaking or any other annoying activity likely to result in ground-borne noise, or a perceptible level of vibration is planned (including works associated with utility adjustments)) must be offered additional mitigation in accordance with the Sydney Metro City and South West Noise and Vibration Strategy referenced in Condition E32.	CPB Advice from Acoustic Consultant	CEMP Part C Section 8 CNVMP (SMCSWSPS-CPB-ALL-EM-PLN-000004) CNVIS	Table 3.1 Section 5 and 6	During Construction
E42	The Proponent must ensure that residential receivers in residential zones likely to experience an internal noise level of Leq(15 minute) 45 dB(A) or greater between 8pm and 7am (inclusive of a 5 dB penalty if rock breaking or any other annoying activity likely to result in ground-borne noise, or a perceptible level of vibration is planned (including works associated with utility adjustments)) must be offered additional mitigation in accordance with the Sydney Metro City and South West Noise and Vibration Strategy referenced in Condition E32.	CPB Advice from Acoustic Consultant	CEMP Part C Section 8 CNVMP (SMCSWSPS-CPB-ALL-EM-PLN-000004) CNVIS	Table 3.1 Section 5 and 6	During Construction

Condition No.	Condition Requirement:	Responsibility	Where Addressed	Section Ref	Timing
E43	At no time can noise generated by construction exceed the National Standard for exposure to noise in the occupational environment of an eight-hour equivalent continuous A-weighted sound pressure level of LAeq,8h, of 85dB(A) for any employee working at a location near the CSSI.	CPB Advice from Acoustic Consultant	CEMP Part C Section 8 CNVMP (SMCSWSPS-CPB-ALL-EM-PLN-000004) CNVIS	Table 3.1 Section 11	During Construction
E44	Notwithstanding Condition E36 construction associated with the CSSI may be undertaken outside the hours specified under those conditions in the following circumstances: (a) for the delivery of materials required by the NSW Police Force or other authority for safety reasons; or (b) where it is required in an emergency to avoid injury or the loss of life, to avoid damage or loss of property or to prevent environmental harm; or (c) where different construction hours are permitted or required under an EPL in force in respect of the construction; or (d) construction that causes LAeq(15 minute) noise levels: i. no more than 5 dB(A) above the rating background level at any residence in accordance with the Interim Construction Noise Guideline (DECC, 2009), and ii. no more than the noise management levels specified in Table 3 of the Interim Construction Noise Guideline (DECC, 2009) at other sensitive land uses, and iii. continuous or impulsive vibration values, measured at the most affected residence are no more than those for human exposure to vibration, specified in Table 2.2 of Assessing Vibration: a technical guideline (DEC, 2006), and iv. intermittent vibration values measured at the most affected residence are no more than those for human exposure to vibration, specified in Table 2.4 of Assessing Vibration: a technical guideline (DEC, 2006); or (e) where a negotiated agreement has been reached with a substantial majority of sensitive receivers who are within the vicinity of and may be potentially affected by the particular construction, and the noise management levels and/or limits for ground-borne noise and vibration (human comfort) cannot be achieved. All agreements must be in writing and a copy forwarded to the Secretary at least one (1) week before the works commencing; or (f) construction approved through an Out of Hours Work Protocol referred to in Condition E47, provided the relevant council, local residents and other affected stakeholders and sensitive receivers are informed of the timing and duration at least five (5) days and no more than 14 days before the commencement of the works.	CPB Advice from Acoustic Consultant	CEMP Part C Section 8 CNVMP (SMCSWSPS-CPB-ALL-EM-PLN-000004) CNVIS	Table 3.1 Section 8	During Construction
E45	On becoming aware of the need for emergency construction in accordance with Condition E44(b), the Proponent must notify the AA, the ER and the EPA (if an EPL applies) of the need for those activities or work. The Proponent must also use best endeavours to notify all affected sensitive receivers of the likely impact and duration of those works.	CPB	CEMP Part C Section 8 CNVMP (SMCSWSPS-CPB-ALL-EM-PLN-000004) CNVIS	Table 3.1 Section 8	During Construction
E46	Notwithstanding Conditions E44 and E48, rock breaking and other particularly annoying activities for station shaft or cut and cover stations is not permitted outside of standard construction hours, except at Central (excluding Central Walk works at 20-28 Chalmers Street, Surry Hills); or (a) where it is required in an emergency to avoid injury or the loss of life, to avoid damage or loss of property or to prevent environmental harm; or (b) where different construction hours are permitted or required under an EPL in force in respect of the construction; or (c) construction that causes LAeq(15 min) noise levels: i. no more than 5 dB(A) above the rating background level at any residence in accordance with the Interim Construction Noise Guideline (DECC, 2009); and ii. no more than the noise management levels specified in Table 3 of the Interim Construction Noise Guideline (DECC, 2009) at other sensitive land uses; and iii. continuous or impulsive vibration values, measures at the most affected residence are no more than those for human exposure to vibration, specified in Table 2.2 of Assessing Vibration: a technical guideline (DEC, 2006); and iv. intermittent vibration values measured at the most affected residence are no more than those for human exposure to vibration, specified in Table 2.4 of Assessing Vibration: a technical guideline (DEC, 2006).	CPB Advice from Acoustic Consultant	CEMP Part C Section 8 CNVMP (SMCSWSPS-CPB-ALL-EM-PLN-000004) CNVIS	Table 3.1 Section 7 and 8	During Construction

Condition No.	Condition Requirement:	Responsibility	Where Addressed	Section Ref	Timing
E47	<p>An Out of Hours Work Protocol for the assessment, management and approval of work outside of standard construction hours, as defined in Condition E36 of this approval, must be prepared in consultation with the EPA and submitted to the Secretary for approval before construction commences for works not subject to an EPL. The protocol must include:</p> <p>(a) the identification of low and high risk construction activities; (b) a risk assessment process in which the AA reviews all proposed out of hours activities and identifies their risk levels; (c) a process for the endorsement of out of hours activities by the AA and approval by the ER for construction activities deemed to be of: i. low environmental risk; or ii. high risk where all construction works cease by 9pm.</p> <p>All other high risk out of hours construction must be submitted to the Secretary for approval unless otherwise approved through an EPL.</p> <p>The protocol must detail standard assessment, mitigation and notification requirements for high and low risk out of hours works, and detail a standard protocol for referring applications to the Secretary.</p>	CPB Advice from Acoustic Consultant	CEMP Part C Section 8 CNVMP (SMCSWSPS-CPB-ALL-EM-PLN-000004) CNVIS	Table 3.1 Section 8	During Construction
E48	<p>Notwithstanding Condition E36 of this approval and subject to Condition E47, the following activities may be undertaken 24 hours per day, seven (7) days per week:</p> <p>(a) tunnelling and associated support activities (excluding cut and cover tunnelling, and excluding the installation and decommissioning of the Blues Point acoustic shed except where compliance with Condition E44 is achieved); (b) excavation within an acoustic enclosure (excluding the Blues Point temporary site except where compliance with Condition E44 is achieved); (c) excavation at Central (excluding Central Walk works at 20-28 Chalmers Street, Surry Hills) without an acoustic enclosure; (d) station and tunnel fit out; and (e) haulage and delivery of spoil and materials.</p>	CPB	CEMP Part C Section 8 CNVMP (SMCSWSPS-CPB-ALL-EM-PLN-000004) CNVIS	Table 3.1	During Construction
E49	All acoustic sheds must be erected as soon as site establishment works at the facilities are completed and before undertaking any works or activities which are required to be conducted within the sheds.	No acoustic sheds will be established for Station Works	-	-	-
E50	<p>A Blast Management Strategy must be prepared and include:</p> <p>(a) sequencing and review of trial blasting to inform blasting; (b) regularity of blasting; (c) intensity of blasting; (d) periods of relief; and (e) blasting program.</p>	No blasting will be carried out for the Station Works	-	-	-

Condition No.	Condition Requirement:	Responsibility	Where Addressed	Section Ref	Timing
E51	The Blast Management Strategy must be endorsed by a suitably qualified and experienced person and reviewed by an independent specialist.	No blasting will be carried out for the Station Works	-	-	-
E52	The Blast Management Strategy must be prepared so that all blasting and associated activities are carried out so as not to generate unacceptable noise and vibration impacts or pose a significant risk to sensitive receivers. The Blast Management Strategy must be prepared in accordance with relevant guidelines including the principles outlined in Hazardous Industry Planning Advisory Paper No 6: Hazard Analysis (Department of Planning, January 2011) and Assessment Guideline: Multi-Level Risk Assessment (Department of Planning and Infrastructure, May 2011) for the handling and storage of hazardous materials and include: (a) details of blasting to be performed, including location, timing, method and justification of the need to blast; (b) identification of all potentially affected noise and vibration sensitive sites including heritage buildings and utilities; (c) establishment of appropriate criteria for blast overpressure and ground vibration levels at each category of noise sensitive site; (d) details of the storage and handling arrangements for explosive materials and the proposed transport of those materials to the construction site; (e) identification of hazardous situations that may arise from the storage and handling of explosives, the blasting process and recovery of the blast site after detonation of the explosives; (f) determination of potential noise and vibration and risk impacts from blasting and appropriate best management practices; and (g) community consultation procedures.	No blasting will be carried out for the Station Works	-	-	-
E53	The Blast Management Strategy must be submitted to the Secretary one (1) month before blasting commences, or as agreed by the Secretary. The Blast Management Strategy as submitted to the Secretary, must be implemented for all blasting activities.	No blasting will be carried out for the Station Works	-	-	-
E54	Blasting associated with the CSSI must not exceed the following criteria, measured at the most affected residence or other sensitive receiver as specified below: (a) airblast overpressure (dB(Lin Peak)) 125 dBL; and (b) vibration (PPV): i. 25 mm/s generally; or ii. 7.5mm/s for heritage structures except where detailed investigation of the construction of the building determines that increasing the screening criterion to 25 mm/s is acceptable. The investigation must be undertaken by a suitably qualified structural engineer with experience assessing heritage structures that is approved by the Secretary. Any decision to adopt the higher vibration criterion must be supported by evidence to demonstrate the higher criterion is appropriate.	No blasting will be carried out for the Station Works	-	-	-

Condition No.	Condition Requirement:	Responsibility	Where Addressed	Section Ref	Timing
E55	Blasting must be limited to a single detonation in any one day, and a maximum of six per week, at each station location, or any other frequency agreed by the Secretary. <i>Note: for the purpose of this Condition, a single detonation may involve a number of individual blasts fired in quick succession in a discrete area.</i>	No blasting will be carried out for the Station Works	-	-	-
E56	Blasting associated with the project must be undertaken at a time to have the least impact on the nearby sensitive receivers determined in consultation with those receivers. All sensitive receivers affected by any blast must be advised fortnightly of the proposed blasting schedule. The Secretary must also be advised of the advance blasting schedule for any location.	No blasting will be carried out for the Station Works	-	-	-
E58	The CSSI must be designed and constructed with the objective of minimising impacts to, and interference with, third party property and infrastructure, and that such infrastructure and property is protected during construction.	CPB	Design Compliance Reports Construction and Site Management Plan (SMCSWSPS-CPB-ALL-CM-PLN-000001)		During Design During Construction
E59	Before commencement of construction, all property owners of buildings identified as being at risk of damage must be offered a building condition survey. Where an offer is accepted a structural engineer must undertake the survey. The results of the surveys must be documented in a Building Condition Survey Report for each building surveyed. Copies of Building Condition Survey Reports must be provided to the owners of the buildings surveyed, and if agreed by the owner, the Relevant Council within three (3) weeks of completing the Survey Report and no later than one (1) month before the commencement of construction.	CPB Dilapidation Survey Obtain TSE Post Construction Surveys	Building Condition Surveys CEMP Part C CNVMP (SMCSWSPS-CPB-ALL-EM-PLN-000004)	Section 7.2	1 Month prior to commencement of construction

Condition No.	Condition Requirement:	Responsibility	Where Addressed	Section Ref	Timing
E60	Within three (3) months of the completion of construction, all property owners of buildings for which a building condition survey was carried out in accordance with Condition E59 must be offered a second building condition survey. Where an offer is accepted, building condition surveys must be undertaken by a structural engineer. The results of the surveys must be documented in a Building Condition Survey Report for each building surveyed. Copies of Building Condition Survey Reports must be provided to the owners of the buildings surveyed within one (1) month of the survey being completed.	CPB / Structural Engineer / Dilapidation	Post Construction Building Condition Surveys		Within 3 months of completion of construction AND Within 1 month of completion of survey
E61	The Proponent must install appropriate equipment to monitor areas in proximity to construction sites and the tunnel route during construction and for a period of not less than six (6) months after settlement has stabilised with particular reference to risk areas identified in the building and infrastructure condition surveys required by conditions E59 and E60 and/or the geotechnical analysis as required. If monitoring during construction indicates exceedance of the criteria, then all construction affecting settlement must cease immediately and must not resume until fully rectified or a revised method of construction is established that will ensure protection of affected buildings.	CPB. Advice from structural engineer	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part C Section 1.2.7	During construction
E62	The Proponent must establish an Independent Property Impact Assessment Panel before relevant works commencing. The Secretary must be informed of the Panel Members and the Panel must comprise geotechnical and engineering experts independent of the design and construction team. The Panel will be responsible for independently verifying surveys undertaken under conditions E59 and E60, the resolution of property damage disputes and the establishment of ongoing settlement monitoring requirements. Either the affected property owner or the Proponent may refer unresolved disputes arising from potential and/or actual property impacts to the Panel for resolution. All costs incurred in establishing and implementing the Panel must be borne by the Proponent.	Sydney Metro CPB	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part A Section 5.4	During construction
E63	The Proponent must monitor settlement for any period beyond the minimum timeframe requirements of condition E61 if directed so by the Independent Property Impact Assessment Panel following its review of the monitoring data from the period not less than six (6) months after settlement has stabilised, consistent with Condition E61. The results of the monitoring must be made available to the Secretary on request.	TSE CPB	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part C Section 1.2.7	During construction

Condition No.	Condition Requirement:	Responsibility	Where Addressed	Section Ref	Timing
E64	<p>The Proponent must prepare and implement a Business Management Plan to minimise impact on businesses adjacent to major construction sites during construction of the CSSI. The Plan must be prepared before construction and must include but not necessarily be limited to:</p> <p>(a) measures to address amenity, vehicular and pedestrian access during business hours and visibility of the business appropriate to its reliance on such, and other reasonable matters raised in consultation with affected business;</p> <p>(b) a Business Consultation forum linked to the Community Communication Strategy required by Condition B1;</p> <p>(c) Business Management Strategies for each construction sites (and/or activity), identifying affected businesses and associated management strategies, including the employment of place managers and specific measures to be put in place to assist small business owners adversely impacted by the construction of the CSSI;</p> <p>(d) a Small Business Owners' Support Program to provide assistance to small business owners adversely impacted by construction of the CSSI. The Program must be administered by a Retail Advisory/Support Panel established by the Proponent. The Program must have appropriate specialist representatives and must report to the Proponent;</p> <p>(e) a monitoring program to assess the effectiveness of the measures including the nomination of performance parameters and criteria against which effectiveness of the measures will be measured; and</p> <p>(f) provision for reporting of monitoring results to the Secretary, as part of the Compliance Tracking Program required in Condition A28.</p>	CPB to provide information	Community Communications Strategy (SMCSWSPS-CPB-ALL-CL-PLN-000001)	Section 11	Prior to construction
E65	All reasonably practicable erosion and sediment controls must be installed and appropriately maintained to minimise any water pollution. When implementing such controls, any relevant guidance in the Managing Urban Stormwater Series must be considered.	CPB	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part C Section 1.5 (SWGWMSP)	During Construction
E66	A Site Contamination Report, documenting the outcomes of Phase 1 and Phase 2 contamination assessments of land upon which the CSSI is to be carried out, that is suspected to be, or known to be, contaminated must be prepared by a suitably qualified and experienced person in accordance with guidelines made or approved under the Contaminated Land Management Act 1997 (NSW).	TSE/ CPB	Handover Documentation CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part C Spoil Management Sub-Plan Section 2.8	
E67	If a Site Contamination Report prepared under Condition E66 finds such land contains contamination, a site audit is required to determine the suitability of a site for a specified use. If a site audit is required, a Site Audit Statement and Site Audit Report must be prepared by a NSW EPA Accredited Site Auditor. Contaminated land must not be used for the purpose approved under the terms of this approval until a Site Audit Statement is obtained that declares the land is suitable for that purpose and any conditions on the Site Audit Statement have been complied with.	TSE/ CPB	Handover Documentation CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part C Spoil Management Sub-Plan Section 2.8	

Condition No.	Condition Requirement:	Responsibility	Where Addressed	Section Ref	Timing
E68	A copy of the Site Audit Statement and Site Audit Report must be submitted to the Secretary and Council for information no later than one (1) month before the commencement of operation.	TSE/ CPB	Handover Documentation CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part C Spoil Management Sub-Plan Section 2.8	1 month prior to commencement of operation
E69	An Unexpected Contaminated Land and Asbestos Finds Procedure must be prepared and must be followed should unexpected contaminated land or asbestos be excavated or otherwise discovered during construction.	TSE/ CPB	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part A Section 3.3 Part D Appendix H	Pre Construction
E70	The Unexpected Contaminated Land and Asbestos Finds Procedure must be implemented throughout construction.	CPB	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part A Section 3.3 Part D Appendix H	During Construction
E71	The proponent must seek to achieve a best practice level of performance for the CSSI using market leading sustainability ratings tools (including a minimum 'Design' and 'As built' rating score of 65 using the Infrastructure Sustainability Council of Australia infrastructure rating tool, or an equivalent level of performance using a demonstrated equivalent rating tool).	CPB Cundall	Sustainability Management Plan (SMCSWSPS-CPB-ALL-SU-PLN-000001) Sustainability Report	Section 3.4 Section 7.2 Section 9 Appendix C	Prior to issue of 109R1

Condition No.	Condition Requirement:	Responsibility	Where Addressed	Section Ref	Timing
E72	<p>The Proponent must prepare a Sustainability Strategy to be submitted to the Secretary within six (6) months of the date of this approval, or within another timeframe agreed with the Secretary, which must be implemented throughout design, construction and operation of the CSSI. The Sustainability Strategy must include:</p> <p>(a) details of the sustainability objectives and targets for the design, delivery and operation of the CSSI; (b) details of the sustainability initiatives which will be investigated and / or implemented; and (c) a description of how the strategy will be implemented for the CSSI.</p>	CPB Cundall	Sustainability Management Plan (SMCSWSPS-CPB-ALL-SU-PLN-000001)	Section 1.5	Within 6 months of approval date
E73	<p>Opportunities to reduce operational greenhouse gas emissions must be investigated during detailed design. The sustainability initiatives identified must be implemented, reviewed and updated regularly throughout design development and construction, and annually during operation.</p>	CPB Cundall	Sustainability Management Plan (SMCSWSPS-CPB-ALL-SU-PLN-000001) Sustainability Report CERT	Section 10 Appendix D	Design
E75	<p>The CSSI must be designed, constructed and operated with the objective of integrating with existing and proposed road and related transport networks and minimising adverse changes to the safety, efficiency and, accessibility of the networks, and facilitate an improved level of service in relation to permanent and operational changes. Detailed design and assessment of related traffic, parking, pedestrian and cycle accessibility impacts and changes shall be undertaken:</p> <p>(a) in consultation with, and to the reasonable requirements of the Traffic and Transport Liaison Group(s) established under Condition E77; (b) in consideration of existing and future demand, connectivity (in relation to permanent changes), performance and safety requirements; (c) to minimise and manage local area traffic impacts; (d) to ensure access is maintained to property and infrastructure; and (e) to meet relevant design, engineering and safety guidelines, including Austroads, Australian Standards, and RMS (RTA) requirements.</p> <p>Copies of civil, structural and traffic signal design plans shall be submitted to the Relevant Road Authority for consultation before the commencement of the relevant works.</p>	CPB Traffic Consultant – Aurecon	CTMP (SMCSWSPS-CPB-ALL-TF-PLN-000001) Consultation TTLG Inspections	Table 4.4 Setion 6 Section 5.8 and 9.9 Section 10.1- 10.5 Section 9.1 and 9.8 Section 4 and 10.3	Prior to issue of Archi and services Crown Certificate for Ground Floor fitout
E76	<p>Permanent road works, including vehicular access, signalised intersection works, and works relating to pedestrians, cyclists, and public transport users must be subject to safety audits demonstrating consistency with relevant design, engineering and safety standards and guidelines. Safety audits must be prepared in consultation with the Traffic and Transport Liaison Group before the completion and use of the subject infrastructure and must be made available to the Secretary upon request.</p>	CPB Traffic Consultant – Aurecon	CTMP (SMCSWSPS-CPB-ALL-TF-PLN-000001)	Table 4.4 and 4.5 Section 10.6 Appendix E	Prior to issue of OVC1

Condition No.	Condition Requirement:	Responsibility	Where Addressed	Section Ref	Timing
E77	<p>The Proponent must establish a Traffic and Transport Liaison Group(s) (TTLGs) to inform traffic and transport management measures during construction and operation of the CSSI. Management measures must be coordinated with and approved by the RMS following endorsement by the Sydney Coordination Office and consultation with the Relevant Roads Authority.</p> <p>The TTLG must comprise representatives from the Relevant Road Authority(ies) (including the RMS, relevant Councils, and the Barangaroo Delivery Authority as appropriate), transport operators (including bus and taxi operators), emergency services and Port Authority of NSW as required. The TTLG must be consulted on to inform the preparation of the Construction Traffic Management Plan(s) and Interchange Access Plan(s).</p>	CPB Traffic Consultant – Aurecon	CTMP (SMCSWSPS-CPB-ALL-TF- PLN-000001)	Table 4.4 Section 6	Prior to issue of 109R1
E78	<p>The Proponent must undertake supplementary analysis and modelling as required by the TTLG to demonstrate that construction and operational traffic can be managed to minimise disruption to traffic network operations, public including changes to and the management of pedestrian, bicycle and public transport networks transport services, pedestrian and cyclist movements. Revised traffic management measures, must be incorporated into the Construction Traffic Management Plan(s), Interchange Access Plan(s) and Station Design and Precinct Plan(s).</p>	CPB Traffic Consultant – Aurecon	CTMP (SMCSWSPS-CPB-ALL-TF- PLN-000001)	Table 4.4	Prior to issue of 109R1
E79	<p>The Proponent must consult with the Relevant Road Authority regarding the use of any weight restricted road by heavy vehicles.</p>	CPB Traffic Consultant – Aurecon	CTMP (SMCSWSPS-CPB-ALL-TF- PLN-000001)	Table 4.4 Section 6	Prior and during construction
E80	<p>The Proponent must minimise truck movements during peak periods within commercial centres. Peak periods are 7am to 10am and 4pm to 7pm Monday to Friday.</p>	CPB Traffic Consultant – Aurecon	CTMP (SMCSWSPS-CPB-ALL-TF- PLN-000001)	Table 4.4 Section 8.6	During construction

Condition No.	Condition Requirement:	Responsibility	Where Addressed	Section Ref	Timing
E81	<p>The Proponent must prepare and implement a Construction Traffic Management Framework (CTMF). The CTMF must be prepared in consultation with TTLG(s) and submitted to the Secretary for approval no later than one (1) month before the commencement of construction (or within any other timeframe agreed with the Secretary). The CTMF will set out the approach to managing issues across the CSSI and include but not be limited to:</p> <p>(a) construction site access, including the efficient and safe egress and ingress of vehicles, consistent relevant Austroads, Australian Standards and RMS requirements;</p> <p>(b) the erection and maintenance of hoardings, scaffolds and associated structures on roads;</p> <p>(c) short and long term lane and road closures including those associated with plant, crane and other operations between the road reservation and construction site;</p> <p>(d) cumulative construction vehicle management from surrounding developments;</p> <p>(e) bus stop and associated facilities relocation and service rerouting;</p> <p>(f) short and long term works zones on roads adjacent to the construction site;</p> <p>(g) mail zone and associated facilities relocation;</p> <p>(h) short and long term works within the road reservation;</p> <p>(i) regulatory, advisory and other signage changes and modifications;</p> <p>(j) parking management, including on and off street and remote parking and access;</p> <p>(k) heavy vehicle management, the restriction (unless otherwise approved) of heavy vehicles to certain routes and the minimisation of heavy vehicle traffic in peak traffic periods;</p> <p>(l) special event management;</p> <p>(m) the retention and reinstatement of emergency and property access;</p> <p>(n) the retention of user and passenger safety, including pedestrians, cyclists, public transport users, including at stops and related facilities;</p> <p>(o) incident response planning around construction worksites; and</p> <p>(p) monitoring of transport and access related impacts attributable to the CSSI.</p>	CPB Traffic Consultant – Aurecon	CTMP (SMCSWSPS-CPB-ALL-TF-PLN-000001)	Table 4.4 Section 8.4 Section 9.9 Section 9.5 Section 8.5 Section 9.8 Section 10.2 and 10.3 Section 10.2 Section 8.6 and 8.7 Section 9.2 Section 9.8 Section 9.4 and 9.5 Section 9.1 Section 10.11	1 Month prior to commencement of construction
E82	Construction Traffic Management Plans (CTMPs), consistent with the CEMF and CTMF required in Condition E81, must be prepared for each construction site in consultation with the TTLG(s), and submitted to the RMS for approval following Sydney Coordination Office endorsement before construction commences at the relevant construction site. A copy of any Construction Traffic Management Plans approved by the RMS must be submitted to the Secretary for information.	CPB Traffic Consultant – Aurecon	CTMP (SMCSWSPS-CPB-ALL-TF-PLN-000001)	Table 4.4 Section 4.1 Section 6	Prior to issue of 109R1
E83	Where construction results in a worsening of the matters identified in Condition E81(a)-(o), the Proponent must review the measures identified in the CTMPs in consultation with the TTLG(s), as relevant. Any changes to the CTMPs must be submitted to the RMS for approval following Sydney Coordination Office endorsement and implemented.	CPB Traffic Consultant – Aurecon	CTMP (SMCSWSPS-CPB-ALL-TF-PLN-000001)	Table 4.4 Section 10.8	Prior and during construction
E85	Heavy vehicle haulage must not use local roads unless no feasible alternatives are available.	CPB Traffic Consultant – Aurecon	CTMP (SMCSWSPS-CPB-ALL-TF-PLN-000001)	Table 4.4 Section 8.7	Prior and during construction

Condition No.	Condition Requirement:	Responsibility	Where Addressed	Section Ref	Timing
E86	During construction, measures must be implemented to maintain pedestrian and vehicular access to, and parking in the vicinity of, businesses and affected properties. Alternative pedestrian and vehicular access, and parking arrangements must be developed in consultation with affected businesses. Such arrangements must be outlined in the Business Management Plan required in Condition E64 and implemented as required. Adequate signage and directions to businesses must be provided before, and for the duration of, any disruption.	CPB Traffic Consultant – Aurecon	BMP (SMCSWSPS-CPB-ALL-CL-PLN-000002) CTMP (SMCSWSPS-CPB-ALL-TF-PLN-000001)	Section 3.0 and 5.1 Section 9 and 10	Prior and during construction
E87	Permanent road works, including vehicular access, signalised intersection works, and works relating to pedestrians, cyclists and public transport users will be subject to safety audits demonstrating consistency with relevant design, engineering and safety standards and guidelines. Safety audits must be included within each relevant CTMP and carried out in consultation with the TTLG before the completion and use of the subject infrastructure and must be made available to the Secretary on request.	CPB Traffic Consultant – Aurecon	CTMP (SMCSWSPS-CPB-ALL-TF-PLN-000001)	Table 4.4 Section 10.6 Appendix E	Prior to issue of the OVC for the works
E88	Details of haulage routes and heavy vehicle sizes to transport material to and from any construction site must be specified in the Construction Traffic Management Plan(s) and be approved by the RMS following endorsement by Sydney Coordination Office and consultation with the TTLG(s).	CPB Traffic Consultant – Aurecon	CTMP (SMCSWSPS-CPB-ALL-TF-PLN-000001)	Table 4.4 Table 8.7	Prior to issue of 109R1
E89	The Proponent must implement traffic and transport management measures with the aid of a truck marshalling and logistics facility located within close proximity to the Sydney and North Sydney CBDs. The facility must be operational in advance of tunnel spoil generation. Details of the facility must be documented in the Ancillary Facilities Management Plan required by Condition A16.	CPB Traffic Consultant – Aurecon	CTMP (SMCSWSPS-CPB-ALL-TF-PLN-000001)	Table 4.4 Table 8.8	TBC by Pchun

Condition No.	Condition Requirement:	Responsibility	Where Addressed	Section Ref	Timing
E90	A Road Dilapidation Report must be prepared for local roads proposed to be used by heavy vehicles for the purposes of the CSSI before the commencement of use by such vehicles. Copies of the Road Dilapidation Report must be provided to the Relevant Council within three (3) weeks of completing the surveys and no later than one (1) month before the use of local roads by heavy vehicles.	CPB Dilapidation Review previous reports ie TSE	CTMP (SMCSWSPS-CPB-ALL-TF- PLN-000001)	Table 4.4 Table 8.11	Prior to issue of 109R1
E91	If damage to roads occurs as a result of construction of CSSI, the Proponent must either (at the landowner's discretion): (a) compensate the landowner for the damage so caused. The amount of compensation may be agreed with the landowner; or (b) rectify the damage so as to restore the road to at least the condition it was before construction commenced as identified in the Road Dilapidation Report(s).	CPB Dilapidation Review previous reports ie TSE	CTMP (SMCSWSPS-CPB-ALL-TF- PLN-000001)	Table 4.4 Table 8.11	During construction
E92	The Proponent must develop an Interchange Access Plan for each station to inform the final design of transport and access facilities and services, including footpaths, cycleways, passenger facilities, parking, traffic and road changes, and integration of public domain and transport initiatives around and at each station. The Interchange Access Plan(s) must consider walking and cycling catchments and take into account: (a) station access hierarchy consistent with the transport planning principles defined in the EIS; (b) safe, convenient, efficient and sufficient access to stations and transfer between transport modes (including subterranean connections and the safeguarding of additional entrances in response to land use change and patronage demand); (c) the maintenance or improvement of pedestrian and cyclists level of service within a justified proximity to stations; (d) current transport initiatives and plans; (e) opportunities and constraints presented by existing and proposed transport and access infrastructure and services; (f) patronage changes resulting from land use, population, employment, transport infrastructure and service changes; (g) integration with existing and proposed transport infrastructure and services; (h) pedestrian, cycle, bus, taxi, vehicle and emergency vehicle access and parking infrastructure and service changes; (i) legislative requirements and applicable guidelines; (j) safety audits, including but not limited to a review of traffic facility and cycle changes to ensure compliance with Austroads design criteria; (k) final design, infrastructure, management and service measures and the level of access and service to be achieved for all users; and (l) the contents of the Interchange Operations and Maintenance Plan (IOMP) and operational management provisions for future operational requirements, including maintenance, security and management responsibilities. The Interchange Access Plan(s) must be prepared in consultation with the TTLG and the Design Review Panel and must be supported by traffic and transport analysis. Where necessary, consultation must also be undertaken with major landholders adjoining station precincts. The Plan(s) must detail a delivery and implementation program which must be provided to and agreed by the Secretary before commencement of permanent aboveground facilities at any station site.	Owned by Metro. Input from Aurecon traffic			DRP Review
E93	In developing the Interchange Access Plan(s), the Proponent must consider: (a) traffic and accessibility design requirements; and (b) the Station Design and Precinct Plan(s) required by Condition E101.	Owned by Metro. Input from Aurecon traffic			

Condition No.	Condition Requirement:	Responsibility	Where Addressed	Section Ref	Timing
E97	The Proponent must provide adequate bicycle infrastructure at stations that form part of the project, and provide adequate areas for future expansion of that infrastructure.	CPB to resolve issue with Metro as Stage 1 design no bike parking for the station	Landscape Architect Numbers (SMCSWSPS-SBD-PSN-LA-DWG-000003 and SMCSWSPS-SBD-PSS-LA-DWG-000004)		Prior to issue of 109R1
E99	The CSSI must be constructed in a manner that minimises visual impacts of construction sites, including, providing temporary landscaping where appropriate to soften views of the construction sites, minimising light spill, and incorporating architectural treatment and finishes within key elements of temporary structures that reflect the context within which the construction sites are located.	CPB Site Sheds to be treated to minimise visual impact	Construction and Site Management Plan (SMCSWSPS-CPB-ALL-CM-PLN-000001)	Section 6.1 and 7.1	During construction
E101	<p>Before commencement of permanent built surface works and/or landscaping, the Proponent must prepare Station Design and Precinct Plans (SDPP) for each station. The SDPP must be prepared by a suitably qualified and experienced person(s), in collaboration and consultation with relevant stakeholders including but not limited to relevant council(s), the Department, and the local community. The SDPP(s) must present an integrated urban and place making outcome for each station or end state element. The SDPP(s) must be approved by the Secretary following review by the DRP and before commencement of permanent aboveground work.</p> <p>Each SDPP must include, but not be limited to:</p> <ul style="list-style-type: none"> (a) identification of specific design objectives, principles and standards based on - <ul style="list-style-type: none"> i. the project design objectives as refined by the DRP; ii. Maximising the amenity of public spaces and permeability around entrances to stations; iii. Local environmental, heritage and place making values; iv. Urban design context; v. sustainable design and maintenance; vi. Community safety, amenity and privacy, including 'safer by design' principles where relevant; vii. Relevant urban design and infrastructure standards and guidelines (including relevant council standards, policies and guidelines); viii. Minimising the footprint of the project (including at operational facilities); (b) opportunities for public art; (c) landscaping and building design opportunities to mitigate the visual impacts of rail infrastructure and operational fixed facilities (including the Chatswood Dive, Marrickville Dive, Sydney Metro Trains Facility South, Artarmon Substation, station structures and services, noise walls etc.); (d) the incorporation of salvaged historic and artistic elements onto the project design, including but not limited to the Tom Bass P&O fountain, the Douglas Annand glass screen (if present), the Douglas Annand wall frieze and heritage fabric from Martin Place Station, unless otherwise agreed by the Secretary; (e) details on the location of existing vegetation and proposed landscaping (including use of endemic and advanced tree species where practicable). Details of species to be replanted/revegetated must be provided, including their appropriateness to the area and habitat for threatened species; (f) a description of the CSSI design features, including graphics such as sections, perspective views and sketches for key elements of the CSSI; (g) the location, design and impacts of operational lighting associated with the CSSI and measures proposed to minimise lighting impacts; (h) details of where and how recommendations from the DRP have been considered in the plan; (i) the timing for implementation of access, landscaping and public realm initiatives; (j) monitoring and maintenance procedures for vegetation and landscaping (including weed control), performance indicators, responsibilities, timing and duration and contingencies where rehabilitation of vegetation and landscaping measures fail; and (k) evidence of consultation with the community, local Councils and agencies in the preparation of on the SDPP(s) and how feedback has been addressed before seeking endorsement by the DRP. <p>Elements covered by SDPP(s) must be complete no later than the commencement of operation of the Sydney Metro to paid services, unless otherwise agreed with the Secretary.</p>	Designers CPB	SDPP (SMCSWSPS-SMD-SPS-PL-PLN00283)	SDPP	DRP review Prior to issue of 109R1 or alternatively prior to approval for above ground works

Condition No.	Condition Requirement:	Responsibility	Where Addressed	Section Ref	Timing
E102	The SDPP must achieve a minimum visual impact rating of at least "Minor Benefit" as defined in the EIS, as amended by the documents listed in A1, for all design elements of the project, where feasible and reasonable. Where it can be demonstrated, to the DRP's satisfaction, that a "Minor Benefit" is not achievable, then a "Negligible" visual impact rating must be achieved as a minimum.	Architect – Foster to prepare SDPP CPB to submit SDPP to Metro for submission to the Dept of Planning	SDPP (SMCSWSPS-SMD-SPS-PL-PLN00283)	Appendix B (Section 5 Table 6)	Prior to issue of 109R1 or alternatively prior to approval for above ground works
E104	All permanent external lighting must be the minimum level of illumination necessary and must comply with AS: 4282:1997 – Control of the Obtrusive Effects of Outdoor Lighting and relevant Australian Standards in the series AS/NZ 1158 – Lighting for Roads and Public Spaces.	Aurecon CPB	Design Report		During Design Prior to issue of relevant OVC
E105	The placement of CCTV cameras associated with the CSSI must be undertaken in consultation with the relevant public authority and the NSW Police.	TSOM CPB only responsible for containment Security Consultant - Umow Lai [David Naovak]	As stated in the TWG on 04.05.20, the placement of CCTV cameras is the responsibility of TSOM. CPB understand that it is under coordination by TSOM and upon receipt of the required locations of and for the cameras, CPB will provide the required conduits for these cameras. CPB will coordinate with TSOM for the supply of documentation to satisfy this requirement.		
E106	Waste generated during construction and operation is to be dealt with in accordance with the following priorities: (a) waste generation is to be avoided and where avoidance is not reasonably practicable, waste generation is to be reduced; (b) where avoiding or reducing waste is not possible, waste is to be re-used, recycled, or recovered; and (c) where re-using, recycling or recovering waste is not possible, waste is to be treated or disposed of.	CPB/Waste Consultant TTM	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part C Section 6.4 and 6.5 Part D Appendix H	During Construction

Condition No.	Condition Requirement:	Responsibility	Where Addressed	Section Ref	Timing
E107	The CSSI must be constructed and operated so as to maintain the NSW Water Quality Objectives where they are being achieved as at the date of this approval, and contribute towards achievement of the NSW Water Quality Objectives over time where they are not being achieved as at the date of this approval, unless an EPL in force in respect of the CSSI contains different requirements in relation to the NSW Water Quality Objectives, in which case those requirements must be complied with.	The primary responsibility is considered to be during the Excavation works completed by TSE.	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part C Section 1 Part D Appendix H	
E108	Drainage feature crossings (permanent and temporary watercourse crossings and stream diversions) and drainage swales and depressions must be undertaken in accordance with relevant guidelines and designed by a suitably qualified and experienced person.	The primary responsibility is considered to be during the Excavation works completed by TSE.	There are no drainage feature crossings (permanent and temporary watercourse crossings and stream diversions), drainage swales or depressions as part of the projects scope of works and design. This condition is therefore not triggered as part of this project.	-	-

Appendix D2.2: REMM Conditions

Ref	Category	Mitigation	Responsibility	Where Addressed	Section Ref	Timing
T1	Construction traffic and transport	Ongoing consultation would be carried out with (as relevant to the location) the CBD Coordination Office, Roads and Maritime Services, Sydney Trains, NSW Trains, the Port Authority of NSW, Barangaroo Delivery Authority, local councils, emergency services and bus operators in order to minimise traffic and transport impacts during construction.	Contractor to contribute to consultation, where required	Construction Traffic Management Plan SMCSWSPS-CPB-ALL-TF-PLN-000001	Table 4.5 Section 6 Appendix B	At all times
T2	Construction traffic and transport	Road Safety Audits would be carried out at each construction site. Audits would address vehicular access and egress, and pedestrian, cyclist and public transport safety.	CPB Traffic Consultant	Construction Traffic Management Plan SMCSWSPS-CPB-ALL-TF-PLN-000001	Table 4.5 Section 10.6 Appendix E	At all times
T3	Construction traffic and transport	Directional signage and line marking would be used to direct and guide drivers and pedestrians past construction sites and on the surrounding network. This would be supplemented by Variable Message Signs to advise drivers of potential delays, traffic diversions, speed restrictions, or alternate routes.	CPB Traffic Consultant	Construction Traffic Management Plan SMCSWSPS-CPB-ALL-TF-PLN-000001	Table 4.5 Section 10	At all times
T4	Construction traffic and transport	In the event of a traffic related incident, co-ordination would be carried out with the CBD Coordination Office and / or the Transport Management Centre's Operations Manager.	CPB Traffic Consultant	Construction Traffic Management Plan SMCSWSPS-CPB-ALL-TF-PLN-000001	Table 4.5 Section 9.1, 9.3 Section 10.7 (Table 10.2)	At all times
T5	Construction traffic and transport	The community would be notified in advance of proposed road and pedestrian network changes through media channels and other appropriate forms of community liaison.	CPB Traffic Consultant	Construction Traffic Management Plan SMCSWSPS-CPB-ALL-TF-PLN-000001	Table 4.5 Section 10.8	At all times
T6	Construction traffic and transport	Vehicle access to and from construction sites would be managed to ensure pedestrian, cyclist and motorist safety. Depending on the location, this may require manual supervision, physical barriers, temporary traffic signals and modifications to existing signals or, on occasions, police presence.	CPB Traffic Consultant	Construction Traffic Management Plan SMCSWSPS-CPB-ALL-TF-PLN-000001	Table 4.5 Section 10.1 – 10.5	At all times
T7	Construction traffic and transport	Additional enhancements for pedestrian, cyclist and motorist safety in the vicinity of the construction sites would be implemented during construction. This would include measures such as: (1) Use of speed awareness signs in conjunction with variable message signs near construction sites to provide alerts to drivers (2) Community educational events that allow pedestrians, cyclists or motorists to sit in trucks and understand the visibility restrictions of truck drivers, and for truck drivers to understand the visibility from a bicycle; and a campaign to engage with local schools to educate children about road safety and to encourage visual contact with drivers to ensure they are aware of the presence of children (3) Specific construction driver training to understand route constraints, expectations, safety issues, human error and its relationship with fitness for work and chain of responsibility duties, and to limit the use of compression braking (4) Use of In Vehicle Monitoring Systems (telematics) to monitor vehicle location and driver behaviour (5) Safety devices on construction vehicles that warn drivers of the presence of a vulnerable road user located in the vehicles' blind spots and warn the vulnerable road user that a vehicle is about to turn.	CPB Traffic Consultant	Construction Traffic Management Plan SMCSWSPS-CPB-ALL-TF-PLN-000001	Table 4.5 Section 10	At all times
T8	Construction traffic and transport	Access to existing properties and buildings would be maintained in consultation with property owners.	CPB Traffic Consultant	Construction Traffic Management Plan SMCSWSPS-CPB-ALL-TF-PLN-000001	Table 4.5 Sections 9 and 10	At all times
T9	Construction traffic and transport	All trucks would enter and exit construction sites in a forward gear, where feasible and reasonable.	CPB Traffic Consultant	Construction Traffic Management Plan SMCSWSPS-CPB-ALL-TF-PLN-000001	Table 4.5 Section 8.4 Sections 9 and 10 Appendix C	At all times

Ref	Category	Mitigation	Responsibility	Where Addressed	Section Ref	Timing
T10	Construction traffic and transport	Any relocation of bus stops would be carried out by Transport for NSW in consultation with Roads and Maritime Services, the CBD Coordination Office (for relevant locations), the relevant local council and bus operators. Wayfinding and customer information would be provided to notify customers of relocated bus stops.	CPB Traffic Consultant	Construction Traffic Management Plan SMCSWSPS-CPB-ALL-TF-PLN-000001	Table 4.5	At all times
T11	Construction traffic and transport	For special events that require specific traffic measures, those measures would be developed in consultation the CBD Coordination Office (for relevant locations), Roads and Maritime Services, Barangaroo Delivery Authority (for relevant locations) and the organisers of the event.	CPB Traffic Consultant	Construction Traffic Management Plan SMCSWSPS-CPB-ALL-TF-PLN-000001	Table 4.5 Section 9.2	At all times
T12	Construction traffic and transport	Construction sites would be managed to minimise construction staff parking on surrounding streets. The following measures would be implemented: <ul style="list-style-type: none"> • Encouraging staff to use public or active transport • Encouraging ride sharing • Provision of alternative parking locations and shuttle bus transfers where feasible and reasonable. Transport for NSW would work with local councils to minimise adverse impacts of construction on parking and other kerbside use in local streets, such as loading zones, bus zones, taxi zones and coach zones.	CPB Traffic Consultant	Construction Traffic Management Plan SMCSWSPS-CPB-ALL-TF-PLN-000001	Table 4.5 Section 8.9 Section 10.3	At all times
T13	Construction traffic and transport	Construction site traffic would be managed to minimise movements in the AM and PM peak periods.	CPB Traffic Consultant	Construction Traffic Management Plan SMCSWSPS-CPB-ALL-TF-PLN-000001	Table 4.5 Section 8.6	At all times
T14	Construction traffic and transport	Construction site traffic immediately around construction sites would be managed to minimise movements through school zones during pick up and drop off times.	CPB Traffic Consultant	Construction Traffic Management Plan SMCSWSPS-CPB-ALL-TF-PLN-000001	Table 4.5	At all times
T19	Construction traffic and transport	Where existing parking is removed to facilitate construction activities, alternative parking facilities would be provided where feasible and reasonable.	CPB Traffic Consultant	Construction Traffic Management Plan SMCSWSPS-CPB-ALL-TF-PLN-000001	Table 4.5 Section 10.2	At all times
T20	Construction traffic and transport	Alternative pedestrian routes and property access would be provided where these are affected during the construction of the power supply routes.	CPB	Construction Traffic Management Plan SMCSWSPS-CPB-ALL-TF-PLN-000001	Table 4.5 Section 10.4	At all times
T21	Construction traffic and transport	The potential combined impact of trucks from multiple construction sites would be further considered during the development of Construction Traffic Management Plans.	CPB Traffic Consultant	Construction Traffic Management Plan SMCSWSPS-CPB-ALL-TF-PLN-000001	Table 4.5 Section 5.7 Sections 9 and 10	At all times
T22	Construction traffic and transport	Where existing footpath routes used by pedestrians and / or cyclists are affected by construction, a condition survey would be carried out to confirm they are suitable for use (eg suitably paved and lit), with any necessary modifications to be carried out in consultation with the relevant local council.	CPB Traffic Consultant	Construction Traffic Management Plan SMCSWSPS-CPB-ALL-TF-PLN-000001	Table 4.5	At all times
OpT2	Operational traffic and transport	Access would be maintained to neighbouring properties.	CPB Traffic Consultant	Construction Traffic Management Plan SMCSWSPS-CPB-ALL-TF-PLN-000001	Table 4.5 Sections 9 and 10	At all times
OpT4	Operational traffic and transport	Transport for NSW would work with local councils to minimise adverse impacts of operation on parking and other kerbside use in local streets, such as loading zones, bus zones, taxi zones and coach zones.	Sydney Metro			

Ref	Category	Mitigation	Responsibility	Where Addressed	Section Ref	Timing
NV1	Construction noise and vibration	<p>The Construction Noise and Vibration Strategy would be implemented with the aim of achieving the noise management levels where feasible and reasonable.</p> <p><input type="checkbox"/> This would include the following example standard mitigation measures where feasible and reasonable:</p> <p>(1) Provision of noise barriers around each construction site</p> <p>(2) Provision of acoustic sheds at Chatswood dive site, Crows Nest, Victoria Cross, Barangaroo, Martin Place, Pitt Street, Waterloo and Marrickville dive site</p> <p>(3) The coincidence of noisy plant working simultaneously close together would be avoided</p> <p><input type="checkbox"/> (4) Offset distances between noisy plant and sensitive receivers would be increased</p> <p><input type="checkbox"/> (5) Residential grade mufflers would be fitted to all mobile plant</p> <p><input type="checkbox"/> (6) Dampened rock hammers would be used</p> <p>(7) Non-tonal reversing alarms would be fitted to all permanent mobile plant</p> <p><input type="checkbox"/> (8) High noise generating activities would be scheduled for less sensitive period considering the nearby receivers</p> <p>(9) The layout of construction sites would consider opportunities to shield receivers from noise.</p> <p>This would also include carrying out the requirements in relation to construction noise and vibration monitoring.</p>	CPB Acoustic Consultant RT	Noise and Vibration Management Sub-plan CEMP Part C Section 8	Sections 6 and 7	Detailed Design
NV3	Construction noise and vibration	<p>Where vibration levels are predicted to exceed the screening criteria, a more detailed assessment of the structure and attended vibration monitoring would be carried out to ensure vibration levels remain below appropriate limits for that structure.</p> <p>For heritage items, the more detailed assessment would specifically consider the heritage values of the structure in consultation with a heritage specialist to ensure sensitive heritage fabric is adequately monitored and managed.</p>	CPB Acoustic Consultant RT Heritage	Noise and Vibration Management Sub-plan CEMP Part C Section 8	Sections 7.2	At all times
NV4	Construction noise and vibration	<p>Feasible and reasonable measures would be implemented to minimise ground borne noise where exceedences are predicted.</p>	CPB Acoustic Consultant RT	Noise and Vibration Management Sub-plan CEMP Part C Section 8	Section 7.2	At all times
NV6	Construction noise and vibration	<p>Transport for NSW would engage an Independent Acoustic Advisor to act independently of the design and construction teams and provide oversight of construction methods, construction noise and vibration planning, management and mitigation, and construction noise and vibration monitoring and reporting. The key responsibilities of the Independent Acoustic Advisor would include :</p> <ul style="list-style-type: none"> • Assurance of contractor noise and vibration planning, modelling, management and monitoring practices • Verification of compliance with relevant guidelines and approval requirements • Audit noise and vibration management practices. 	CPB Acoustic Consultant RT	Noise and Vibration Management Sub-plan CEMP Part C Section 8	Section 4.4	
NV7	Construction noise and vibration	<p>Alternative demolition techniques that minimise noise and vibration levels would be investigated and implemented where feasible and reasonable. This would include consideration of:</p> <ul style="list-style-type: none"> • The use of hydraulic concrete shears in lieu of hammers/rock breakers • Sequencing works to shield noise sensitive receivers by retaining building wall elements • Locating demolition load out areas away from the nearby noise sensitive receivers • Providing respite periods for noise intensive works • Methods to minimise structural-borne noise to adjacent buildings including separating the structural connection prior to demolition through saw-cutting and propping, using hand held splitters and pulverisers or hand demolition 	CPB Acoustic Consultant RT	Noise and Vibration Management Sub-plan CEMP Part C Section 8	Section 8.2	

Ref	Category	Mitigation	Responsibility	Where Addressed	Section Ref	Timing
		<ul style="list-style-type: none"> Installing sound barrier screening to scaffolding facing noise sensitive neighbours Modifying demolition works sequencing / hours to minimise impacts during peak pedestrian times and / or adjoining neighbour outdoor activity periods. 				
OPNV3	Operational noise and vibration	Stations and ancillary facilities including train breakout noise from draught relief shafts would be designed to meet the applicable noise criteria derived from the Industrial Noise Policy (EPA, 2000).	CPB	Design Documents		During Design
BI1	Business impacts	Specific consultation would be carried out with businesses potentially impacted during construction. Consultation would aim to identify and develop measures to manage the specific construction impacts for individual businesses.	CPB	Community Communications Strategy (CCS) SMCSWSPS-CPB-ALL-CL-PLN-000001 Business Management Plan	Section 11	At all times
BI2	Business impacts	A business impact risk register would be developed to identify, rate and manage the specific construction impacts for individual businesses.	CPB	Community Communications Strategy (CCS) SMCSWSPS-CPB-ALL-CL-PLN-000001 Design Report Business Management Plan	Section 11	At all times
BI3	Business impacts	Appropriate signage would be provided around construction sites to provide visibility to retained businesses.	CPB	Community Communications Strategy (CCS) SMCSWSPS-CPB-ALL-CL-PLN-000001 Design Report Business Management Plan	Section 11	At all times
NAH2	Non-Aboriginal heritage	The archaeological research design would be implemented. Significant archaeological findings would be considered for inclusion in heritage interpretation (as per NAH8) for the project and be developed in consultation with the relevant local council.	CPB To the extent of any further excavation only	Heritage Interpretation Plan (SMCSWSPS-GBA-STA-HE-REP-000002)		Detailed Design
NAH3	Non-Aboriginal heritage	An Exhumation Policy and Guideline would be prepared and implemented. It would be developed in accordance with the Guidelines for Management of Human Skeletal Remains (NSW Heritage Office, 1998b) and NSW Health Policy Directive – Exhumation of human remains (December, 2013). It would be prepared in consultation with NSW Heritage Office and NSW Health.	The Principal will comply with this condition except with regard to the implementation of the policy.	CHMP (SMCSWSPS-CPB-ALL-HE-PLN-000001) CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Appendix C1 Appendix H	At all times
NAH4	Non-Aboriginal heritage	The method for the demolition of existing buildings and / or structures at Chatswood dive site, Victoria Cross Station, Martin Place Station, Pitt Street Station, Central Station and Waterloo Station would be developed to minimise direct and indirect impacts to adjacent and / or adjoining heritage items.	CPB	CNVMP (SMCSWSPS-CPB-ALL-EM-PLN-000004)		Demolition Planning
NAH7	Non-Aboriginal heritage	The project design would be sympathetic to heritage items and, where reasonable and feasible, minimise impacts to the setting of heritage items. The detailed design for Martin Place Station and Central Station would be developed with input from a heritage architect.	CPB Heritage consultant	Stage 3 Design Report		Detailed Design
NAH8	Non-Aboriginal heritage	Appropriate heritage interpretation would be incorporated into the design for the project in accordance with the NSW Heritage Manual, the NSW Heritage Office's Interpreting Heritage Places and Items: Guidelines (August 2005), and the NSW Heritage Council's Heritage Interpretation Policy.	CPB Heritage consultant	Stage 3 Design Report		Detailed Design
AH1	Aboriginal heritage	Aboriginal stakeholder consultation would be carried out in accordance with the NSW Office of Environment and Heritage's Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010.	CPB To the extent of any further excavation only	Construction Heritage Management Plan SMCSWSPS-CPB-ALL-HE-PLN-000001		At all times

Ref	Category	Mitigation	Responsibility	Where Addressed	Section Ref	Timing
				Heritage Interpretation Plan (SMCSWSPS-GBA-STA-HE-REP-000002)		
AH2	Aboriginal heritage	The cultural heritage assessment report would be implemented.	CPB Heritage consultant	Construction Heritage Management Plan SMCSWSPS-CPB-ALL-HE-PLN-000001 CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Appendix D2	At all times
AH4	Aboriginal heritage	Appropriate Aboriginal heritage interpretation would be incorporated into the design for the project in consultation with Aboriginal stakeholders.	CPB Heritage consultant	Heritage Interpretation Plan (SMCSWSPS-GBA-STA-HE-REP-000002) Heritage Impact Statement (SMCSWSPS-GBA-STA-HE-REP-000001)		Detailed Design
LV1	Landscape and Visual Amenity (Construction)	Where feasible and reasonable, the elements within construction sites would be located to minimise visual impacts, for example materials and machinery would be stored behind fencing.	CPB	Construction and Site Management Plan [SMCSWSPS-CPB-ALL-CM-PLN-000001) Visual Amenity Management Sub-plan CEMP Part C-5	Section 6 and 7 Section 5.6.1	Construction
LV2	Landscape and Visual Amenity (Construction)	Existing trees to be retained would be protected prior to the commencement of construction in accordance with Australian Standard AS4970 the Australian Standard for Protection of Trees on Development Sites and Adjoining Properties.	CPB	Visual Amenity Management Sub-plan CEMP Part C-5	Part C Section 5.3	Construction
LV3	Landscape and Visual Amenity (Construction)	Lighting of construction sites would be oriented to minimise glare and light spill impact on adjacent receivers.	CPB	Visual Amenity Management Sub-plan CEMP Part C-5	Part C Section 5.3	Construction
LV4	Landscape and Visual Amenity (Construction)	Visual mitigation would be implemented as soon as feasible and reasonable after the commencement of construction and remain for the duration of the construction period.	CPB	Visual Amenity Management Sub-plan CEMP Part C-5	Part C Section 5.6.1	Construction
LV5	Landscape and Visual Amenity (Construction)	Opportunities for the retention and protection of existing street trees would be identified during detailed construction planning.	CPB	Visual Amenity Management Sub-plan CEMP Part C-5	Part C Section 5.6.1.1	Construction
LV6	Landscape and Visual Amenity (Construction)	The design and maintenance of construction site hoardings would aim to minimise visual amenity and landscape character impacts, including the prompt removal of graffiti. Public art opportunities would be considered.	CPB	Visual Amenity Management Sub-plan CEMP Part C-5	Part C Section 5.6.2 (CEMP)	At all times
LV10	Landscape and Visual Amenity (Construction)	Temporary impacts to public open space would be rehabilitated in consultation with the relevant local council and / or landowner.	CPB	Construction and Site Management Plan (SMCSWSPS-CPB-ALL-CM-PLN-000001)	Section 6.5.9 Section 7.5.9	Construction

Ref	Category	Mitigation	Responsibility	Where Addressed	Section Ref	Timing
GWG1	Groundwater and Geology	<p>A detailed geotechnical model for the project would be developed and progressively updated during design and construction. The detailed geotechnical model would include:</p> <ul style="list-style-type: none"> • Assessment of the potential for damage to structures, services, basements and other sub-surface elements through settlement or strain • Predicted changes to groundwater levels, including at nearby water supply works. <p>Where building damage risk is rated as moderate or higher (as per the CIRIA 1996 risk-based criteria), a structural assessment of the affected buildings / structures would be carried out and specific measures implemented to address the risk of damage.</p> <p>With each progressive update of the geotechnical model the potential for exceedance of the following target changes to groundwater levels would be reviewed:</p> <ul style="list-style-type: none"> • Less than 2.0 metres – general target • Less than 4.0 metres – where deep building foundations present • Less than 1.0 metre – residual soils • Less than 0.5 metre – residual soils (Blues Point) (fill / Aeolian sand). <p>Where a significant exceedance of target changes to groundwater levels are predicted at surrounding land uses and nearby water supply works, an appropriate groundwater monitoring program would be developed and implemented. The program would aim to confirm no adverse impacts on groundwater levels or to appropriately manage any impacts. Monitoring at any specific location would be subject to the status of the water supply work and agreement with the landowner.</p> <p>The geotechnical model and groundwater monitoring program would be developed in consultation with the Department of Primary Industries (Water).</p>	Not Applicable to Pitt St ISD as evidenced in Appendix A of the SMCSW Chatswood to Sydenham Staging Report (Revision 6.0 Date 2 July 2019)	-	-	-
GWG2	Groundwater and Geology	Condition surveys of buildings and structures in the vicinity of the tunnel and excavations would be carried out prior to the commencement of excavation at each site.	Not Applicable to Pitt St ISD as evidenced in Appendix A of the SMCSW Chatswood to Sydenham Staging Report (Revision 6.0 Date 2 July 2019)	-	-	-
SCW3	Soil, contamination, water quality (Construction)	Erosion and sediment control measures would be implemented in accordance with Managing Urban Stormwater: Soils and Construction Volume 1 (Landcom, 2004) and Managing Urban Stormwater: Soils and Construction Volume 2 (Department of Environment and Climate Change, 2008). Measures would be designed as a minimum for the 80 th percentile; 5-day rainfall event.	CPB	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part C Section 1.5	Construction
SCW4	Soil, contamination, water quality (Construction)	Discharges from the construction water treatment plants would be monitored to ensure compliance with the discharge criteria in an environment protection licence issued to the project.	CPB	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part C Section 1.6	At all times
SO2	Social impacts and community infrastructure	Specific consultation would be carried out with sensitive community facilities (including aged care, child care centres, educational institutions and places of worship) potentially impacted during construction. Consultation would aim to identify and develop measures to manage the specific construction impacts for individual sensitive community facilities.	CPB – Community	Community Communications Strategy SMCSWSPS-CPB-ALL-CL-PLN-000001	Section 8.3	At all times
B3	Biodiversity	The local WIRES group and / or veterinarian would be contacted if any fauna are injured on site or require capture and / or relocation.	CPB	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part C Section 4 Appendix H SMCSWSPS-CPB-ALL-EM-PRO-000003	At all times
FH9	Hydrology and flooding (Construction)	Design of the project would be reviewed to, where feasible and reasonable, not worsen existing flooding characteristics up to and including the 100-year annual recurrence interval event in the vicinity of the project. Detailed flood modelling would consider:	CPB Flood Consultant Aurecon	Flood Impact Assessment (SMCSWSPS-AUR-ALL-CE-REP-000002)	Section 5.8 Section 8.1	Design

Ref	Category	Mitigation	Responsibility	Where Addressed	Section Ref	Timing
		<ul style="list-style-type: none"> Potential changes to flood prone land and flood levels Potential changes to overland flow paths Redistribution of surface runoff as a result of project infrastructure Behaviour of existing stormwater runoff Potential changes required to flood evacuation routes, flood warning systems and signage. <p>Flood modelling to support detailed design would be carried out in accordance with the following guidelines:</p> <ul style="list-style-type: none"> Floodplain Development Manual (NSW Government, 2005b) Floodplain Risk Management Guideline: Practical Consideration of Climate Change (DECC, 2007b) Floodplain Risk Management Guide: Incorporating Sea Level Rise Benchmarks in Flood Risk Assessments (DECCW, 2010c) New guideline and changes to section 117 direction and EP&A Regulation on flood prone land, Planning Circular PS 07-003 (NSW Department of Planning, 2007). <p>Flood modelling and consideration of mitigation measures would be carried out in consultation with the relevant local councils, the Office of Environment and Heritage and the State Emergency Services.</p> <p>Not worsen is defined as:</p> <ul style="list-style-type: none"> A maximum increase flood levels of 50mm in a 100 year Average Recurrence Interval flood event A maximum increase in time of inundation of one hour in a 100 year Average Recurrence Interval flood event No increase in the potential for soil erosion and scouring from any increase in flow velocity in a 100 year Average Recurrence Interval flood event. 		Civil Design Report Stage 3 (SMCSWSPS-AUR-STA-CE-REP-000001)	Section 2.1.2	
FH10	Hydrology and flooding (Construction)	<p>During detailed design, project infrastructure would be designed to meet the following criteria, where feasible and reasonable:</p> <ul style="list-style-type: none"> Locate station and service entrances to underground stations above the greater of the 100 year annual recurrence interval flood level plus 500mm or the probable maximum flood level Provide site surface grading and drainage collection systems at the Chatswood and Marrickville dive structures to manage the risk of local catchment and overland flooding for events up to and including the probable maximum flood event Locate aboveground rail system facilities (such as traction power supply sub stations) at least above the 100 year annual recurrence interval flood level plus 500mm Protect facilities that are identified as being critical to emergency response operations from the probable maximum flood level. 	CPB Flood Consultant Aurecon	Civil Design Report Stage 3 (SMCSWSPS-AUR-STA-CE-REP-000001))	Table 2-1	Design
AQ1	Air Quality	The engines of all on-site vehicles and plant would be switched off when not in use for an extended period.	CPB	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part C Section 7	At all times
AQ2	Air Quality	Plant would be well maintained and serviced to minimise emissions. Emissions from plant would be considered as part of pre-acceptance checks.	CPB	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part C Section 7	At all times
AQ3	Air Quality	Construction site layout and placement of plant would consider air quality impacts to nearby receivers.	CPB	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part C Section 7	At all times
AQ4	Air Quality	Hard surfaces would be installed on long term haul routes and regularly cleaned.	CPB	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part C Section 7	At all times

Ref	Category	Mitigation	Responsibility	Where Addressed	Section Ref	Timing
AQ5	Air Quality	Unsurfaced haul routes and work area would be regularly damped down in dry and windy conditions.	CPB	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part C Section 7	At all times
AQ6	Air Quality	All vehicles carrying loose or potentially dusty material to or from the site would be fully covered.	CPB	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part C Section 7	At all times
AQ7	Air Quality	Stockpiles would be managed to minimise dust generation.	CPB	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part C Section 7	At all times
AQ8	Air Quality	Demolition would be managed to minimise dust generation.	CPB	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part C Section 7	Demolition
HR1	Hazard and risk (Construction)	All hazardous substances that may be required for construction would be stored and managed in accordance with the Storage and Handling of Dangerous Goods Code of Practice (WorkCover NSW, 2005) and Hazardous and Offensive Development Application Guidelines: Applying SEPP 33 (Department of Planning, 2011).	CPB	Project Health and Safety Management Plan SMCSWSPS-CPB-ALL-HS-PLN-000001	Element 4 Element 6 Element 7	At all times
HR2	Hazard and risk (Construction)	Dial before you dig searches and non-destructive digging would be carried out to identify the presence of underground utilities.	CPB	Project Health and Safety Management Plan SMCSWSPS-CPB-ALL-HS-PLN-000001	Section 3.1.2 Managed through Permit to Penetrate / Excavate process	At all times
WM1	Waste management (Construction)	All waste would be assessed, classified, managed and disposed of in accordance with the NSW Waste Classification Guidelines.	CPB	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001) SMP (SMCSWSPS-CPB-ALL-SU-PLN-000001)	Part C Section 6 Section 10.5	At all times
WM2	Waste management (Construction)	100 per cent of spoil that can be reused would be beneficially reused in accordance with the project spoil reuse hierarchy.	CPB	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001) SMP (SMCSWSPS-CPB-ALL-SU-PLN-000001)	Part C Section 6 Section 2.4	At all times
WM3	Waste management (Construction)	A recycling target of at least 90 per cent would be adopted for the project.	CPB	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001) SMP (SMCSWSPS-CPB-ALL-SU-PLN-000001)	Part C Section 6 Section 2.4	At all times
WM4	Waste management (Construction)	Construction waste would be minimised by accurately calculating materials brought to the site and limiting materials packaging.	CPB	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001) SMP (SMCSWSPS-CPB-ALL-SU-PLN-000001)	Part C Section 6 Section 10.5	At all times
SUS1	Sustainability (Construction)	Sustainability initiatives would be incorporated into the detailed design and construction of the project to support the achievement of the project sustainability objectives.	CPB ESD Consultant Cundall	Sustainability Management Plan (SMCSWSPS-CPB-ALL-SU-PLN-000001)	Section 10	Detailed Design Construction

Ref	Category	Mitigation	Responsibility	Where Addressed	Section Ref	Timing
SUS2	Sustainability (Construction)	A best practice level of performance would be achieved using market leading sustainability rating tools during design and construction.	CPB ESD Consultant Cundall	Sustainability Management Plan (SMCSWSPS-CPB-ALL-SU-PLN-000001)	Section 9	Detailed Design Construction
SUS3	Sustainability (Construction)	A workforce development and industry participation strategy would be developed and implemented during construction.	CPB ESD Consultant Cundall	Sustainability Management Plan (SMCSWSPS-CPB-ALL-SU-PLN-000001)	Section 10.9	Construction
SUS4	Sustainability (Construction)	Climate change risk treatments would be incorporated into the detailed design of the project including: <ul style="list-style-type: none"> • Ensuring that adequate flood modelling is carried out and integrated with design • Testing the sensitivity of air-conditioning systems to increased temperatures, and identify potential additional capacity of air-conditioning systems that may be required within the life of the project, with a view to safeguarding space if required • Testing the sensitivity of ventilation systems to increased temperatures and provide adequate capacity. 	CPB ESD Consultant Cundall	Sustainability Management Plan (SMCSWSPS-CPB-ALL-SU-PLN-000001)	Section 10.3 Section 11	Construction
SUS5	Sustainability (Construction)	An iterative process of greenhouse gas assessments and design refinements would be carried out during detailed design and construction to identify opportunities to minimise greenhouse gas emissions. Performance would be measured in terms of a percentage reduction in greenhouse gas emissions from a defined reference footprint.	CPB ESD Consultant Cundall	Sustainability Management Plan (SMCSWSPS-CPB-ALL-SU-PLN-000001)	Section 10.2	Construction
SUS6	Sustainability (Construction)	25 per cent of the greenhouse gas emissions associated with consumption of electricity during construction would be offset.	CPB ESD Consultant Cundall	Sustainability Management Plan (SMCSWSPS-CPB-ALL-SU-PLN-000001)	Section 2.4	Construction
CU1	Cumulative impacts	Transport for NSW would manage and co-ordinate the interface with projects under construction at the same time. Co-ordination and consultation with the following stakeholders would occur, where required: <ul style="list-style-type: none"> -CBD Coordination Office -Department of Planning and Environment -Roads and Maritime Services -Sydney Trains -NSW Trains -Sydney Buses -Sydney Water -Port Authority of NSW -Willoughby Council -North Sydney Council -City of Sydney Council -Marrickville Council -Sydney Motorways Corporation -Barangaroo Delivery Authority -Emergency service providers -Utility providers -Construction contractors. <p>Co-ordination and consultation with these stakeholders would include: <ul style="list-style-type: none"> -Provision of regular updates to the detailed construction program, construction sites and haul routes -Identification of key potential conflict points with other construction projects -Developing mitigation strategies in order to manage conflicts. Depending on the nature of the conflict, this could involve: <ul style="list-style-type: none"> -Adjustments to the Sydney Metro construction program, work activities or haul routes; or adjustments </p>	Contractor to contribute to consultation, where required	Compliance Matrix		At all times

Ref	Category	Mitigation	Responsibility	Where Addressed	Section Ref	Timing
		to the program, activities or haul routes of other construction projects -Co-ordination of traffic management arrangements between projects.				

Appendix D2.3: CEMF Conditions and Contract Clauses

CEMF Clause	CEMF Heading	Requirement	Where Addressed	Section Ref	Contractor's Responsibility
					Schedule C1 SWTC- Appendix F3 Annexure 2
1.3	Environment & Sustainability Policy	<p>Transport for NSW (TfNSW) has developed an Environment and Sustainability Policy (Appendix A) for the Sydney Metro Delivery Office (SMDO). Principal Contractors will be required to undertake their works in accordance with this policy.</p> <p>The policy reflects a commitment in the delivery of the project to:</p> <ul style="list-style-type: none"> -Align with, and support, Transport for NSW (TfNSW) Environment & Sustainability Policy. -Optimise sustainability outcomes, transport service quality, and cost effectiveness. -Develop effective and appropriate responses to the challenges of climate change, carbon management, resource and waste management, land use integration, customer and community expectation, and heritage and biodiversity conservation. -Be environmentally responsible, by avoiding pollution, enhancing the natural environment and reducing the project ecological footprint, while complying with all applicable environmental laws, regulations and statutory obligations. -Be socially responsible by delivering a workforce legacy which benefits individuals, communities, the project and industry, and is achieved through collaboration and partnerships. 	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Section 2.3	The Contractor must comply with this policy.
2.1	Legislation	<p>The key environmental obligations to be addressed are contained within:</p> <ul style="list-style-type: none"> -Legislative requirements. -Project approval documentation. -Conditions of Approval. -Environment Protection Licences. -Other permits, approval and licences. -Standards and guidelines. 	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Appendix D	The Contractor must comply with these requirements where applicable to the Contractor's Activities
2.2	Environmental Approvals	<p>Sydney Metro Northwest is classified as Critical State Significant Infrastructure and was approved under the following in accordance with Section 115W of the Environmental Protection and Assessment Act 1997:</p> <ul style="list-style-type: none"> -Staged State Infrastructure Approval (1 October 2011, modified on 25 September 2012) -Stage 1 – Major Civil Construction Works (25 September 2012, modified on 18 April 2013) -Stage 2 – Stations, Rail Infrastructure and Systems (8 May 2013, modified on 20 May 2014). <p>Some components of Sydney Metro Northwest (such as the conversion of the Epping to Chatswood component of the project) have also been approved under Part 5 of the Environmental Protection and Assessment Act. In which case TfNSW is the consent authority. Sydney Metro City and Southwest is also classified as Critical State Significant Infrastructure and requires approval from a consent authority under the requirements of the Environmental Protection and Assessment Act 1997 (Section 115W). Two separate approvals will be sought:</p>	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001) CEMP	Element 3	The Contractor must comply with these requirements where applicable to the Contractor's Activities

CEMF Clause	CEMF Heading	Requirement	Where Addressed	Section Ref	Contractor's Responsibility
					Schedule C1 SWTC- Appendix F3 Annexure 2
		-Sydney Metro City and Southwest – Chatswood to Sydenham -Sydney Metro City and Southwest – Sydenham to Bankstown The requirements of the approval are required to be complied with by TfNSW. Responsibility for implementing mitigation measures and conditions of approval will be allocated between TfNSW and Principal Contractors as appropriate. Typically TfNSW will produce a Staging Report which sets out the applicability and allocation of approval requirements within the project's program of works.			
2.3	EPL	Sydney Metro projects often meet the definition of a number of scheduled activities under Schedule 1 of the Protection of the Environmental Operation Act 1997 (POEO Act) and as such our contractors may be required to obtain an Environment Protection Licence (EPL) or work under the existing EPL held by Sydney Trains. Where required, Sydney Metro Principal Contractors will:	CEMP	Appendix D1	The Contractor must comply with these requirements.
		A Apply for and be granted an EPL from the EPA.			
		B Hold an EPL which covers their scope of works as necessary under the POEO Act.			
		C Undertake their scope of works in accordance with the conditions of the applicable EPLs as issued by the EPA.			
		D Work under the existing Sydney Trains EPL.			
2.4	Standards and Guidelines	Standard / Guideline Relevant Authority CEMF Reference ISO14001 Interim Construction Noise Guidelines (Department of Environment and Climate Change, 2009) Managing Urban Stormwater: Soil and Construction (Landcom, 2008) AS4282:1997 Control of the Obtrusive Effect of Outdoor Lighting Waste Classification Guidelines (Department of Environment, Climate Change and Water, 2008) AS 1742.3 Manual of uniform traffic control devices Part 3: Traffic control for works on roads RMS Traffic Control at Worksites Manual RMS Australian and New Zealand Guidelines for Fresh and Marine Water Quality	CEMP	Section 1	The Contractor must comply with these requirements.
3.1	Environmental and Sustainability Management System	a Principal Contractors are required to have a corporate Environmental Management System certified under AS/NZS ISO 14001:2004 and to have transitioned this accreditation into AS/NZS ISO 14001:2015 by September 2018.	CPB Management System Accredited to AS/NZS14001:2015 by SGS (Certificate AU14/4487)	Section3	The Contractor must comply with these requirements.
		B Principal Contractors are required to develop a project based Environment and Sustainability Management System (E&SMS). The E&SMS will:			
		I Be consistent with the Principal Contractors corporate Environmental Management System and AS/NZS ISO 14001:2004 or 2015;			

CEMF Clause	CEMF Heading	Requirement	Where Addressed	Section Ref	Contractor's Responsibility
					Schedule C1 SWTC- Appendix F3 Annexure 2
		<ul style="list-style-type: none"> ii Be supported by a process for identifying and responding to changing legislative or other requirements; iii include processes for assessing design or construction methodology changes for consistency against the planning approvals; iv Include processes for tracking and reporting performance against sustainability and compliance targets; v Include a procedure for the identification and management of project specific environmental risks and appropriate control measures; and vi Be consistent with the SM C&SW Sustainability Strategy and Sydney Metro Environment and Sustainability Policy. 	CEMP		
		C All sub-contractors engaged by the Principal Contractor will be required to work under the Principal Contractor's E&SMS.			
		D The relationship between key documents within the Sydney Metro Environment and Sustainability Management System and the Principal Contractor's Environment and Sustainability Management System is shown in Figure 2.			
		E The Principal Contractors Sustainability Plan and its sub plans will capture governance and design requirements as well as social sustainability initiatives as required by the Sydney Metro Sustainability Strategies.			
		F These plans vary in scope across different delivery packages			
3.2	Sustainability Management Plan	a Principal Contractors are required to prepare and implement a Sustainability Management Plan (SMP) relevant to the scale and nature of their scope of works. The SMP shall comprise of a main SMP document and issue-specific subplans.		The SMP	Refer to Appendix F2 in relation to this clause for the Principals Requirements.
		B Depending on the scope and scale of the works, TfNSW may decide to streamline the SMP and sub-plan requirements. As a minimum the SMP will address and detail:		The SMP	
		i The requirements of the relevant planning approval documentation, any relevant conditions of all other permits and licences, the Contractor's corporate EMS, the sustainability provisions of the contract documentation, and this Construction Environmental Management Framework;		Section 1	
		ii The sustainability management team structure, including key personnel authority and roles of key personnel, lines of responsibility and communication, minimum skill levels of each role and interfaces with the overall project organisation structure;		Section 3.2	
		iii A sustainability policy statement and strategies for adaptation to climate change, resource management (including energy, water and waste), workforce development, procurement and biodiversity enhancement;	Sustainability Management Plan (SMCSWSPS-CPB-ALL-SU-PLN-000001)	Appendix A	
		iv Sustainability initiatives to be implemented during the project;		Section 10	
		v How sustainability initiatives will be identified and implemented;		Section 10	

CEMF Clause	CEMF Heading	Requirement	Where Addressed	Section Ref	Contractor's Responsibility
					Schedule C1 SWTC- Appendix F3 Annexure 2
		vi The processes and methodologies for assurance, monitoring, auditing, corrective action, continuous improvement and reporting on sustainability performance;		Element 7	
		vii The processes and methodologies which will be used to achieve the required scores under rating systems identified in contract documents;		Section 9 Appendix C Appendix D	
		vii i The processes and procedures for undertaking climate change risk assessments;		Element 3 Section 11	
		ix The processes and procedures for the identification and implementation of climate change adaption measures;		Section 11	
		x The approach to sustainable procurement including: -The processes and procedures that will be used to provide environmental and social improvement; -The processes and environmental and social criteria that will be used for the selection of Subcontractors; -The processes that will be used to ensure ethical sourcing of labour and materials; -Where equipment, materials or labour are procured from locations outside Australia, the processes that will be used to ensure human rights impacts and risks are identified and mitigated; and -Interfaces with other Project Plans.		Element 4	
		c Depending on the scope of the works, the SMP will also include, as a separate sub-plans:			
		i A Construction Workforce Development Plan;	Sustainability Management Plan (SMCSWSPS-CPB-ALL-SU-PLN-000001)	Section 10.9	
		ii A Construction Carbon and Energy Management Plan;	Sustainability Management Plan (SMCSWSPS-CPB-ALL-SU-PLN-000001)	Section 10.2	
		iii A Materials Management Plan; and	Sustainability Management Plan (SMCSWSPS-CPB-ALL-SU-PLN-000001)	Section 10.5	
		iv A Waste Management & Recycling Plan.	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001) Sustainability Management Plan (SMCSWSPS-	Part C Section 6 (CEMP) Section 10.5 (SMP)	

CEMF Clause	CEMF Heading	Requirement	Where Addressed	Section Ref	Contractor's Responsibility	
					Schedule C1 SWTC- Appendix F3 Annexure 2	
			CPB-ALL-SU-PLN-000001)			
		d				
		i				
		ii				
		iii				
		iv				
			Sustainability Management Plan (SMCSWSPS-CPB-ALL-SU-PLN-000001) Workplace Relations Management Plan (SMCSWSPS-CPB-ALL-WR-PLN-000001)	Section 10.2 (SMP) Element 7 (SMP) Section 18 (WRMP)		
3.3	Construction Environmental Management Plans	a	Principal Contractors are required to prepare and implement a Construction Environmental Management Plan (CEMP) relevant to the scale and nature of their scope of works. The CEMP shall comprise of a main CEMP document, issue specific sub plans, activity specific procedures and site based control maps. The CEMP shall illustrate the relationship between other plans required by the contract, in particular those that relate to design management.		This CEMP	The Contractor must comply with these requirements and in addition to the requirements of Section 3.3 g. the Contractor's procedures included in the CEMP must be consistent with the following documents: (a) City and Southwest Construction Noise and Vibration Strategy (SM ES-ST-210); (b) Environmental Incident Classification and Reporting Procedure (SM ES-PW-303); (c) Sydney Metro City & Southwest Environmental Reporting Template SM ESFT-421; (d) Water Discharge and Reuse Procedure (SM ES-PW-309);
		B	Depending on the scope and scale of the works, TfNSW may decide to streamline the CEMP and sub-plan requirements. For example, depending on the risk associated with particular environmental issues it may be appropriate to remove the need for a sub plan, or replace with a procedure as part of the CEMP.		Appendix H	
		c	The CEMP will cover the requirements of the relevant planning approval documentation, the conditions of all other permits and licences, the Principal Contractor's corporate EMS, the environmental provisions of the contract documentation and this CEMP.		Appendix D	
		d	As a minimum the CEMP will:		This CEMP	
		i	Include a contract specific environmental policy;		Appendix B2	
		ii	Include a description of activities to be undertaken during construction;		Section 2.1	

CEMF Clause	CEMF Heading	Requirement	Where Addressed	Section Ref	Contractor's Responsibility	
					Schedule C1 SWTC- Appendix F3 Annexure 2	
		iii	For each plan under the CEMP include a matrix of the relevant Conditions of Approval or Consent referencing where each requirement is addressed;	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Appendix D	(e) Planning Approval Consistency Procedure (SM ES-PW-314); (f) Environment & Sustainability Policy (SM SE MM 102); (g) Environmental Compliance Management Standard (SM ES-ST-202; and (h) Out of Hours Works Assessment Procedure (SM ES-PW-310).
		iv	For each plan under the CEMP, set objectives and targets, and identify measurable key performance indicators in relation to these;		Section 2.6 and 4.7	
		v	For each role that has environmental accountabilities or responsibilities, including key personnel, provide a tabulated description of the authority and roles of key personnel, lines of responsibility and communication, minimum skill level requirements and their interface with the overall project organisation structure;		Section 4.2	
		vi	Assign the responsibility for the implementation of the CEMP to the Environment Manager, who will have appropriate experience. The Principal Contractor's Project Director will be accountable for the implementation of the CEMP;		Section 4.2	
		vii	Identify communication requirements, including liaison with stakeholders and the community;		Section 4.7	
		vii i	Include induction and training requirements and a summary of the Training Needs Analysis required in Section 3.9(b);		Element 7	
		ix	Management strategies for environmental compliance and review of the performance of environmental controls;		Element 12	
		x	Processes and methodologies for surveillance and monitoring, auditing and review, and reporting on environmental performance including environmental compliance tracking;		Element 12	
		xi	Include procedures for emergency and incident management, non-compliance management, and corrective and preventative action; and		Element 9 and Element 10	
		xii	Include procedures for the control of environmental records.		Element 11	
		e	The CEMP and associated sub-plans will be reviewed by TfNSW and/or an independent environmental representative (see Section 3.11) prior to any construction works commencing. Depending on the Conditions of Approval, the CEMP and certain sub-plans may also require the approval of the Department of Planning and Environment (DP&E).		Section 1	
		f	Where a corresponding systems document exists within the Sydney Metro Integrated Management System, the Principal Contractor's procedures will be required to be consistent with any requirements in those documents.		Section 3.3	
		3.4	Construction Environmental Management Sub-Plans		a	
i	Spoil management;			CTMP (SMCSWSPS-		
ii	Groundwater management;					

CEMF Clause	CEMF Heading	Requirement	Where Addressed	Section Ref	Contractor's Responsibility
					Schedule C1 SWTC- Appendix F3 Annexure 2
		<ul style="list-style-type: none"> iii Traffic and transport management; iv Noise and vibration management; v Heritage management; vi Flora and fauna management; vii Visual amenity management; vii i Carbon and energy management; ix Materials management; x Soil and water management; xi Air quality management; and xii Waste management and recycling. 	CPB-ALL-TF-PLN-000001) Sustainability Management Plan (SMCSWSPS-CPB-ALL-SU-PLN-000001)	Section 10.2 and 10.5 (SMP)	
		B Additional detail on the minimum requirements for these sub plans is provided in Sections 6-17 of this CEMF.			
3.5	Environmental Procedures and Control Maps	a The Principal Contractor will prepare and implement activity specific environmental procedures . These procedures should supplement environmental management sub plans, but may substitute for sub plans in agreement with TfNSW if a reasonable risk based justification can be made and the sub plan is not a requirement of any approval.		Appendix H	The Contractor must comply with these requirements. In addition, the contractor is to develop a procedures/s for Flora & Fauna Management, Soil & water Management and Air Quality Management.
		B The procedures will include:			
		i A breakdown of the work tasks relevant to the specific activity and indicate responsibility for each task;	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001		
		ii Potential impacts associated with each task;			
		iii A risk rating for each of the identified potential impacts;			
		iv Mitigation measures relevant to each of the work tasks; and			
		v Responsibility to ensure the implementation of the mitigation measures.			
		C The Principal Contractor will prepare and implement site based progressive Environmental Control Maps (ECM's) which as a minimum:			
		i Is a progressive document depicting a current representation of the site;		Appendix F	
		ii Indicates which environmental procedures, environmental approvals, or licences are applicable;			
		iii Illustrates the site showing significant structures, work areas and boundaries;			
		iv Illustrates environmental control measures and environmentally sensitive receivers;			
		v Is endorsed by the Principal Contractors Environmental Manager or delegate; and			

CEMF Clause	CEMF Heading	Requirement	Where Addressed	Section Ref	Contractor's Responsibility	
					Schedule C1 SWTC- Appendix F3 Annexure 2	
		vi	Relevant workers will be trained in the requirements of and will sign off the procedures prior to commencing works on the specific site and / or activity.			
3.6	Additional Environmental Assessments	a	Where the requirement for an additional environmental assessment is identified, this will be undertaken prior to undertaking any physical works. The environmental assessment will include:	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Element 5	The Contractor must comply with these requirements.
		I	A description of the existing surrounding environment;			
		ii	Details of the ancillary works and construction activities required to be carried out including the hours of works;			
		iii	An assessment of the environmental impacts of the works, including, but not necessarily limited to, traffic, noise and vibration, air quality, soil and water, ecology and heritage;			
		iv	Details of mitigation measures and monitoring specific to the works that would be implemented to minimise environmental impacts; and			
		v	Identification of the timing for completion of the construction works, and how the sites would be reinstated (including any necessary rehabilitation).			
3.7	Condition Surveys	a	Prior to the commencement of construction, the Principal Contractors will offer Pre-construction Building Condition Surveys, in writing, to the owners of buildings where there is a potential for construction activities to cause cosmetic or structural damage. If accepted, the Principal Contractor will produce a comprehensive written and photographic condition report produced by an appropriate professional prior to relevant works commencing.	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part C Section 8	(a) The Contractor must comply with the requirements Section 9.2 of Appendix F2 in relation to pre-construction building condition surveys and not this clause 3.7 (a). (b) The Contractor must comply with these requirements.
		B	Prior to the commencement of construction, the Principal Contractor will prepare a Road Dilapidation Report for all local public roads proposed to be used by heavy vehicles.	CTMP (SMCSWSPS-CPB-ALL-TF-PLN-000001)	Table 4.4 and 8.11	
3.8	Register of Hold Points	a	Principal Contractors will identify hold points, beyond which approval is required to proceed with a certain activity. Example activities include vegetation removal and water discharge. Hold points will be documented in relevant CEMPs.	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Section 3.2	The Contractor must comply with these requirements.
		B	Prior to the commencement of construction, the Principal Contractor will prepare a Road Dilapidation Report for all local public roads proposed to be used by heavy vehicles.	CTMP (SMCSWSPS-CPB-ALL-TF-PLN-000001)	Table 4.4 and 8.11	
3.9	Training, awareness and Competence	a	Principal Contractors will be responsible for determining the training needs of their personnel. As a minimum this will include site induction, regular toolbox talks and topic specific environmental training as follows:	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Element 7	The Contractor must comply with these requirements.

CEMF Clause	CEMF Heading	Requirement	Where Addressed	Section Ref	Contractor's Responsibility
					Schedule C1 SWTC- Appendix F3 Annexure 2
		<p>I The site induction will be provided to all site personnel and will include, as a minimum:</p> <ul style="list-style-type: none"> -Training purpose, objectives and key issues; -Contractor's environmental policy and key performance indicators; -Due diligence, duty of care and responsibilities; -Relevant conditions of any environmental licence and/or the relevant conditions of approval; -Site specific issues and controls including those described in the environmental procedures; -Reporting procedure for environmental hazards and incidents; and -Communication protocols. <p>ii Toolbox talks will be held on a regular basis in order to provide a project or site wide update, including any key or recurring environmental issues; and</p> <p>iii Topic specific environmental training should be based upon, but is not limited to, Issue specific sub-plans required under Section 3.4 (a) (i-xi).</p> <p>B Principal Contractors will conduct a Training Needs Analysis which:</p> <p>i Identifies that all staff are to receive an environmental induction and undertake environmental incident management training;</p> <p>ii Identifies the competency requirements of staff that hold environmental roles and responsibilities documented within the Construction Environmental Management Plan and sub-plans;</p> <p>iii Identifies appropriate training courses/events and the frequency of training to achieve and/or maintain these competency requirements; and</p> <p>iv Implements and documents as part of the CEMP a training schedule that plans attendance at environmental training events, provides mechanisms to notify staff of their training requirements, and identifies staff who do not attend scheduled training events or who have overdue training requirements.</p>			
3.10	Emergency and Incident Response	<p>a Principal Contractors will develop and implement a Pollution Incident Response Management Plan, in accordance with the requirements of the POEO Act. Contractors' emergency and incident response procedures will also be consistent with any relevant SMDO procedures and will include:</p> <p>I Categories for environmental emergencies and incidents;</p> <p>ii Notification protocols for each category of environmental emergency or incident, including notification of TfNSW and notification to owners / occupiers in the vicinity of the incident. This is to include relevant contact details;</p> <p>iii Identification of personnel who have the authority to take immediate action to shut down any activity, or to affect any environmental control measure (including as directed by an authorised officer of the EPA);</p>	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001	Element 9 and10	The Contractor must comply with these requirements.

CEMF Clause	CEMF Heading	Requirement	Where Addressed	Section Ref	Contractor's Responsibility
					Schedule C1 SWTC- Appendix F3 Annexure 2
		<ul style="list-style-type: none"> iv A process for undertaking appropriate levels of investigation for all incidents and the identification, implementation and assessment of corrective and preventative actions; and v Notification protocols of incidents to the EPA, DP&E or OEHL that are made by the Contractor or TfNSW. 			
		B The Contractor will make all personnel aware of the plan and their responsibilities.			
3.11	Independent Environmental Representatives	<ul style="list-style-type: none"> a TfNSW will engage Independent Environmental Representatives (Ers) to undertake the following, along with any additional roles as required: <ul style="list-style-type: none"> I Review, provide comment on and endorse (where required) any relevant environmental documentation to verify it is prepared in accordance with relevant environmental legislation, planning approval conditions, Environment Protection Licences, relevant standards and this CEMF; ii Monitor and report on the implementation and performance of the above mentioned documentation and other relevant documentation; iii Provide independent guidance and advice to TfNSW and the Contractors in relation to environmental compliance issues and the interpretation of planning approval conditions; iv Be the principal point of advice for the DP&E in relation to all questions and complaints concerning the environmental performance of the project; v Ensure that environmental auditing is undertaken in accordance with all relevant project requirements; and vi Recommend reasonable steps, including 'stop works', to be taken to avoid or minimise adverse environmental impacts. 	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Section 5.3	The Contractor must comply with these requirements, in so much as facilitating the ER in carrying out the requirements of their role and implementing any mitigation measures/actions as required by the ER.
3.12	Roles and Responsibilities	<ul style="list-style-type: none"> a In relation to Roles and Responsibilities the CEMP will <ul style="list-style-type: none"> I Describe the relationship between the Principal Contractor, TfNSW, key regulatory stakeholders, the independent environmental representative and the independent certifier; ii For each role that has environmental accountabilities or responsibilities, including key personnel, provide a tabulated description of the authority and roles of key personnel, lines of responsibility and communication, minimum skill level requirements and their interface with the overall project organisation structure; iii Provide details of each specialist environment, sustainability or planning consultant who is employed by the Principal Contractor including the scope of their work; and iv Provide an overview of the role and responsibilities of the Independent Environmental Representative, the Independent Certifier and other regulatory stakeholders. B All sub-contractors engaged by the Principal Contractor will be required to operate within the EMS documentation of that Principal Contractor. 	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001) Sustainability Management Plan (SMCSWSPS-CPB-ALL-SU-PLN-000001)	Section 4	The Contractor must comply with these requirements.

CEMF Clause	CEMF Heading	Requirement	Where Addressed	Section Ref	Contractor's Responsibility	
					Schedule C1 SWTC- Appendix F3 Annexure 2	
3.13	Environmental Monitoring, Inspections and Auditing	a	Issue specific environmental monitoring will be undertaken as required or as additionally required by any approval, permit or licence conditions.	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Element 12 Part C Appendix E	The Contractor must comply with these requirements.
		b	The results of any monitoring undertaken as a requirement of the EPL will be published on the Principal Contractor's, or a project specific, website within 14 days of obtaining the results.			
		C	Environmental inspections will include:			
		i	Surveillance of environmental mitigation measures by the Site Foreman; and			
		ii	Periodic inspections by the Principal Contractor's Environmental Manager (or delegate) to verify the adequacy of all environmental mitigation measures. This will be documented in a formal inspection record.			
		D	Regular site inspections by the Ers and TfNSW representatives at a frequency to be agreed with the Principal Contractor.			
		E	Principal Contractors must undertake internal environmental audits. The scope will include:			
		i	Compliance with any approval, permit or licence conditions;			
		ii	Compliance with the E&SMS, CEMP, SMP, sub-plans and procedures;			
		iii	Community consultation and complaint response;			
		iv	Environmental training records; and			
v	Environmental monitoring and inspection results.					
F	TfNSW (or an independent environmental auditor) will also undertake periodic audits of the Principal Contractor's E&SMS and compliance with the environmental aspects of contract documentation, including this Construction Environmental Management Framework.					
3.14	Environmental Non-compliances	a	Principal Contractors will document and detail any non-compliances arising out of the above monitoring, inspections and audits. TfNSW will be made aware of all non-compliances in a timely manner.	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Element 3	The Contractor must comply with these requirements.
		B	Principal Contractors will develop and implement corrective actions to rectify the non-compliances and preventative actions in order to prevent a re-occurrence of the non-compliance. Contractors will also maintain a register of non compliances, corrective actions and preventative actions.			
		C	TfNSW or the Environmental Representative may raise non-compliances against environmental requirements.			
3.15	Environmental Records and Compliance Reporting	a	Principal Contractors will maintain appropriate records of the following:	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Element 2, 3 and 12	The Contractor must comply with these requirements.
		i	Site inspections, audits, monitoring, reviews or remedial actions;			
		ii	Documentation as required by performance conditions, approvals, licences and legislation;			

CEMF Clause	CEMF Heading	Requirement	Where Addressed	Section Ref	Contractor's Responsibility
					Schedule C1 SWTC- Appendix F3 Annexure 2
		<ul style="list-style-type: none"> iii Modifications to site environmental documentation (eg CEMP, sub-plans and procedures); and iv Other records as required by this Construction Environmental Management Framework. 			
		B Records will be retained onsite for the duration of works.			
		C Additionally records will be retained by the Principal Contractor for a period of no less than 7 years. Records will be made available in a timely manner to TfNSW (or their representative) upon request.			
		D Compliance reports detailing the outcome of any environmental surveillance activity including internal and external audits (refer to Section 3.13) will be produced by the Principal Contractors Environmental Manager or delegate. These reports will be submitted to TfNSW at an agreed frequency.			
3.16	Review and Improvement of the E&SMS	a Principal Contractors will ensure the continual review and improvement of the E&SMS. This will generally occur in response to:	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Section 1 Element 12 Appendix E	The Contractor must comply with these requirements.
		I Issues raised during environmental surveillance and monitoring;			
		ii Expanded scope of works;			
		iii Environmental incidents; and			
		iv Environmental non-conformances.			
B A formal review of the E&SMS by the Principal Contractor's Senior Management Team will also occur on an annual basis, as a minimum. This review shall generate actions for the continual improvement of the E&SMS and supporting management plans.					
4.1	Overview	a Throughout construction, Sydney Metro and the Principal Contractors will work closely with stakeholders and the community to ensure they are well informed regarding the construction works.	Community Communication s Strategy (SMCSWSPS-CPB-ALL-CL-PLN-000001)	Section 5.4 Section 8.1 Section 6.2 Section 6.8 Section 6.10	The Contractor must comply with these requirements.
		B Stakeholders and the community will be informed of significant events or changes that affect or may affect individual properties, residences and businesses. These will include:			
		i Significant milestones;			
		ii Design changes;			
		iii Changes to traffic conditions and access arrangements for road users and the affected public; and			
iv Construction operations which will have a direct impact on stakeholders and the community including noisy works, interruptions to utility services or construction work outside of normal work hours.					
4.2	Communication and Consultation Strategy	a A Community Communication Strategy will be developed by each Sydney Metro Principal Contractor.;	Community Communication s Strategy (SMCSWSPS-CPB-ALL-CL-PLN-000001)	This strategy This strategy Section 6.8	The Contractor must comply with these requirements.
		B Key elements of the Community Communication Strategy, which will be implemented at appropriate times in the construction process, will include:			
		i Notification (including targeted letterbox drops and email) of any works that may disturb local residents and businesses (such as noisy			

CEMF Clause	CEMF Heading	Requirement	Where Addressed	Section Ref	Contractor's Responsibility
					Schedule C1 SWTC- Appendix F3 Annexure 2
		activities and night works) at least seven days prior to those works commencing;			
		ii Notification (including targeted letterbox drops and email) of works that may affect transport (such as road closures, changes to pedestrian routes and changes to bus stops);		Section 6.2	
		iii Traffic alerts (via email) to all key traffic and transport stakeholders advising of any changes to access and local traffic arrangements (at least seven days prior to significant events);		Section 6.2	
		iv Print and radio advertisements regarding major traffic changes;		Section 6.2	
		v 24-hour toll-free community project information phone line;		Section 10	
		vi Complaints management process;		Section 10	
		vii Community information sessions, as required;		Section 6.4 Section 7	
		vii i Regular updates to the Sydney Metro website (sydneymetro.info), including uploading of all relevant documents, and contact details for the stakeholder and community relations team;		Section 5.2.3	
		ix Provision of information to the Sydney Metro Community Information Centre including community newsletters, information brochures and fact sheets and interactive web-based activities;		Section 5.2.3	
		x Clear signage at the construction sites;		Section 6.3	
		xi Regular newspaper advertisements in local and metropolitan papers;		Section 9.2	
		xii Regular inter-agency group meetings;		Section 5.2.3	
		xii i Community, business and stakeholder satisfaction surveys and feedback forms;		Section 5.2.3	
		xi v Translator and interpreter services; and		Section 7.2	
		x v The Principal Contractor's Community Relations Team will liaise with the Sydney Metro Project Communications team as the point of contact for the community.		Section 5.2.3	
4.3	Complaint Handling	a Community liaison and complaints handling will be undertaken in accordance with the Construction Complaints Management System and will include:	Community Communication s Strategy (SMCSWSPS-CPB-ALL-CL-PLN-000001)	Section 10	The Contractor must comply with these requirements.
		i Principal Contractors will deal with complaints in a responsive manner so that stakeholders' concerns are managed effectively and promptly; and			
		ii A verbal response will be provided to the complainant as soon as possible and within a maximum of two hours from the time of the complaint (unless the complainant requests otherwise). A detailed written response will then be provided, if required, to the complainant within one week.			
4.4		a Principal Contractors will ensure as a minimum:		Part C Section 5	

CEMF Clause	CEMF Heading	Requirement	Where Addressed	Section Ref	Contractor's Responsibility
					Schedule C1 SWTC- Appendix F3 Annexure 2
	Urban Design of Temporary Works	I	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)		The Contractor must comply with these requirements.
		B			
		C			
		D			
4.5	Business and Property Impacts	a	Community Communication s Strategy (SMCSWSPS-CPB-ALL-CL-PLN-000001)	Section 11 This Strategy	The Contractor must comply with these requirements.
		B			
		i			
		ii			
		iii			
		iv			
		C i			

CEMF Clause	CEMF Heading	Requirement	Where Addressed	Section Ref	Contractor's Responsibility
					Schedule C1 SWTC- Appendix F3 Annexure 2
		<ul style="list-style-type: none"> ii Summary of the commercial character of the locality, its general trading profile (daily and annually) and information gained from the business profiling such as: <ul style="list-style-type: none"> -Operating hours; -Main delivery times; -Reliance on foot traffic; -Any signage or advertising that may be impacted; -Customer origin; and -Other information specific to the business that will need to be considered in construction planning. lii Define the roles and responsibilities in relation to the control and monitoring of business disturbances; iv Identification of locality specific standard business mitigation measures which would be implemented; v Maps and diagrams to illustrate the information for easy identification of measures which would be implemented; vi Description of the monitoring, auditing and reporting procedures; vii Procedure for reviewing performance and implementing corrective actions; vii i Description of the complaints handling process; and ix Procedure for community consultation and liaison. 			
5.1	Working Hours	<ul style="list-style-type: none"> a Standard working hours are between 7am – 6pm on weekdays and 8am – 1pm on Saturdays. B Works which can be undertaken outside of standard construction hours without any further approval include: <ul style="list-style-type: none"> i Those which have been described in respective environmental assessments as being required to take place 24/7. For example, tunnelling and underground excavations and supporting activities will be required 24/7; ii Works which are determined to comply with the relevant Noise Management Level at sensitive receivers; iii The delivery of materials outside of approved hours as required by the Police or other authorities (including RMS) for safety reasons; iv Where it is required to avoid the loss of lives, property and / or to prevent environmental harm in an emergency; and v Where written agreement is reached with all affected receivers. C Principal Contractors may apply for EPA approval to undertake works outside of normal working hours under their respective Environment Protection Licences. 	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part C Section 8 Noise and Vibration Management Sub-plan	The Contractor must comply with these requirements.
5.2	Site Layout	<ul style="list-style-type: none"> a Principal Contractors will consider the following in the layout of construction sites: <ul style="list-style-type: none"> I The location of noise intensive works and 24 hour activities in relation to noise sensitive receivers; 	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part C Section 8 Noise and Vibration Management Sub-plan	The Contractor must comply with these requirements.

CEMF Clause	CEMF Heading	Requirement	Where Addressed	Section Ref	Contractor's Responsibility
					Schedule C1 SWTC- Appendix F3 Annexure 2
		<ul style="list-style-type: none"> ii The location of site access and egress points in relation to noise and light sensitive receivers, especially for sites proposed to be utilised 24 hours per day; iii The use of site buildings to shield noisy activities from receivers; iv The use of noise barriers and / or acoustic sheds where feasible and reasonable for sites proposed to be regularly used outside of daytime hours; and v Aim to minimise the requirement for reversing, especially of heavy vehicles. 	Construction and Site Management Plan (SMCSWSPS-CPB-ALL-CM-PLN-000001)	Sections 6 and 7	
5.3	Reinstatement	<ul style="list-style-type: none"> a Mitigation measures for reinstatement will be produced in consultation with TfNSW, the community and stakeholders. B Mitigation measures required for reinstatement will be incorporated into the CEMP and will include as a minimum: <ul style="list-style-type: none"> i Principal Contractors will clear and clean all working areas and accesses at project completion; ii At the completion of construction all plant, temporary buildings or vehicles not required for the subsequent stage of construction will be removed from the site; iii All land, including roadways, footpaths, loading facilities or other land having been occupied temporarily will be returned to their pre-existing condition or better; and iv Reinstatement of community spaces, infrastructure and services will occur as soon as possible after completion of construction. 	Construction and Site Management Plan (SMCSWSPS-CPB-ALL-CM-PLN-000001)	Section 6.5.9 Section 7.5.9	The Contractor must comply with these requirements.
6.1	Spoil Management Objectives	<ul style="list-style-type: none"> a The following spoil management objectives will apply to the construction of the project: <ul style="list-style-type: none"> I Minimise spoil generation where possible; i The project will mandate 100% reuse or recycling (on or off-site) of usable spoil; ii The project will mandate 100% reuse or recycling (on or off-site) of usable spoil; iii Spoil will be managed with consideration to minimising adverse traffic and transport related issues; iv Spoil will be managed to avoid contamination of land or water; v Spoil will be managed with consideration of the impacts on residents and other sensitive receivers; and vi Site contamination will be effectively managed to limit the potential risk to human health and the environment. 	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part C Section 2 Spoil Management Sub-Plan	The Contractor must comply with these requirements.
6.2	Spoil Management Implementation	<ul style="list-style-type: none"> a Principal Contractors will develop and implement a Spoil Management Plan for their scope of works. The Spoil Management Plan will include as a minimum: <ul style="list-style-type: none"> I The spoil mitigation measures as detailed in the environmental approval documentation; 	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part C Section 2 Spoil Management Sub-Plan	The Contractor must comply with these requirements.

CEMF Clause	CEMF Heading	Requirement	Where Addressed	Section Ref	Contractor's Responsibility
					Schedule C1 SWTC- Appendix F3 Annexure 2
		<ul style="list-style-type: none"> ii The responsibilities of key project personnel with respect to the implementation of the plan; iii Procedures and methodologies for the haulage and disposal locations, storage and stockpiling arrangements, including those for virgin excavated natural material, contaminated and unsuitable material; iv Procedures for the testing, excavation, classification, handling and reuse of spoil; v measures that will be implemented to both reduce spoil quantities and maximise the beneficial reuse of spoil which will be generated during the performance of the TSE Contractor's Activities, including how spoil generation is minimised through the design development process; vi Details, links or references to where traffic movements in relation to spoil are described, and measures that will be implemented to minimise traffic and noise impacts associated with haulage and disposal of spoil; vii quantities for reuse of spoil within the Construction Site, for beneficial reuse of spoil off site and for spoil disposal; vii Processes and procedures for the management of the environmental and social impacts of spoil transfer and reuse; ix A register of spoil receipt sites that includes the site or project name, location, capacity, site owner and which tier the site is classified as under the spoil reuse hierarchy; x Spoil management monitoring requirements; and xi Compliance record generation and management. 			
		<ul style="list-style-type: none"> B Spoil management measures will be included in regular inspections undertaken by the Contractor, and compliance records will be retained. These will include: <ul style="list-style-type: none"> i Records detailing the beneficial re-use of spoil either within the project or at off-site locations; and ii Waste dockets for any spoil disposed of to landfill sites. 			
6.3	Spoil Management	<ul style="list-style-type: none"> a Examples of spoil mitigation measures include: <ul style="list-style-type: none"> I Implementing the spoil re-use hierarchy; ii Handling spoil to minimise potential for air or water pollution; and iii Minimise traffic impacts associated with spoil removal. 	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part C Section 2 Spoil Management Sub-Plan	The Contractor must comply with these requirements.
7.1	Groundwater Management Objectives	<ul style="list-style-type: none"> a The following groundwater management objectives will apply to construction: <ul style="list-style-type: none"> I Reduce the potential for drawdown of surrounding groundwater resources; ii Prevent the pollution of groundwater through appropriate controls; and iii Reduce the potential impacts of groundwater dependent ecosystems. 	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part C Section 1.2	The Contractor must comply with these requirements.

CEMF Clause	CEMF Heading	Requirement	Where Addressed	Section Ref	Contractor's Responsibility	
					Schedule C1 SWTC- Appendix F3 Annexure 2	
7.2	Groundwater Management Implementation	a	The following content may be provided within other sub plans such as the Soil and Water Management Plan and Flora and Fauna Management Plan.	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Element 11 Part C Section 1.5 Appendix C and I	The Contractor must comply with these requirements.
		b	Principal Contractors will develop and implement a Groundwater Management Plan for their scope of works. The Groundwater Management Plan will include as a minimum:			
		i	The groundwater mitigation measures as detailed in the environmental approval documentation;			
		ii	The requirements of any applicable licence conditions;			
		iii	Details of proposed extraction, use and disposal of groundwater, and measures to mitigate potential impacts to groundwater sources, incorporating monitoring, impact trigger definition and response actions for all groundwater sources potentially impacted by the SSI;			
		iv	Evidence of consultation with the NSW Office of Water;			
		v	The responsibilities of key project personnel with respect to the implementation of the plan;			
		vi	Procedures for the treatment, testing and discharge of groundwater from the site;			
		vii	Compliance record generation and management; and			
	vii	Details of groundwater monitoring if required.				
7.3	Groundwater Mitigation	a	Examples of groundwater mitigation measures include:	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part C Section 1.5	The Contractor must comply with these requirements.
		i	Implementing all feasible and reasonable measures to limit groundwater inflows to stations and crossovers; and			
		ii	Undertaking groundwater monitoring during construction (levels and quality) in areas identified as 'likely' and 'potential' groundwater dependent ecosystems.			
8.1	Construction Traffic Management Objectives	a	Construction traffic management will be managed using the following documentation, where relevant:	CTMP (SMCSWSPS-CPB-ALL-TF-PLN-000001)	The CTMP Section 8 and 10 Section 8 .2 and 8.5 Section 10.3 Section 8.7, Appendix C and D Section 8 .5, 10.3, 10.4 and Appendix D Section 10.2	The Contractor must comply with these requirements as well as the compliance documents in Attachment 1.
		i	Construction Traffic Management Plan;			
		ii	Traffic Management Plan (for each work site);			
		iii	Traffic Staging Plan (for road works);			
		iv	Traffic Control Plan (for road works);			
		v	Vehicle Movement Plan (internal to construction sites);			
		vi	Pedestrian Management Plan (around construction sites); and			
		vii	Parking Management Plan (loss of parking).			
		b	Principal Contractors will develop and implement a Construction Traffic Management Plan for their scope of works. The Construction Traffic Management Plan will as a minimum:			

CEMF Clause	CEMF Heading	Requirement	Where Addressed	Section Ref	Contractor's Responsibility
					Schedule C1 SWTC- Appendix F3 Annexure 2
		i	Implement the traffic and transport mitigation measures as detailed in the environmental approval documentation;	Section 10	
		ii	be developed in consultation with the relevant road authority, CBD Coordinator General (CCO) and / or transport operator;	Section 6	
		iii	Set out the overall traffic management resources, processes and procedures for the management of traffic and transport during construction of the Project Works and Temporary Works;	Section 8 and 10	
		iv	Identify types and volumes of construction vehicles and associated route and time restrictions;	Section 9	
		v	Identify traffic generation from other major infrastructure developments, impacts from construction traffic and haulage routes;	Section 9	
		vi	Identify potential activities that could result in the disruption to traffic and transport networks, including pedestrian, cyclist and public transport networks and during special events;	Section 9	
		c	The individual construction traffic plans listed in (a) are to comply with and address the requirements of RMS Traffic Control at Worksites Manual AS 1742.3 Manual of uniform traffic control devices Part 3: Traffic control for works on roads, relevant Austroads Guides and RMS Supplements to Austroads and Australian Standards;	Table 4.1	
		d	The process for the development of Traffic Management Plans (TMP) including the minimum requirements as detailed in Specification G10 and as required by the relevant road authorities.	Table 4.2	
		e	The process for the development of Traffic Staging Plans (TSP) including the minimum requirements for these TSP including road design drawings showing traffic lane configurations for traffic passing through the site during various construction stages, including details of road alignment and geometry, intersection layouts, provision for buses and cyclists, work areas and pedestrian areas, drainage, signs and pavement markings;	Section 8.2 and 8.5	
		f	The process for the development of Traffic Control Plans (TCP). The TCPs will set out the specific traffic and transport management arrangements to be implemented at specific locations during the construction of the Project Works and Temporary Works.	Section 10.3	
		g	The process for the development of Vehicle Movement Plan (VMP). The content of a VMP will include:	Section 8.7 Appendix C and D	
		i	A diagram showing the preferred travel paths for vehicles associated with a work site entering, leaving or crossing the through traffic stream. A VMP may be combined with or superimposed on a TCP; and	Section 8.7 Appendix C and D	
		ii	The vehicle entry and exit points into the work area, and indicate clearly that these are the only points where interface with through traffic is permitted.	Section 8.7 Appendix C and D	
		h	The process for the development of a Pedestrian Movement Plan (PMP). The content of the PMP will include:	Section 8.5, 10.3, 10.4 Appendix D	

CEMF Clause	CEMF Heading	Requirement	Where Addressed	Section Ref	Contractor's Responsibility
					Schedule C1 SWTC- Appendix F3 Annexure 2
		<ul style="list-style-type: none"> i A diagram showing the allocated travel paths for workers or pedestrians around or through a worksite. A PMP may be combined with or superimposed on a TCP; and i The process for the development of a Parking Management Plan (PkMP). The PkMP will identify: <ul style="list-style-type: none"> ii A diagram showing all signs and devices used to guide the workers or pedestrians. I Parking requirements and on and offsite parking arrangements and associated impacts; ii Remote parking arrangements and associated access between sites and public transport nodes; iii Communication and parking management measures; and iv Proposals for relocation of impacted users for any Sydney CBD kerbside use impacts during the construction period j TfNSW and its Contractors will undertake liaison with agencies and the community regarding traffic management. This may involve: <ul style="list-style-type: none"> i Establishment of a Traffic and Transport Liaison Group which could consist of representatives from Sydney Metro Contractors, TfNSW, CCO, WestConnex, RMS, TMC, NSW Police, relevant councils, emergency services, and bus operators. The group would review and provide feedback on: <ul style="list-style-type: none"> -Road Occupancy Licence (ROL) applications to monitor potential cumulative impacts from multiple ROLs operating concurrently in one area; -Be consulted on the preparation of Construction Traffic Management Plans and supporting Plans; and -Consultation with the CCO, RMS, TMC and others in relation to the approval of Construction Traffic Management Plans, supporting Plans, or related licences for works within and external to the CBD. 		<p>Section 10.3, Appendix C Appendix D</p> <p>Section 10.2</p> <p>Section 6</p> <p>Section 6</p>	
8.3	Construction Traffic Mitigation	<ul style="list-style-type: none"> a Examples of traffic mitigation measures include: <ul style="list-style-type: none"> I Minimising heavy vehicle movements during peak traffic times; ii Avoidance of local roads for heavy vehicle routes, where feasible; iii Providing for safe pedestrian and cyclist movements around the worksites; and iv Where feasible and reasonable, contractors will provide its workforce with satellite car parking and buses to transport them to the worksites. 	CTMP (SMCSWSPS-CPB-ALL-TF-PLN-000001)	Section 10	The Contractor must comply with these requirements as well as the compliance documents in Attachment 1.
9.1	Construction Noise and Vibration Management Implementation	<ul style="list-style-type: none"> a The following noise and vibration management objectives will apply to construction: <ul style="list-style-type: none"> I Minimise unreasonable noise and vibration impacts on residents and businesses; ii Avoid structural damage to buildings or heritage items as a result of construction vibration; iii Undertake active community consultation; and 	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part C Section 8	The Contractor must comply with these requirements.

CEMF Clause	CEMF Heading	Requirement	Where Addressed	Section Ref	Contractor's Responsibility	
					Schedule C1 SWTC- Appendix F3 Annexure 2	
		iv	Maintain positive, cooperative relationships with schools, childcare centres, local residents and building owners.			
9.2	Construction Noise and Vibration Management Objectives	a	Principal Contractors will develop and implement a Construction Noise and Vibration Management Plan for their scope of works consistent with the Interim Construction Noise Guidelines (Department of Environment and Climate Change, 2009). The Construction Noise and Vibration Management Plan will include as a minimum:	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part C Section 8	The Contractor must comply with these requirements.
		I	Identification of work areas, site compounds and access points;			
		ii	Identification of sensitive receivers and relevant construction noise and vibration goals;			
		iii	Be consistent with, and include the requirements of the noise and vibration mitigation measures as detailed in, the environmental approval documentation and the Sydney Metro Construction Noise and Vibration Strategy (CNVS);			
		iv	Details of construction activities and an indicative schedule for construction works, including the identification of key noise and/or vibration generating construction activities (based on representative construction scenarios) that have the potential to generate noise or vibration impacts on surrounding sensitive receivers, in particular residential areas;			
		v	Identification of feasible and reasonable procedures and mitigation measures to ensure relevant vibrations and blasting criteria are achieved, including a suitable blast program;			
		vi	Community consultation requirements and Community notification provisions specifically in relation to blasting;			
		vii	The requirements of any applicable EPL conditions;			
		vii i	Additional requirements in relation to activities undertaken 24 hours of the day, 7 days per week;			
		ix	Pre-construction compliance requirements and hold points;			
			The responsibilities of key project personnel with respect to the implementation of the plan;			
		xi	Noise monitoring requirements;			
		xii	Compliance record generation and management; and			
		xii i	An Out of Hours Works Protocol applicable to all construction methods and sites.			
B	Detailed Construction Noise and Vibration Impact Statements will be prepared for noise-intensive construction sites and or activities, to ensure the adequacy of the noise and vibration mitigation measures. Specifically, Construction Noise and Vibration Impact Statements will be prepared for EPL variation applications and works proposed to be undertaken outside of standard construction hours.					
C	Noise and vibration monitoring would be undertaken for construction as specified in the CNVS and the EPL.					

CEMF Clause	CEMF Heading	Requirement	Where Addressed	Section Ref	Contractor's Responsibility
					Schedule C1 SWTC- Appendix F3 Annexure 2
		D The following compliance records would be kept by Principal Contractors: i Records of noise and vibration monitoring results against appropriate NMLs and vibration criteria; and ii Records of community enquiries and complaints, and the Contractor's response.			
9.3	Construction Noise and Vibration Mitigation	a All feasible and reasonable mitigation measures would be implemented in accordance with the CNVS. Examples of noise and vibration mitigation measures include: I Construction hours will be in accordance with the working hours specified in Section 5.1; ii Hoarding and enclosures will be implemented where required to minimise airborne noise impacts; and iii The layout of construction sites will aim to minimise airborne noise impacts to surrounding receivers.	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part C Section 8	The Contractor must comply with these requirements.
10.1	Heritage Management Objectives	a The following heritage management objectives will apply to construction: I Embed significant heritage values through any architectural design, education or physical interpretation; ii Minimise impacts on items or places of heritage value; iii Avoid accidental impacts on heritage items; and iv Maximise worker's awareness of indigenous and non-indigenous heritage.	CHMP (SMCSWSPS-CPB-ALL-HE-PLN-000001)	Section 2.43	The Contractor must comply with these requirements.
10.2	Heritage Management Implementation	a Principal Contractors will develop and implement a Heritage Management Plan which will include as a minimum: I Evidence of consultation with Registered Aboriginal Parties and the NSW Heritage Council; ii Identify initiatives that will be implemented for the enhancement of heritage values and minimisation of heritage impacts, including procedures and processes that will be used to implement and document heritage management initiatives; iii The heritage mitigation measures as detailed in the environmental approval documentation; iv The responsibilities of key project personnel with respect to the implementation of the plan; v Procedures for interpretation of heritage values uncovered through salvage or excavation during detailed design; vi Procedures for undertaking salvage or excavation of heritage relics or sites (where relevant), consistent with and any recordings of heritage relics prior to works commencing that would affect them; vii Details for the short and / or long term management of artefacts or movable heritage;	CHMP (SMCSWSPS-CPB-ALL-HE-PLN-000001)	Section 3 Section 4 Section 5	The Contractor must comply with these requirements.

CEMF Clause	CEMF Heading	Requirement	Where Addressed	Section Ref	Contractor's Responsibility
					Schedule C1 SWTC- Appendix F3 Annexure 2
		<ul style="list-style-type: none"> vii i Details of management measures to be implemented to prevent and minimise impacts on heritage items (including further heritage investigations, archival recordings and/or measures to protect unaffected sites during construction works in the vicinity); ix Procedures for unexpected heritage finds, including procedures for dealing with human remains; x Heritage monitoring requirements; and xi Compliance record generation and management. B The Contractor's regular inspections will include checking of heritage mitigation measures. C Compliance records will be retained by the Contractor. These will include: <ul style="list-style-type: none"> i Inspections undertaken in relation to heritage management measures; ii Archival recordings undertaken of any heritage item; iii Unexpected finds and stop work orders; and iv Records of any impacts avoided or minimised through design or construction methods. 			
10.3	Heritage Mitigation	<ul style="list-style-type: none"> a Examples of heritage mitigation measures include: <ul style="list-style-type: none"> I Any heritage item not affected by the works will be retained and protected throughout construction; ii During construction undertake professional archaeological investigation, excavation, and reporting of any historical Indigenous heritage sites of state significance which will be affected. Reporting may be completed as construction progresses; iii Undertake archival recordings of all non-Indigenous heritage items affected by the works prior to commencement of works; and iv Implement unexpected heritage find procedures for Indigenous and non-Indigenous heritage items. 	CHMP (SMCSWSPS-CPB-ALL-HE-PLN-000001)	Section 5	The Contractor must comply with these requirements.
11.1	Flora and Fauna Management	<ul style="list-style-type: none"> a The following flora and fauna management objectives will apply to construction: <ul style="list-style-type: none"> I Minimise impacts on flora and fauna; ii Design waterway modifications and crossings to incorporate best practice principles; iii Retain and enhance existing flora and fauna habitat wherever possible; and iv Appropriately manage the spread of weeds and plant pathogens. 	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part C Section 4	The Contractor must comply with these requirements.
11.2	Flora and Fauna Management Implementation	<ul style="list-style-type: none"> a Principal Contractors will develop and implement a Flora and Fauna Management Plan which will include as a minimum: <ul style="list-style-type: none"> i The ecological mitigation measures as detailed in the environmental approval documentation; 			Not Applicable

CEMF Clause	CEMF Heading	Requirement	Where Addressed	Section Ref	Contractor's Responsibility
					Schedule C1 SWTC- Appendix F3 Annexure 2
		ii	The responsibilities of key project personnel with respect to the implementation of the plan;		
		iii	Procedures for the clearing of vegetation and the relocation of flora and fauna;		
		iv	Details on the locations, monitoring program and use of nest boxes by fauna;		
		v	Procedures for the demarcation and protection of retained vegetation, including all vegetation outside and adjacent to the construction footprint;		
		vi	Plans for impacted and adjoining areas showing vegetation communities; important flora and fauna habitat areas; locations where threatened species, populations or ecological communities have been recorded;		
		vii	Vegetation management plan(s) for sites where native vegetation is proposed to be retained;		
		vii i	Identification of measures to reduce disturbance to sensitive fauna;		
		ix	Rehabilitation details, including identification of flora species and sources, and measures for the management and maintenance of rehabilitated areas (including duration of the implementation of such measures);		
		x	Weed management measures focusing on early identification of invasive weeds and effective management controls;		
		xi	A procedure for dealing with unexpected EEC threatened species identified during construction, including cessation of work and notification of the Department, determination of appropriate mitigation measures in consultation with the OEH (including relevant relocation measures) and updating of ecological monitoring or off-set requirements;		
		xii	Details on the methodology for vegetation mapping and survey;		
		xii i	Ecological monitoring requirements; and		
		xi v	Compliance record generation and management.		
		B	Principal Contractors would undertake the following ecological monitoring as a minimum:		
		i	A pre-clearing inspection will be undertaken prior to any native vegetation clearing by a suitable qualified ecologist and the Contractor's Environmental Manager (or delegate). The pre-clearing inspection will include, as a minimum: -Identification of hollow bearing trees or other habitat features; -Identification of any threatened flora and fauna; -A check on the physical demarcation of the limit of clearing; -An approved erosion and sediment control plan for the worksite; and		

CEMF Clause	CEMF Heading	Requirement	Where Addressed	Section Ref	Contractor's Responsibility
					Schedule C1 SWTC- Appendix F3 Annexure 2
		-The completion of any other pre-clearing requirements required by any project approvals, permits or licences.			
		ii The completion of the pre-clearing inspection will form a HOLD POINT requiring sign-off from the Contractor's Environmental Manager (or delegate) and a qualified ecologist; and			
		iii A post clearance report, including any relevant Geographical Information System files, will be produced that validates the type and area of vegetation cleared including confirmation of the number of hollows impacted and the corresponding nest box requirements to offset these impacts.			
		C The Principal Contractor's regular inspections will include a check on the ecological mitigation measures and project boundary fencing.			
		D The following compliance records would be kept by the Principal Contractor:			
		i Records of pre-clearing inspections undertaken;			
		ii Records of the release of the pre-clearing hold point; and			
		iii Records of ecological inspections undertaken.			
11.3	Flora and Fauna Mitigation	a Examples of flora and fauna mitigation measures includes			
		i Areas to be retained and adjacent habitat areas will be fenced off prior to works to prevent damage or accidental over clearing;			
		ii Clearing will follow a two-stage process as follows: -Non-habitat trees will be cleared first after sign-off of the pre-clearing inspection; and -Habitat trees will be cleared no sooner than 48 hours after non-habitat trees have been cleared. A suitably qualified ecologist will be present on site during the clearing of habitat trees. Felled habitat trees will be left on the ground for 24 hours or inspected by the ecologist prior to further processing.			
		iii Weed management is to be undertaken in areas affected by construction prior to any clearing works in accordance with the Noxious Weeds Act 1993.			
12.1	Visual Amenity Management Objectives	a The following visual and landscape management objectives will apply to the construction of the project:	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part C Section 5	The Contractor must comply with these requirements.
		i Minimise impacts on existing landscape features as far as feasible and reasonable;			
		ii Ensure the successful implementation of the Landscape Design; and			
		iii Reduce visual impact of construction to surrounding community.			

CEMF Clause	CEMF Heading	Requirement	Where Addressed	Section Ref	Contractor's Responsibility	
					Schedule C1 SWTC- Appendix F3 Annexure 2	
12.2	Visual Amenity Management Implementation	a	Principal Contractors will develop and implement a Visual Amenity Management Plan for temporary works which will include as a minimum:	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part C Section 5	The Contractor must comply with these requirements.
		I	The visual mitigation measures as detailed in the environmental approval documentation for construction;			
		ii	Input from an experienced Landscape or Urban Designer;			
		iii	The maintenance of outward facing elements of site hoarding or noise barriers, including the removal of graffiti and weeds;			
		iv	Apply the principles of Australian Standard 4282-1997 Control of the obtrusive effects of outdoor lighting and relevant safety design requirements and detail mitigation measures to minimise lighting impacts on sensitive receivers for all permanent, temporary and mobile light sources;			
		v	Identify the processes and procedures that will be used for the incorporation of the principles of Crime Prevention Through Environmental Design (CPTED) in the design and construction of any temporary site facilities; and			
		vi	Compliance record generation and management.			
	B	Visual and landscape measures will be incorporated into the Principal Contractor's regular inspections including checking the health of retained vegetation around site boundaries, checking the condition of any site hoarding and acoustic sheds, and checking the position and direction of any sight lighting.				
	C	The Contractor will retain compliance records of any inspections undertaken in relation to visual and landscape measures				
12.3	Visual Amenity Mitigation	a	Examples of visual amenity mitigation measures include:	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part C Section 5	The Contractor must comply with these requirements.
		I	Wherever feasible and reasonable, vegetation around the perimeter of the construction sites will be maintained;			
		ii	Temporary construction works will be designed with consideration of urban design and visual amenity as per Section 4.4; and			
	iii	Temporary site lighting, for security purposes or night works will be installed and operated in accordance with AS4282:1997 Control of the Obtrusive Effect of Outdoor Lighting.				
13.1	Carbon and Energy Management Objectives	a	The following carbon and energy management objectives will apply to construction:	Sustainability Management Plan (SMCSWSPS-CPB-ALL-SU-PLN-000001)	Section 10.2	Refer to Appendix F2 for the Principal's requirements in relation to this clause.
		I	Reduce energy use and carbon emissions during construction;			
		ii	Support innovative and cost effective approaches to energy efficiency, low carbon / renewable energy sources and energy procurement; and			
	iii	Design to reduce energy use and carbon emissions during operations.				
13.2		a	Principal Contractors will develop and implement a Carbon and Energy Management Plan that will include, as a minimum:	Sustainability Management	Section 5.1	Refer to Appendix F2 for the Principal's requirements in relation to this clause.

CEMF Clause	CEMF Heading	Requirement	Where Addressed	Section Ref	Contractor's Responsibility	
					Schedule C1 SWTC- Appendix F3 Annexure 2	
	Carbon and Energy Management Implementation	I	Plan (SMCSWSPS-CPB-ALL-SU-PLN-000001)	Section 10.2		
ii		The relevant requirements of the Sydney Metro Environment and Sustainability Policy and the Sydney Metro Sustainability Strategy;				
iii		The responsibilities of key project personnel with respect to the implementation of the plan;				
iv		The low carbon strategies and initiatives that will be implemented to minimise the carbon emissions associated with construction;				
v		The energy efficiency strategies and initiatives that will be implemented to minimise energy use associated with construction;				
vi		Carbon emission estimates determined using a carbon footprint assessment undertaken in accordance with ISO 14064-1, ISO14064-2 and ISO14064-3 that incorporates direct and indirect emissions associated with construction; and				
vii		Compliance record generation and management.				
B		Reporting of carbon and energy will be undertaken throughout the construction works in accordance with the National Greenhouse and Energy Reporting Act 2007.				
	C	The Contractors would be required to retain appropriate records and prepare carbon footprint assessments (inclusive of Scope 1, 2 and 3 emissions) at various stages of construction.				
13.3	Carbon and Energy Mitigation	a	Sustainability Management Plan (SMCSWSPS-CPB-ALL-SU-PLN-000001)	Section 10.2	Refer to Appendix F2 for the Principal's requirements in relation to this clause.	
		I				Examples of carbon and energy mitigation measures include:
		ii				Equipment and material selection will have consideration of energy efficiencies;
		iii				Construction workers will be encouraged to use sustainable transport options and green travel plans will be developed;
		iv				Inclusion of renewable energy sources to power temporary facilities and equipment where feasible;
		v				Designing and operating Site offices for energy efficiency;
		vi				Offsetting a portion of construction greenhouse gas emissions; and
	Efficient operation of vehicles and equipment.					
14.1	Materials Management Objectives	a	Sustainability Management Plan (SMCSWSPS-CPB-ALL-SU-PLN-000001)	Section 10.5	Refer to Appendix F2 for the Principal's requirements in relation to this clause.	
		I				The following materials management objectives would apply to the construction of the project:
		ii				Reduce material use throughout the project life-cycle;
		iii				Consider embodied impacts in materials selection;
		iv				Use recycled materials;
		v				Recycle and reuse materials onsite; and
	Influence subcontractors and materials suppliers to adopt sustainability objectives in their works and procurement.					
14.2	Materials Management Implementation	a	Sustainability Management	Section 10.5	Refer to Appendix F2 for the Principal's requirements in relation to this clause.	

CEMF Clause	CEMF Heading	Requirement	Where Addressed	Section Ref	Contractor's Responsibility
					Schedule C1 SWTC- Appendix F3 Annexure 2
		<ul style="list-style-type: none"> I The materials mitigation measures as detailed in the environmental approval documentation; ii The relevant requirements of the City & Southwest Environment and Sustainability Policy and the City & Southwest Sustainability Strategy; iii The responsibilities of key project personnel with respect to the implementation of the policy; iv Compliance record generation and management; v Ethical sourcing of materials; and vi Local sourcing. <p>B The Contractors will be required to retain records detailing the consideration of sustainability in the procurement of all materials.</p>	Plan (SMCSWSPS-CPB-ALL-SU-PLN-000001)		
14.3	Materials Mitigation	<ul style="list-style-type: none"> a Examples of materials mitigation measures include: <ul style="list-style-type: none"> I Consideration of quality and durability in the procurement of materials; ii Using recycled materials; iii Using materials with a lower embodied impact; iv Using recycled steel in concrete reinforcement; v Developing deconstruction plans to enable recycling and reuse at end-of-life; vi Using low-VOC, low emission materials; vii Using sustainably sourced timber and wood products; viii Low-carbon concrete; and ix Consideration of whole-of-life costs during procurement. 	Sustainability Management Plan (SMCSWSPS-CPB-ALL-SU-PLN-000001)	Section 10.5	Refer to Appendix F2 for the Principal's requirements in relation to this clause.
15.1	Soil and Water Management Objectives	<ul style="list-style-type: none"> a The following soil and water management objectives will apply to construction: <ul style="list-style-type: none"> I Minimise pollution of surface water through appropriate erosion and sediment control; ii Maintain existing water quality of surrounding surface watercourses; and iii Source construction water from non-potable sources, where feasible and reasonable. 	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part C Section 1	The Contractor must comply with these requirements.
15.2	Soil and Water Management Implementation	<ul style="list-style-type: none"> a Principal Contractors will develop and implement a Soil and Water Management Plan for their scope of works. The Soil and Water Management Plan will include as a minimum: <ul style="list-style-type: none"> I The surface water and flooding mitigation measures as detailed in the environmental approval documentation; ii Details of construction activities and their locations, which have the potential to impact on water courses, storage facilities, stormwater flows, and groundwater; 	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part C Section 1.5, 1.6, 1.8 Appendix C Appendix D Element 11	The Contractor must comply with these requirements. The soil and Water Management Procedure must include the Mains Water Consumption Target and the Non-Potable Water Consumption Target.

CEMF Clause	CEMF Heading	Requirement	Where Addressed	Section Ref	Contractor's Responsibility
					Schedule C1 SWTC- Appendix F3 Annexure 2
		iii Surface water and ground water impact assessment criteria consistent with the principles of the Australian and New Zealand Environment Conservation Council (ANZECC) guidelines;			
		iv Management measures to be used to minimise surface and groundwater impacts, including identification of water treatment measures and discharge points, details of how spoil and fill material required by the SSI will be sourced, handled, stockpiled, reused and managed; erosion and sediment control measures; salinity control measures and the consideration of flood events;			
		vi A contingency plan, consistent with the Acid Sulphate Soils Manual (EPA 1998), to deal with the unexpected discovery of actual or potential acid sulphate soils, including procedures for the investigation, handling, treatment and management of such soils and water seepage;			
		vi Management measures for contaminated material (soils, water and building materials) and a contingency plan to be implemented in the case of unanticipated discovery of contaminated material, including asbestos, during construction;			
		vii A description of how the effectiveness of these actions and measures would be monitored during the proposed works, clearly indicating how often this monitoring would be undertaken, the locations where monitoring would take place, how the results of the monitoring would be recorded and reported, and, if any exceedance of the criteria is detected how any non-compliance can be rectified;			
		vii i The requirements of any applicable EPL conditions;			
		ix The responsibilities of key project personnel with respect to the implementation of the plan;			
		x Procedures for the development and implementation of progressive erosion and sediment control plans;			
		xi Identification of locations where site specific Stormwater and Flooding Management Plans are required; and			
		xii Compliance record generation and management.			
		b Principal Contractors will develop and implement Progressive Erosion and Sediment Control Plans (ESCPs) for all active worksites in accordance with Managing Urban Stormwater: Soils & Construction Volume 1 (Landcom, 2004) (known as the "Blue Book"). The ESCPs will be approved by the Contractor's Environmental Manager (or delegate) prior to any works commencing (including vegetation clearing) on a particular site. Copies of the approved ESCP will be held by the relevant Contractor personnel including the Engineer and the Site Foreman.			
		c ESCPs will detail all required erosion and sediment control measures for the particular site at the particular point in time and be progressively updated to reflect the current site conditions. Any amendments to the ESCP will be approved by the Contractor's Environmental Manager (or delegate).			

CEMF Clause	CEMF Heading	Requirement	Where Addressed	Section Ref	Contractor's Responsibility
					Schedule C1 SWTC- Appendix F3 Annexure 2
		<p>d Principal Contractors will develop and implement Stormwater and Flooding Management Plans for the relevant construction sites. These plans will identify the appropriate design standard for flood mitigation based on the duration of construction, proposed activities and flood risks. The plan will develop procedures to ensure that threats to human safety and damage to infrastructure are not exacerbated during the construction period.</p> <p>e Principal Contractors will undertake the following soil and water monitoring as a minimum:</p> <p>i Weekly inspections of the erosion and sediment control measures. Issues identified would be rectified as soon as practicable;</p> <p>ii Additional inspections will be undertaken following significant rainfall events (greater than 20 mm in 24 hours); and</p> <p>iii All water will be tested (and treated if required) prior to discharge from the site in order to determine compliance with the parameters of the EPL. No water will be discharged from the site without written approval of the Contractor's Environmental Manager (or delegate). This is to form a HOLD POINT.</p> <p>f The following compliance records will be kept by the Principal Contractors:</p> <p>i Copies of current ESCPs for all active construction sites;</p> <p>ii Records of soil and water inspections undertaken;</p> <p>iii Records of testing of any water prior to discharge; and</p> <p>iv Records of the release of the hold point to discharge water from the construction site to the receiving environment.</p> <p>g The following water resources management objectives will apply to the construction of the project:</p> <p>i Minimise demand for, and use of potable water;</p> <p>ii Maximise opportunities for water re-use from captured stormwater, wastewater and groundwater;</p> <p>iii Examples of measures to minimise potable water consumption include: -Water efficient controls, fixtures and fittings in temporary facilities; -Collecting, treating and reusing water generated in tunnelling operations, concrete batching and casting facility processes; -Using recycled water or treated water from onsite sources in the formulation of concrete; -Harvesting and reusing rainwater from roofs of temporary facilities; -Using water from recycled water networks; -Collecting, treating and reusing groundwater and stormwater; -Using water efficient construction methods and equipment; and -Providing designated sealed areas for equipment wash down.</p>			
15.3	Soil and Water Mitigation	<p>a Examples of surface water and flooding mitigation measures include:</p> <p>i Clean water will be diverted around disturbed site areas, stockpiles and contaminated areas;</p>	CEMP (SMCSWSPS-	Part C Section 1.5	The Contractor must comply with these requirements.

CEMF Clause	CEMF Heading	Requirement	Where Addressed	Section Ref	Contractor's Responsibility
					Schedule C1 SWTC- Appendix F3 Annexure 2
		<ul style="list-style-type: none"> ii Control measures will be installed downstream of works, stockpiles and other disturbed areas; iii Exposed surfaces will be minimised, and stabilised / revegetated as soon feasible and reasonable upon completion of construction; iv Dangerous good and hazardous materials storage will be within bunded areas with a capacity of 110 per cent of the maximum single stored volume; and v Spill kits will be provided at the batch plants, storage areas and main work sites. 	CPB-ALL-EM-PLN-000001)		
16.1	Air Quality Management Objectives	<ul style="list-style-type: none"> a The following air quality management objectives will apply to construction: <ul style="list-style-type: none"> I Minimise gaseous and particulate pollutant emissions from construction activities as far as feasible and reasonable; and ii Identify and control potential dust and air pollutant sources. 	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part C Section 7.4	The Contractor must comply with these requirements.
16.2	Air Quality Management Implementation	<ul style="list-style-type: none"> a Principal Contractors will develop and implement an Air Quality Management Plan which will include, as a minimum: <ul style="list-style-type: none"> I The air quality mitigation measures as detailed in the environmental approval documentation; ii The requirements of any applicable EPL conditions; iii Site plans or maps indicating locations of sensitive receivers and key air quality / dust controls; iv The responsibilities of key project personnel with respect to the implementation of the plan; v Air quality and dust monitoring requirements; and vi Compliance record generation and management. B Air quality and dust monitoring will involve the following as a minimum: <ul style="list-style-type: none"> i Meteorological conditions will be monitored and appropriate responses will be organised and undertaken periodically by the Principal Contractor; ii Regular visual monitoring of dust generation from work zones; and iii Monitoring emissions from plant and construction vehicles to ensure they have appropriate emission controls and are being maintained correctly. C The following compliance records will be kept by the Principal Contractor: <ul style="list-style-type: none"> i Records of any meteorological condition monitoring; ii Records of any management measures implemented as a result of adverse, windy weather conditions; and iii Records of air quality and dust inspections undertaken. 	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part C Section 7.5, 7.8, 7.6 Appendix E Element 11	The Contractor must comply with these requirements.
16.3	Air Quality Mitigation	Examples of air quality mitigation measures include:		Part C Section 7.5	

CEMF Clause	CEMF Heading	Requirement	Where Addressed	Section Ref	Contractor's Responsibility
					Schedule C1 SWTC- Appendix F3 Annexure 2
		<ul style="list-style-type: none"> I Plant and equipment will be serviced and maintained in good working order to reduce unnecessary emissions from exhaust fumes; ii Water suppression will be used for active earthwork areas, stockpiles, unsurfaced haul roads and loads of soil being transported to reduce wind-blown dust emissions; iii Wheel-wash facilities or rumble grids will be provided and used near the site exit points, as appropriate; and iv Dust extraction and filtration systems will be installed for tunnel excavation works and deep excavation with limited surface exposure. 	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)		The Contractor must comply with these requirements.
17.1	Waste Objectives	<ul style="list-style-type: none"> a The following waste objectives will apply to construction <ul style="list-style-type: none"> I Minimise waste throughout the project life-cycle; and ii ii. Waste management strategies will be implemented in accordance with the Waste Avoidance and Resource Recovery Act 2001 management hierarchy as follows: <ul style="list-style-type: none"> -Avoidance of unnecessary resource consumption; -Resource recovery (including reuse, reprocessing, recycling and energy recovery); and -Disposal b Targets for the recovery, recycling or reuse of construction waste, and beneficial reuse of spoil will be provided by the Principal Contractor. 	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Section 1.5 Part C Section 6	The Contractor must comply with these requirements.
17.2	Waste Implementation	<ul style="list-style-type: none"> a Principal Contractors will develop and implement a Waste Management and Recycling Plan which will include as a minimum: <ul style="list-style-type: none"> I The waste management and recycling mitigation measures as detailed in the environmental approval documentation; ii The responsibilities of key project personnel with respect to the implementation of the plan; iii Waste management and recycling monitoring requirements; iv A procedure for the assessment, classification, management and disposal of waste in accordance with the Waste Classification Guidelines (DECC, 2008); and v Compliance record generation and management. B Principal Contractors will undertake the following waste monitoring as a minimum: <ul style="list-style-type: none"> i Weekly inspections will include checking on the waste storage facilities on site; and ii All waste removed from the site will be appropriately tracked from 'cradle to grave' using waste tracking docketts. C Principal Contractors will report all necessary waste and purchasing information to TfNSW as required for TfNSW to fulfil their WRAPP reporting requirements. D Compliance records will be retained by the Principal Contractors in relation to waste management including records of inspections and waste docketts for all waste removed from the site. 	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part C Section 6.6, 6.7 Appendix E Element 11	The Contractor must comply with these requirements.

CEMF Clause	CEMF Heading	Requirement	Where Addressed	Section Ref	Contractor's Responsibility
					Schedule C1 SWTC- Appendix F3 Annexure 2
17.3	Waste Mitigation	a	CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001)	Part C Section 6	The Contractor must comply with these requirements.
		i			
		ii			
		iii			

Contract Ref.	Requirement:	Responsibility	Where Addressed
PSISD Station Delivery Deed Clause 6. Safety and Environment	6.1 – Care of people, property and the Environment 6.7 Incident Management 6.11 NGER Legislation	Environment & Sustainability Manager	CEMP(SMCSWSPS-CPB-ALL-EM-PLN-000001) Appendix B Environmental Policies Element 9: Incident Management Element 3: Legal and Other Requirements
PSISD Station Delivery Deed Clause 7. Law and Approvals	7.4 Approvals	Environment & Sustainability Manager	Refer CSSI Conditions of Approval Appendix D2.1 of CEMP (SMCSWSPS-CPB-ALL-EM-PLN-000001) and tracked in the Quarterly Compliance Tracking Report
PSISD Station Delivery Deed Schedule C1 Appendix B9 and F8	Sustainability requirements: Appendix B9 Target 6, 7, 8: 6 – Recycle or reuse at least 95% of inert and non-hazardous construction and demolition recyclable waste, excluding spoil 7 – Beneficially reuse 100% of reusable spoil 8 – Recycle or reuse 60% of office waste	Environment & Sustainability Manager	Sustainability Management Plan (SMCSWSPS-CPB-ALL-SU-PLN-000001) CEMP(SMCSWSPS-CPB-ALL-EM-PLN-000001) Waste Management Sub-Plan and Spoil Management Sub-Plan Reporting through Sustainability Quarterly Reports

Appendix E: MIRRA Schedule

(Monitoring, Inspections, Reporting, Review, Audit) Schedule

Name	Detail	Frequency	By Whom	Resources
MONITORING				
Water Quality	Dewatering activities- Water quality parameters including pH, TSS, Oil and grease, Turbidity	As per SWGMSP	Environmental Manager	Environmental Monitoring form
Soil and water monitoring	As per Soil, Water and Groundwater Management Sub-Plan	Daily During discharge	Environmental Manager Site supervisor	Specialist consultant
Weather	Check weather and rainfall forecasts	Daily	Environmental Manager	www.bom.gov.au www.windy.com
Noise and Vibration	As per Construction Noise and Vibration Management Sub-Plan (NVMSP)	As per CNVMP	Environmental Manager Specialist consultant	Noise and Vibration Specialist
Settlement Monitoring	Check settlement monitoring equipment	As required by building condition surveys or recommended by specialist consultant	Specialist Consultant	
Air Quality Monitoring	As per Air Quality Management Sub-Plan	Daily	Environmental Manager Site Supervisor	Specialist consultant if required
INSPECTIONS				
Site Inspection	Environmental inspections	Weekly	Environmental Manager	Weekly Environmental Inspection Checklist
Pre and Post Rain Inspection	Inspection of ESC measures	Prior to and following significant rainfall events (ie. >10mm / 24hr)	Environmental Manager	
ER Inspection	Monitor the implementation of CEMP and monitoring programs under SSI_7400	Determined by the nature of activities being undertaken and their associated environmental risks	ER	
REPORTING				
Client Environmental Report	Detail on Environmental achievements, monitoring	Monthly	Environmental Manager	As part of Client Monthly Project Report

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 Date Published: 25/09/2019

Management System - Uncontrolled Document when Printed

Name	Detail	Frequency	By Whom	Resources
	results, incidents, audit outcomes			
Water	Quantity of water used	Monthly	Environmental Manager	Synergy
Waste	Total quantity of material purchased, the quantity purchased with recycled content, the total quantity of waste generated, the total quantity recycled, the total quantity disposed of and the method and location of disposal.	Monthly	Environmental Manager	Waste and Materials Tracking Spreadsheet Synergy
Complaints Reports	A report to SM that provides details of all complaints received in relation to construction activities regulated by the licence on the telephone complaints line.	As soon as practical, (within 24 hours)	Community Consultation Manager / Place Manger	Stakeholder and Community Relations Manager
Energy	Energy usage	Monthly	Contract Administrator	JDE
Environment and Sustainability Dashboard	Internal reporting of business KPI's	Monthly	Environmental Manager	Synergy
Monitoring results (noise & vibration, water & settlement)	Report on monitoring data recorded and potential exceedances against criteria. To be issued to SM, ER, AA and DPE.	Six monthly	Environmental Manager	Environmental Coordinator
	Noise & Vibration monthly report issued for information only to SM, ER and AA	Monthly	Renzo Tonin	
Compliance Tracking Report	Reporting on compliance with CSSI Conditions of Approval	Six monthly	Environmental Manager	Environmental Coordinator
Incident Reports	Environmental Incident reports will be provided to SM's Representative and the Environmental Representative within 24 hours of the incident occurring	Within 24 hours of the incident occurring	Project Director	Environmental Manager, Environmental Coordinator

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 **Date Published:** 25/09/2019

Management System - Uncontrolled Document when Printed

REVIEW

CEMP Review	Review of CEMP, Sub-Plans and Appendices Update CEMP and Sub-Plans based on relevant changes, issues, incidents or non-compliances.	Annually	Environmental Manager	CEMP
Management Reviews	<ul style="list-style-type: none">▪ Identification of areas of opportunity for improved environmental performance▪ Analysis of the causes of non-compliances and deficiencies▪ Environment inspections and audits▪ Verification of the effectiveness of corrective and preventative actions▪ Highlighting any changes in procedures resulting from process improvement.	Quarterly	Management Team	The review is initiated by the Environmental Manager and includes relevant Project team members review environmental management issues for the Project.
Risk Register Review	Review risks in relation to changes to work activity onsite	Monthly	Environmental Manager	Risk Register
Site Environmental Plans (SEP)	Review site environmental controls in relation to work activity onsite to ensure reflective of site conditions	Fortnightly	Environmental Manager	ECM

AUDIT

CPB Contractors Internal SHEQ Audit	Review of EMP compliance to CPB Contractors EMS/ ISO14001	Annual	SHEQ Team	As per CPB audit schedule
External independent audit	Verify compliance with approval and legal requirements, construction documentation and any other commitments.	As required	External Auditor	TBC

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 **Date Published:** 25/09/2019

Management System - Uncontrolled Document when Printed

Appendix F: Site Environmental Plans

Current Site Environmental Plans – note these are displayed on site notice boards and updated throughout the duration of the project as the following controlled Aconex document numbers:

SMCSWSPS-CPB-PSS-EM-PLN-000001 – South Station Box

SMCSWSPS-CPB-PSN-EM-PLN-000001 – North Station Box

SMCSWSPS-CPB-SPS-EM-PLN-000001 – Platforms and Adits

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 **Date Published:** 25/09/2019

Management System - Uncontrolled Document when Printed

Appendix G: Environmental Risk Register

The risk assessment criteria has been developed in line with the CPB Management System (CMS). Qualitative measures are used to estimate the consequence or impact of an event, along with the estimate of likelihood, to produce consistent risk rankings across the identified risks using Steps 1 – 3 as outlined below.

Step 1 - What is the Most Credible Consequence?					
Consequence Rating	1 Negligible	2 Minor	3 Moderate	4 Major	5 Substantial
Safety and Health	First Aid Treatment (or No treatment)	Medical Treatment Injury	Lost Time Injury	Permanent Injury (Paraplegia, Amputation)	Fatality (Single or multiple)
Environment and Heritage	Small, contained localised impact / Low level repairable damage	Short lived, well contained environmental impact / Minor remedial action required	Medium term, contained impact / Significant remedial action required	Impacts extend off-site / external ecosystem. Considerable remediation required	Long Term irreversible damage / Long Term Remediation required
Plant Damage	Little or No Damage	Damage less than \$15,000	Damage between \$15,000 and \$50,000	Damage between \$50,000 and \$100,000	Damage greater than \$100,000
Reputation	Brief local negative media coverage.	Local negative media coverage. Site or project problem.	Regional/short negative media coverage. Loss of Client / project.	Sustained national negative media coverage. Loss of long term key client.	International negative media coverage. Loss of business from key sector.
Time	Delay / Business interruption <1% of program days	Delay / Business interruption between 1%-3% of program days	Delay / Business interruption between 4%-6% of program days	Delay / Business interruption between 7%-10% of program days	Delay / Business interruption >10% of program days
Cost	Additional cost to the business / project <1% revenue	Additional cost to the business / project between 1%-3% revenue	Additional cost to the business / project between 4%-6% of revenue	Additional cost to the business / project between 7%-10% of revenue	Additional cost to the business / project >10% of revenue

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 **Date Published:** 25/09/2019

Management System - Uncontrolled Document when Printed

Step 2 - What is the likelihood of that Consequence occurring in the circumstances?

Likelihood Ranking				
Score	Description		Percentage	Expected Frequency
5	Almost Certain	Common / Frequent Occurrence	Can be expected to occur 75% - 99%	More than 1 event per month
4	Likely	Is known to occur or "It has happened regularly"	Can quite commonly occur 50% - 75%	More than 1 event per year
3	Possible	Could occur or "I've heard of it happening"	May occasionally occur 25% - 50%	1 event per 1 to 10 years
2	Unlikely	Not likely to occur very often	May infrequently occur 10% - 25%	1 event per 10 to 100 years
1	Rare	Conceivable but only in exceptional circumstances	May occur in exceptional circumstances 0% - 10%	Less than 1 event per 100 years

Step 3 – Determine the Risk Level

Determine the risk score by combining most credible consequence with likelihood

Likelihood	Consequence	Negligible	Minor	Moderate	Major	Substantial
	Rating	1	2	3	4	5
Almost Certain	5	5 (Low)	10 (Moderate)	18 (Very High)	23 (Extreme)	25 (Extreme)
Likely	4	4 (Low)	9 (Moderate)	17 (Very High)	20 (Very High)	24 (Extreme)
Possible	3	3 (Low)	8 (Moderate)	13 (High)	19 (Very High)	22 (Very High)
Unlikely	2	2 (Low)	7 (Low)	12 (High)	15 (High)	21 (Very High)
Rare	1	1 (Low)	6 (Low)	11 (Moderate)	14 (High)	16 (High)

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 Date Published: 25/09/2019

Management System - Uncontrolled Document when Printed

Risk ID	Category	Activity	Hazard/Aspect	Cause	Consequence /Impact	Current Controls	Risk Score
E1	Environment	Planning Approvals and Licences	Non Compliance with Regulatory instruments or Legislation (incl. Planning Approval conditions)	Inadequate management practices; Lack of competency/knowledge; Contractor management gaps	Regulatory action (prosecution, pins). Delay to subsequent approval requests, (delay to program) Contractual Breach Reputation Damage Non-compliance with sustainability certification	<ul style="list-style-type: none"> ■ Implementation of CEMP ■ Induction included summary of regulatory obligations ■ Supplier contracts included details of regulatory obligations ■ Suitably qualified environment representative in delivery team 	13 (High)
E2	Environment	Planning Approvals and Licences	Commencing work without approvals	Inadequate planning	Regulatory action (prosecution, pins). Delay to subsequent approval requests, (delay to program) Contractual Breach	<ul style="list-style-type: none"> ■ Approvals on master program ■ Low impact / early works approval Procedure ■ Change Management Procedure ■ Suitably qualified environment representative in delivery team 	13 (High)
E3	Environment	Planning Approvals and Licences	New approvals requirements due to scope change	New approvals requirements due to scope change	Regulatory action (prosecution, pins). Delay to subsequent approval requests, (delay to program) Contractual Breach	<ul style="list-style-type: none"> ■ Approvals on master program ■ Low impact / early works approval Procedure ■ Change Management Procedure ■ Suitably qualified environment representative in delivery team (in design review) 	11 (Moderate)
E4	Environment	Biodiversity and Ecology	Clearing or trimming without a permit,	Inadequate management of environmental aspects;	Regulatory action (prosecution, pins); Contractual Breach;	<ul style="list-style-type: none"> ■ Flora and Fauna Management Sub-Plan and Procedure ■ Inductions included details of flora and fauna management requirements 	7 (Low)

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 **Date Published:** 25/09/2019

Management System - Uncontrolled Document when Printed

Risk ID	Category	Activity	Hazard/Aspect	Cause	Consequence /Impact	Current Controls	Risk Score
			approval and/or pre-clearance survey	Lack of competency/knowledge	Non-compliance with sustainability certification; Impact to existing flora and fauna communities	<ul style="list-style-type: none"> ■ Toolbox training on management of flora and fauna during construction ■ Site Environment Plans (SEP) ■ Suitably qualified environment representative in delivery team ■ Specialist consultant for Flora/ Fauna Management ■ Tree report prepared by arborist required for all tree trimming or removal. 	
E5	Environment	Biodiversity and Ecology	Damage to existing flora	Construction activities impacting existing vegetation due to poorly demarcated site	Regulatory action (prosecution, PINs) Breach of deed requirements Reputation Non-compliance with sustainability certification Impact to existing flora and fauna communities	<ul style="list-style-type: none"> ■ No-go fencing is to be installed and clearly defined on SEP ■ Flora and Fauna Management Sub-Plan and Procedure ■ Inductions included details of flora and fauna management requirements ■ Toolbox training on management of flora and fauna during construction ■ Trees to be retained to be protected in accordance with Australian Standard AS4970 (200-) - Protection of Trees on Development Sites and Adjoining Properties 	7 (Low)
E6	Environment	Biodiversity and Ecology	Unexpected flora and fauna finds	Pre-clearance checks not undertaken Inadequate site delineation	Impact to flora and fauna communities	<ul style="list-style-type: none"> ■ Flora and Fauna Management Sub-Plan and Procedure ■ Inductions included details of flora and fauna management requirements ■ Toolbox training on management of flora and fauna during construction 	3 (Low)
E7	Environment	Transport and Traffic	Changed traffic conditions in the neighbourhood or increased traffic	Traffic entering/leaving construction sites and compounds	Increased local traffic Changes to local traffic conditions Air quality impacts Noise impacts	<ul style="list-style-type: none"> ■ Construction Traffic Management Plan and TCP's ■ Community Communications Strategy ■ Project induction included Traffic management obligations ■ Site Inductions and Truck Driver training included site specific requirements ■ Road Act Approvals ■ Air Quality Management Sub-Plan ■ Construction Noise and Vibration Management Sub-Plan 	9 (Moderate)

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 Date Published: 25/09/2019

Management System - Uncontrolled Document when Printed

Risk ID	Category	Activity	Hazard/Aspect	Cause	Consequence /Impact	Current Controls	Risk Score
E8	Environment	Transport and Traffic	Increased heavy vehicles traffic	Haulage	Increased local traffic Changes to local traffic conditions Air quality impacts Noise impacts	<ul style="list-style-type: none"> ■ Construction Traffic Management Plan ■ TCP's and VMPs ■ Community Communications Strategy ■ Road Act Approvals ■ Air Quality Management Sub-Plan ■ Construction Noise and Vibration Management Sub-Plan ■ Site Inductions and Truck Driver training included site specific haulage routes 	10 (Moderate)
E9	Environment	Transport and Traffic	Road closure - for heavy delivery	Heavy deliveries	Changes to local traffic conditions Increased local traffic Community complaints	<ul style="list-style-type: none"> ■ Construction Traffic Management Plan ■ Community Communications Strategy ■ Site Induction and tool box training included any requirements for road closure 	9 (Moderate)
E10	Environment	Noise and Vibration	Unapproved works outside hours	Inadequate planning Not complying with the out of hours approval process and requirements	Regulatory action (prosecution, pins). Contractual Breach Reputation Community complaints	<ul style="list-style-type: none"> ■ Out of Hours Works on delivery program ■ Construction Noise and Vibration Management Sub-Plan ■ Construction Noise and Vibration Impact Statements (CNVIS) ■ OOHW Procedure ■ Induction included reference to obligations for management of OOHW ■ Tool box training on management OOHW ■ Suitably qualified environment representative in delivery team to assess and monitor 	13 (High)

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 Date Published: 25/09/2019

Management System - Uncontrolled Document when Printed

Risk ID	Category	Activity	Hazard/Aspect	Cause	Consequence /Impact	Current Controls	Risk Score
E11	Environment	Noise and Vibration	Cumulative / daytime construction noise	Construction activities not allowing for respite periods; Inadequate planning and consultation; Not complying with the noise management requirements	Community complaints Reputation	<ul style="list-style-type: none"> ■ Out of Hours Works on delivery program ■ Construction Noise and Vibration Management Sub-Plan ■ Construction Noise and Vibration Impact Statements (CNVIS) ■ OOHW Procedure ■ Induction included reference to obligations for management of noisy activities, standard working times and OOHW. ■ Tool box training on management of noise and vibration ■ Suitably qualified environment representative in delivery team to assess and monitor ■ Community Communications Strategy 	13 (High)
E12	Environment	Noise and Vibration	Vibration impacts of heavy plant	Heavy plant movements and activities Use of percussive machinery	Community complaints Damage to existing infrastructure Damage to heritage buildings	<ul style="list-style-type: none"> ■ Construction Noise and Vibration Management Sub-Plan ■ Construction Noise and Vibration Impact Statements (CNVIS) ■ Heritage Management Sub-Plan ■ Induction included reference to obligations for vibration management ■ Tool box training on management of vibration ■ Suitably qualified environment representative in delivery team to assess and monitor vibration ■ Community Communications Strategy 	12 (High)
E13	Environment	Heritage and Archaeology	Unexpected archaeological finds	Unexpected find(s) Inadequate demarcation of site Location of known site(s) not referenced in site plans and communicated to	Delay to program Damage to relics	<ul style="list-style-type: none"> ■ Heritage Management Sub-Plan ■ Unexpected Finds Heritage and Human Remains Procedure ■ Inductions included reference to obligations with regard to unexpected finds ■ Tool box training on management of unexpected finds ■ Specialist consultant to manage unexpected finds 	7 (Low)

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 Date Published: 25/09/2019

Management System - Uncontrolled Document when Printed

Risk ID	Category	Activity	Hazard/Aspect	Cause	Consequence /Impact	Current Controls	Risk Score
				personnel. Not following unexpected finds protocol			
E14	Environment	Soil and Water	Sediment run-off	Inadequate sediment control Not complying with sediment control plans	Pollution of water Impact on aquatic ecology Sedimentation of waterways Regulatory action Delay to program Community impacts	<ul style="list-style-type: none"> ■ Soil, Water and Groundwater Management Sub-Plan and associated Procedures ■ Erosion and Sediment Control Plans ■ Induction includes reference to obligations associated with management of spoil and water during construction ■ Toolbox training on management of ERSED and de-watering ■ Suitably qualified environment representative in delivery team ■ Specialist consultant for ERSED development and review 	13 (High)
E15	Environment	Soil and Water	Unapproved discharge of water from site	Poor planning of construction activity Not obtaining or working in accordance with an issued water discharge permit (as per de-watering procedure)	Pollution of water Impact on aquatic ecology Sedimentation of waterways Regulatory action Delay to program Community impacts	<ul style="list-style-type: none"> ■ Soil, Water and Groundwater Management Sub-Plan and associated Procedures ■ Erosion and Sediment Control Plans ■ Induction includes reference to obligations associated with management of spoil and water during construction ■ Toolbox training on management of ERSED and de-watering ■ Suitably qualified environment representative in delivery team 	13 (High)
E16	Environment	Soil and Water	Unexpected finds of contaminated soil, hazardous	Unexpected finds during construction activities	Additional cost for assessment and disposal Program delay Soil contamination from inadequate disposal	<ul style="list-style-type: none"> ■ Soil, Water and Groundwater Management Sub-Plan ■ Unexpected Finds Soil Contamination and Asbestos Procedure ■ Waste Management and Recycling Procedure ■ Induction includes reference to obligations associated with management of waste, 	7 (Low)

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 Date Published: 25/09/2019

Management System - Uncontrolled Document when Printed

Risk ID	Category	Activity	Hazard/Aspect	Cause	Consequence /Impact	Current Controls	Risk Score
			materials or acid sulfate soils	Not following unexpected finds protocol		<ul style="list-style-type: none"> unexpected finds, contamination, acid sulfate soils and hazardous materials. Toolbox training on management of contamination and unexpected finds Suitably qualified environment representative in delivery team Specialist consultant for contamination management 	
E17	Environment	Soil and Water	Chemical / hazardous materials storage and use	<ul style="list-style-type: none"> Unapproved use of materials on-site Inappropriate use or storage Inadequate storage and containment controls 	<ul style="list-style-type: none"> Pollution of water Pollution of soil 	<ul style="list-style-type: none"> Project Health and Safety Management Plan Emergency Response Plan/Spill Management Procedure Site Environment Plans include designated storage areas Refuelling procedures Tool box training substance storage and management Induction reference substance storage obligations 	12 (High)
E18	Environment	Soil and Water	Interception of ground water	<ul style="list-style-type: none"> Not following soil and water management plan Insufficient geotechnical data 	<ul style="list-style-type: none"> Pollution of waters Delay to program Salinity impacts on infrastructure 	<ul style="list-style-type: none"> Soil, Water and Groundwater Management Sub-Plan and associated Procedures Induction included reference to groundwater management obligations Toolbox training delivered included management of Groundwater during construction 	8 (Moderate)
E19	Environment	Visual Amenity	Visual impacts	<ul style="list-style-type: none"> Not cordoning off the worksite with fencing, shade cloth in accordance with contract requirements 	<ul style="list-style-type: none"> Light pollution Temporary hoarding Graffiti 	<ul style="list-style-type: none"> Visual Amenity Management Sub-Plan Community Communications Strategy 	7 (Low)

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 Date Published: 25/09/2019

Management System - Uncontrolled Document when Printed

Risk ID	Category	Activity	Hazard/Aspect	Cause	Consequence /Impact	Current Controls	Risk Score
E20	Environment	Social and Economic Impacts	Local economy	Construction activities impacting local businesses	Impact on businesses Local employment	<ul style="list-style-type: none"> Sustainability Management Plan Sustainable Workforce Target 	7 (Low)
E21	Environment	Greenhouse Gas and Climate Change	Increased energy usage	Poor planning of construction activity Not following greenhouse gas management plans	Increased costs Increased greenhouse GHG emissions Contributing to climate change	<ul style="list-style-type: none"> Sustainability Management Plan Construction programming 	7 (Low)
E22	Environment	Air Quality	Dust generation	Poor planning of construction activity Not complying with the air quality, management plan, working in windy conditions, not covering loads Delays in stabilisation of disturbed land	Community impacts Regulatory action Air pollution	<ul style="list-style-type: none"> Air Quality Management Sub-Plan and Procedures Water Management Procedures (for dust suppression) Induction includes air quality management requirements Toolbox Training of workforce on management of air quality during construction 	8 (Moderate)
E23	Environment	Air Quality	Exhaust emissions	Poor planning of construction activity Not complying with the air quality management plan; Inadequate plant management	Community impacts Regulatory action Air pollution	<ul style="list-style-type: none"> Air Quality Management Sub-Plan Induction included air quality management requirements Toolbox Training of workforce on management of air quality during construction; 	7 (Low)

Title: N1070 Environmental Management Plan

ID: MSID-4-295 Version: 12.0 Date Published: 25/09/2019

Management System - Uncontrolled Document when Printed

Risk ID	Category	Activity	Hazard/Aspect	Cause	Consequence /Impact	Current Controls	Risk Score
E24	Environment	Waste	Incorrect disposal of waste	Poor planning of construction activity Not following waste management plan	Regulatory action (prosecution, PINs)	<ul style="list-style-type: none"> ■ Waste and Recycling Management Sub-Plan and Procedures ■ Induction included waste management requirements ■ Toolbox training of workforce on waste management 	8 (Moderate)
E25	Environment	Waste	Excess waste generation	Poor planning of construction activity Not following waste management plan	Non-compliance with sustainability certification	<ul style="list-style-type: none"> ■ Waste and Recycling Management Sub-Plan ■ Sustainability Management Plan ■ Induction included waste management requirements ■ Toolbox training of workforce on waste management ■ Waste reduction initiatives to be implemented as per the Sustainability Management Plan 	7 (Low)
E26	Environment	Noise and Vibration	Settlement	Construction activities impacting on surrounding buildings structural integrity	Structural damage to surrounding buildings	<ul style="list-style-type: none"> ■ Pre construction building condition surveys ■ Settlement monitoring ■ Specialist consultant structural engineer engaged 	11 (Moderate)

Title: N1070 Environmental Management Plan

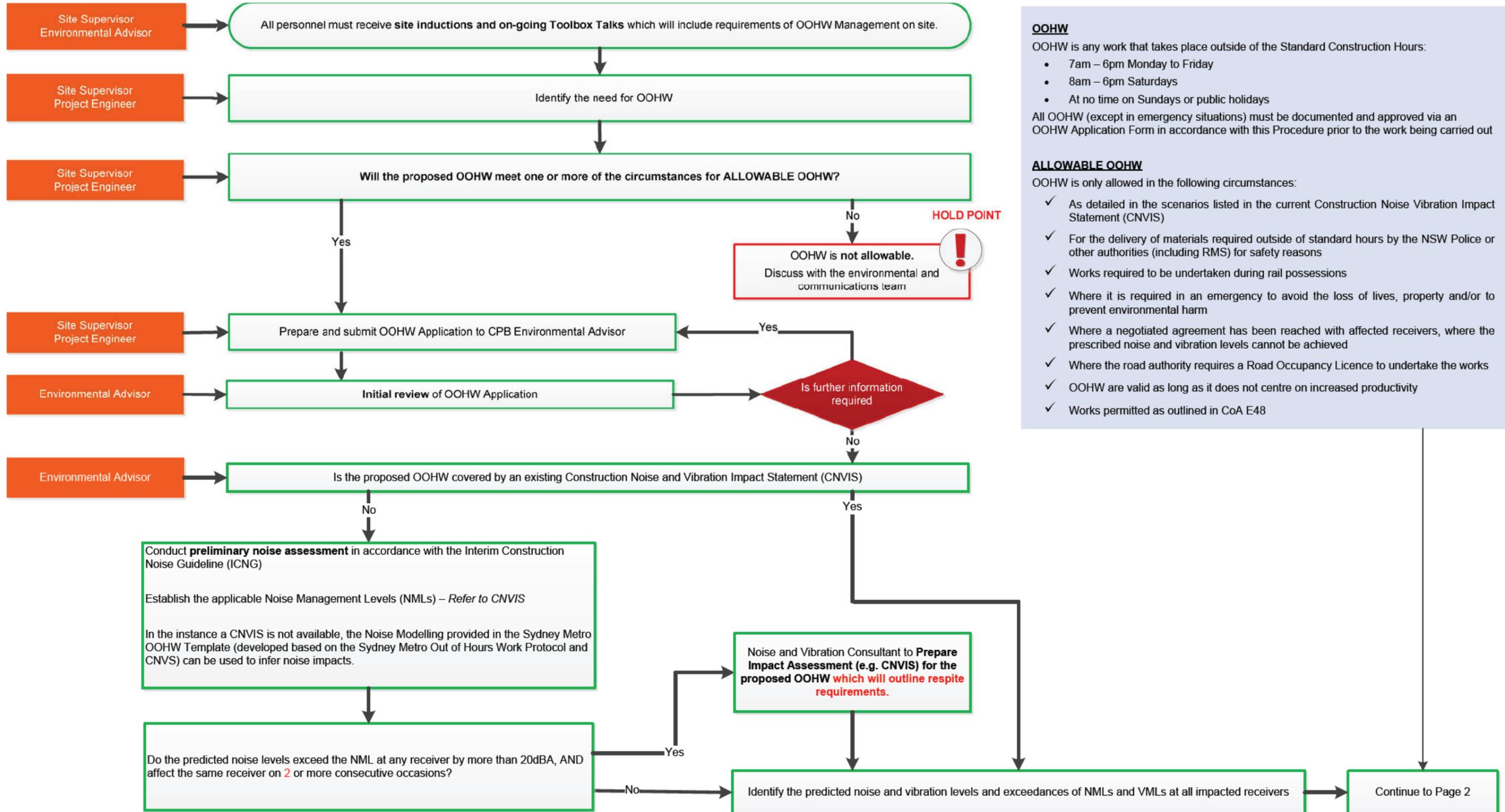
ID: MSID-4-295 Version: 12.0 Date Published: 25/09/2019

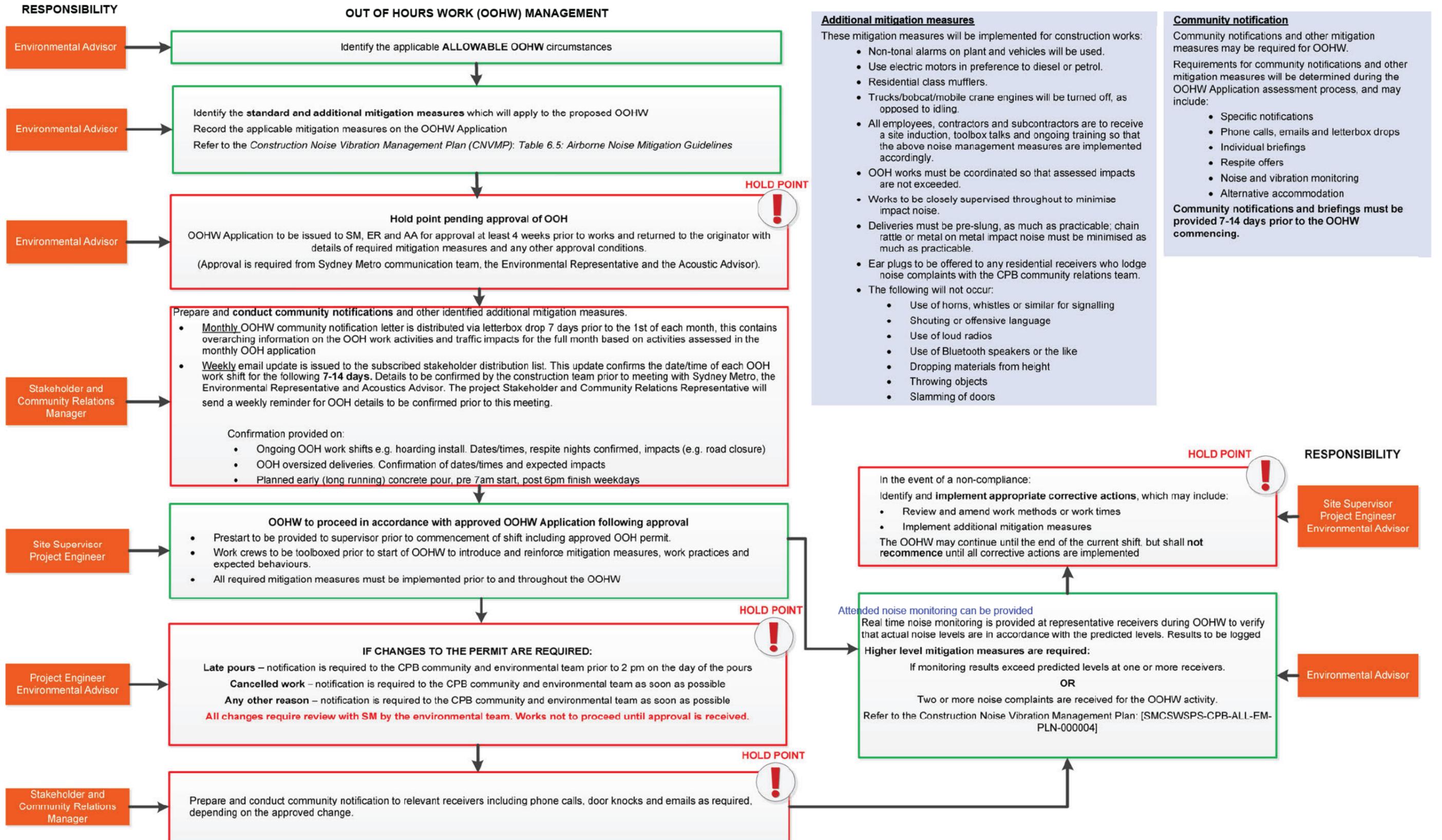
Management System - Uncontrolled Document when Printed

Appendix H Aspect Specific Procedures

RESPONSIBILITY

OUT OF HOURS WORK (OOHW) MANAGEMENT

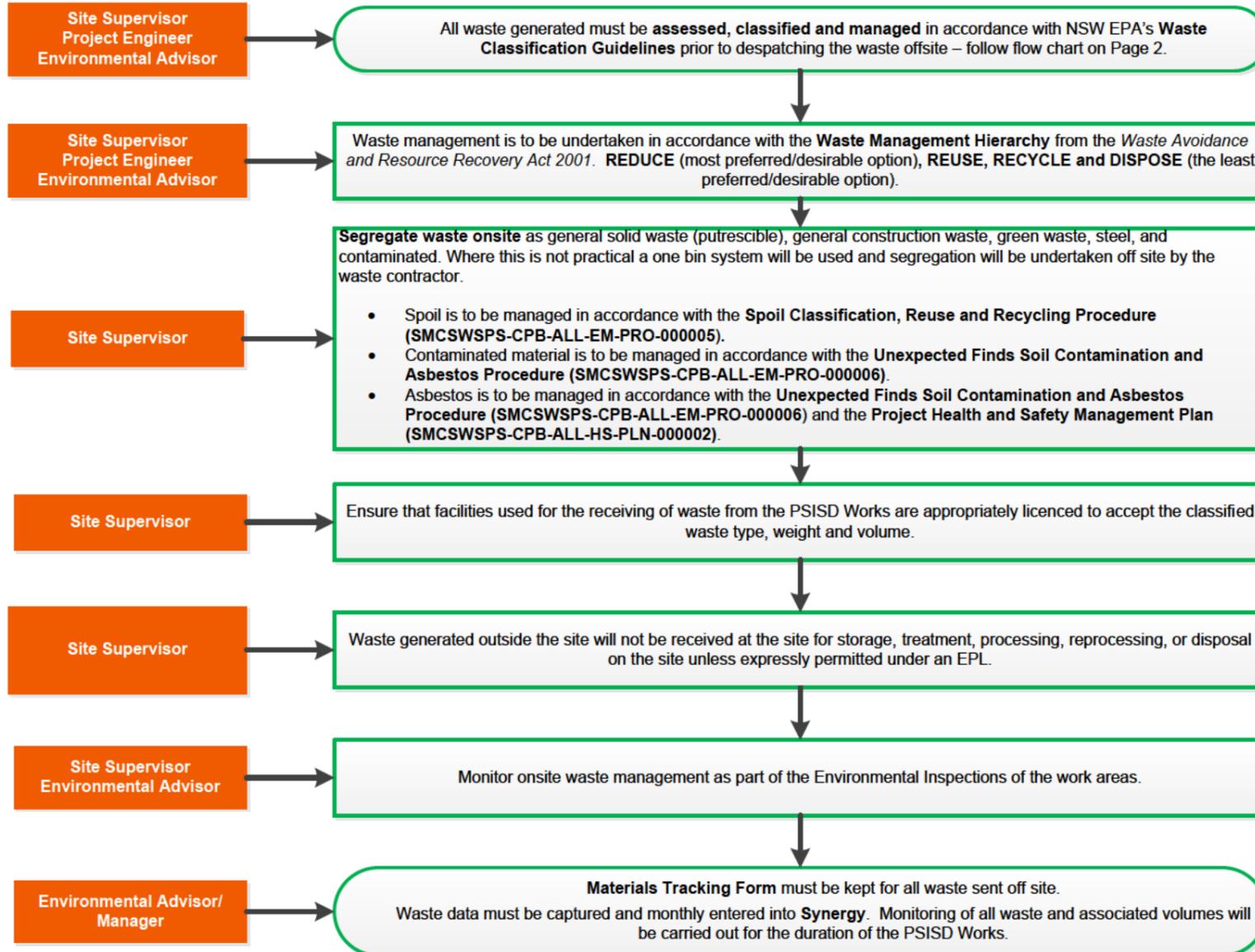




RESPONSIBILITY

WASTE MANAGEMENT AND MONITORING ACTIONS

NOTES



Objective

- To correctly classify waste that is produced during the construction of the PSISD Works for reuse, recycling or disposal to an appropriately licenced facility. This is to ensure potential impacts from waste are minimised during construction.

Targets

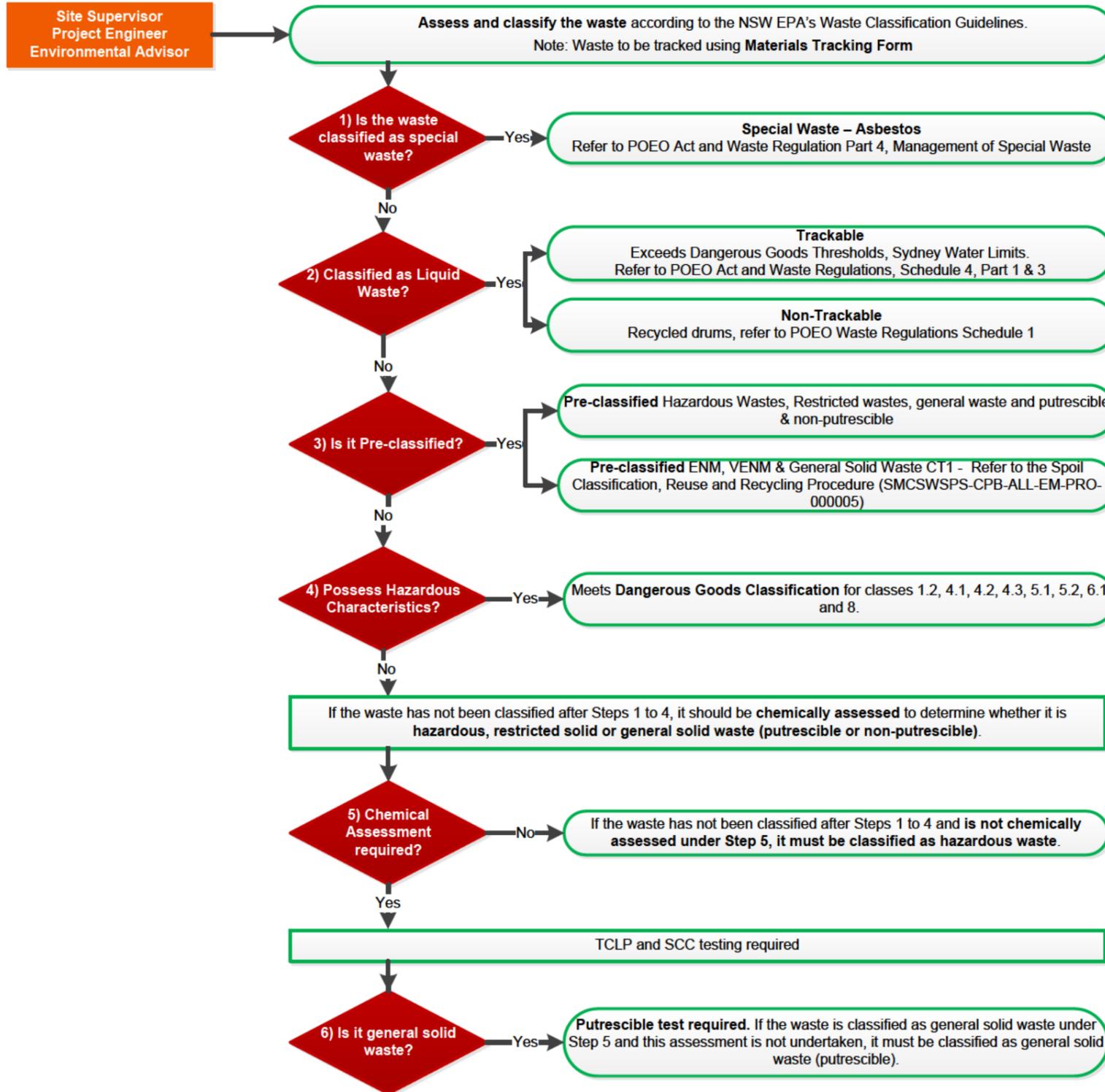
- 95% of inert and non-hazardous construction and demolition recyclable waste, excluding spoil, is recycled or alternatively beneficially reused.
- 60% of office waste is recycled or alternatively beneficially reused.
- 100% of reusable spoil is beneficially reused.

Waste Stream	Classification
Rubble, rock, sand, asphalt, road base, concrete	General Solid Waste (not putrescible)
Green waste	General Solid Waste (not putrescible) / Exempt Waste
Timber waste / off cuts	General Solid Waste (not putrescible)
General recyclables (glass, cans, paper, cardboard)	General Solid Waste (not putrescible)
Metal waste/ off cuts (i.e. steel reinforcement)	General Solid Waste (not putrescible)
Wire waste / off cuts	General Solid Waste (not putrescible)
PVC waste/ off cuts (e.g. piping and conduits)	General Solid Waste (not putrescible)
Waste oil	Liquid Waste
Non-destructive Digging Waste	Liquid Waste
Potentially contaminated spoil	Depends on contamination levels. Maybe be classed as General Solid Waste or Restricted Solid Waste or Hazardous Waste.
Potentially contaminated water (i.e. septic)	Depends on contamination levels. Maybe be classed as Liquid Waste or Hazardous Liquid Waste.
Asbestos	Special Waste (Asbestos Waste)
Food waste, sanitary products	General Solid Waste (Putrescible)
General mixed waste and	General Solid Waste (not putrescible)

RESPONSIBILITY

WASTE CLASSIFICATION PROCESS

NOTES



1) Special Waste

'Special waste' is a class of waste that has unique regulatory requirements. Special waste means any of the following:

- clinical and related waste
- asbestos waste
- waste tyres
- anything classified as special waste under an EPA gazettal notice.

2) Liquid Waste

Liquid waste means any waste (other than special waste) that:

- has an angle of repose of less than 5 degrees above horizontal
- becomes free-flowing at or below 60 degrees Celsius or when it is transported
- is generally not capable of being picked up by a spade or shovel
- is classified as liquid waste under an EPA gazettal notice.

3) Pre-Classified Waste

Some commonly generated waste types have been pre-classified as hazardous waste, general solid waste (putrescible) or general solid waste (non-putrescible). These pre-classifications are contained in the definitions of those classifications in Schedule 1 of the POEO Act.

All currently gazetted special, liquid and pre-classified wastes are listed on the EPA website at: <https://www.epa.nsw.gov.au/your-environment/waste/industrial-waste>

4) Hazardous Characteristics

If a waste has not been classified under Steps 1–3, it must be classified as 'hazardous waste' if it is a dangerous good under any of the following classes or divisions of the Transport of Dangerous Goods Code:

- Class 1: Explosives
- Class 2: Gases (compressed, liquefied or dissolved under pressure)
- Division 4.1: Flammable solids (excluding garden waste, natural organic fibrous material and wood waste, and all physical forms of carbon such as activated carbon and graphite)
- Division 4.2: Substances liable to spontaneous combustion (excluding garden waste, natural organic fibrous material and wood waste, and all physical forms of carbon such as activated carbon and graphite)
- Division 4.3: Substances which when in contact with water emit flammable gases
- Class 5: Oxidising agents and organic peroxides
- Division 6.1: Toxic substances
- Class 8: Corrosive substances.

6) Putrescible or Non-putrescible Waste

General solid waste may only be classified as non-putrescible if:

- it does not readily decay under standard conditions, does not emit offensive odours and does not attract vermin or other vectors (such as flies, birds and rodents), or
- it has a specific oxygen uptake of less than 1.5 milligrams O₂ per hour per gram of total organic solids at 20 degrees Celsius, or
- it is such that, during composting (for the purpose of stabilisation), the mass of volatile solids in the organic waste has been reduced by at least 38%, or
- it has been treated by composting for at least 14 days, during which time the temperature of the organic waste must have been greater than 40 degrees Celsius and the average temperature greater than 45 degrees Celsius.

Non-putrescible materials typically do not:

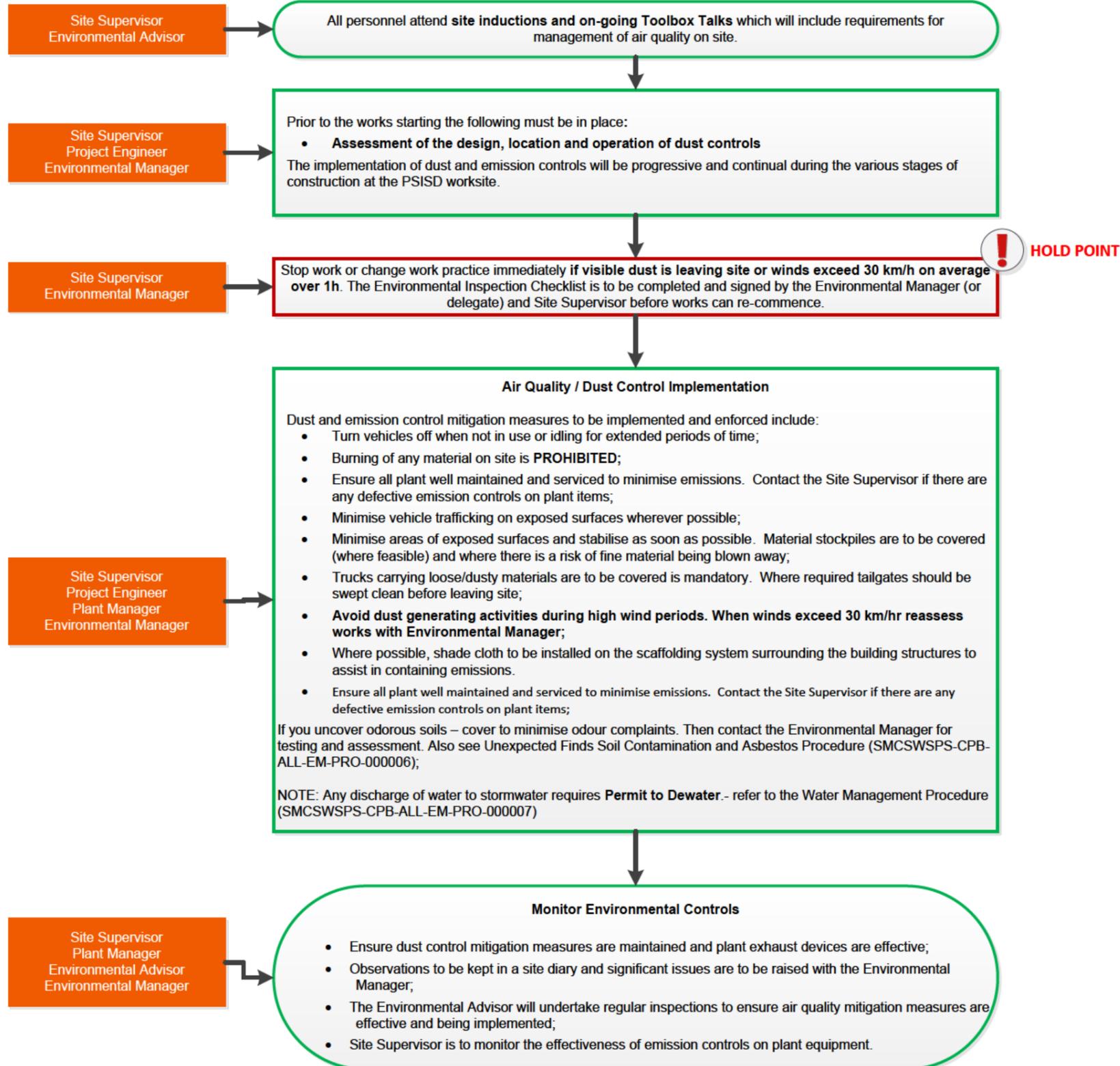
- readily decay under standard conditions
- emit offensive odours
- attract vermin or other vectors (such as flies, birds and rodents).

For further details refer to the DECCW's **Waste Classification Guidelines**.

RESPONSIBILITY

ACTION

NOTES



Monitoring

- Daily monitoring of meteorological conditions and weather forecast conducted by the Site Supervisor or Environmental Manager to provide warnings of adverse meteorological conditions using data obtained from Bureau of Meteorology.
- The Site Supervisor or Project Engineer will visually monitor daily construction activities (including dust generating activities, emissions from plant equipment, delivery of materials and any excessive odours) to ensure dust and emission controls are effective.
- During periods of excessive wind and/or when dust has been noted to leave site (Hold Point), stop work or modify construction methods.

Recording

- Site Supervisor will keep a record of any problematic dust generating activities and control measures implemented in site diary.
- As part of regular environmental inspections the Environmental Advisor will inspect dust and plant emission controls onsite recording their effectiveness and any actions that need to be raised.
- Plant Manager/Site Supervisor is to keep records of all servicing of plant and construction equipment to ensure effective maintenance of emission control devices.
- Records of weather observations from Bureau of Meteorology.

Potential Impacts

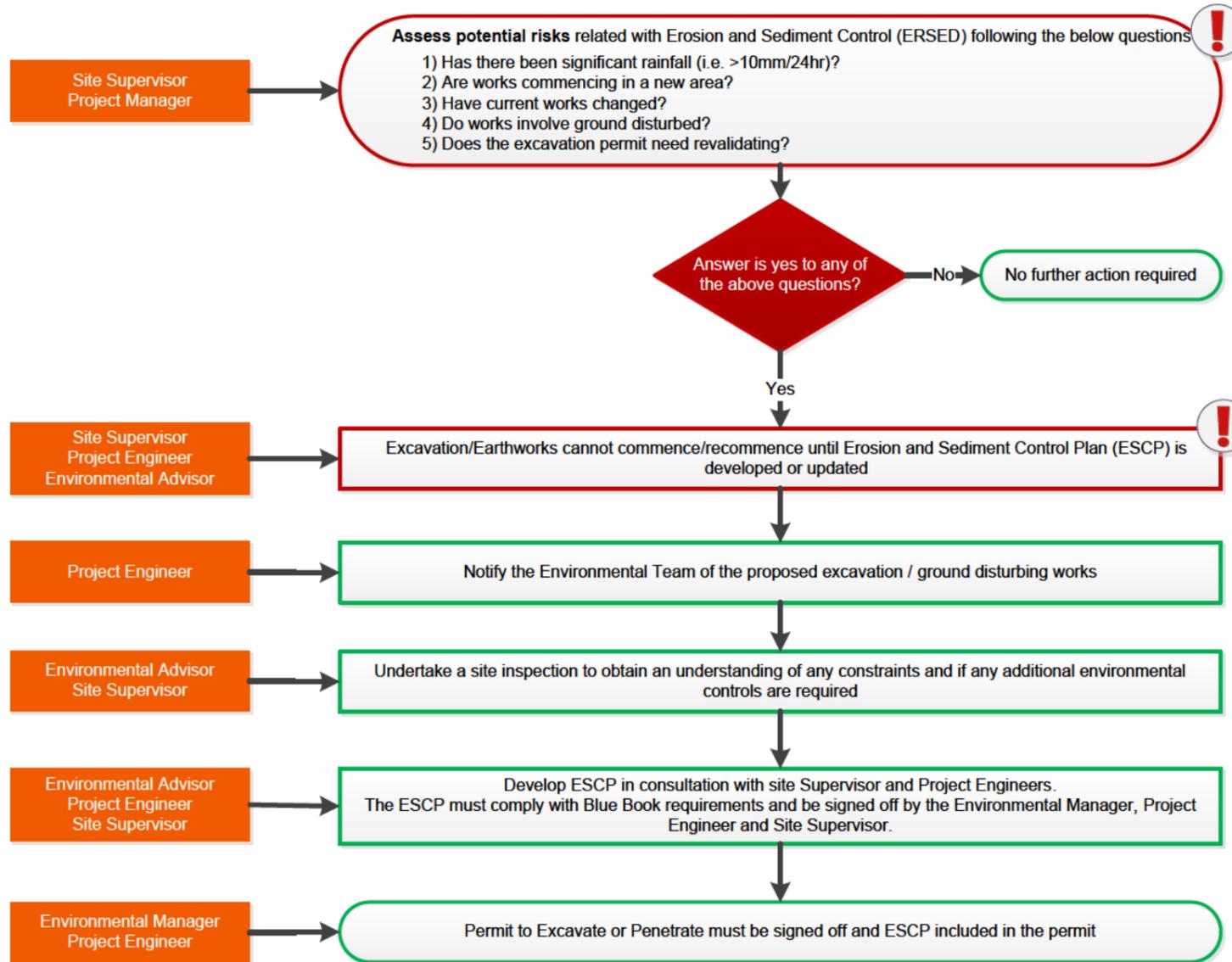
- Dust can cause damage to personal, public and adjoining property. This may lead to extensive cleaning requirements.
- Dust can reduce visibility when disturbed and therefore have negative aesthetic impacts and increase the risk of personal harm on work sites.
- Increased levels of dust and vehicle emissions can have health impacts on humans and fauna, such as causing breathing and eye irritation.
- Mud tracking onto roads can have negative health and safety impacts for public road users, and environmental impacts on the receiving environment.
- Dust and vehicle emissions can result in odours that some people may be sensitive to.

Note: For further details refer to the Air Quality Management Procedure in the Part C of the CEMP (SMCSWSPS-CPB-ALL-EM-PLN-00001)

RESPONSIBILITY

MANAGEMENT ACTIONS

NOTES



HOLD POINT

HOLD POINT

ERSED Principles

- Divert cleanwater away from disturbed areas wherever possible.
- The implementation of temporary erosion and sediment controls will be progressive and continual.
- Minimise disturbance at all times and "No Disturbance Zones" are to be enforced where practical. If works in these areas are required, obtain a Permit to Enter Protected or 'No-Go' Zones.
- Sediment control measures will be designed so that they are as close as possible to the potential source of sediment.
- Any temporary controls (e.g. slope breaks, cross drains) will be reinstated at the end of each day.
- After rainfall events (>10mm in 24hrs), sediment and erosion controls will be inspected to ensure performance is as designed.
- Stockpile materials away from water flow paths and waterways

Hold Point for Erosion and Sediment Control

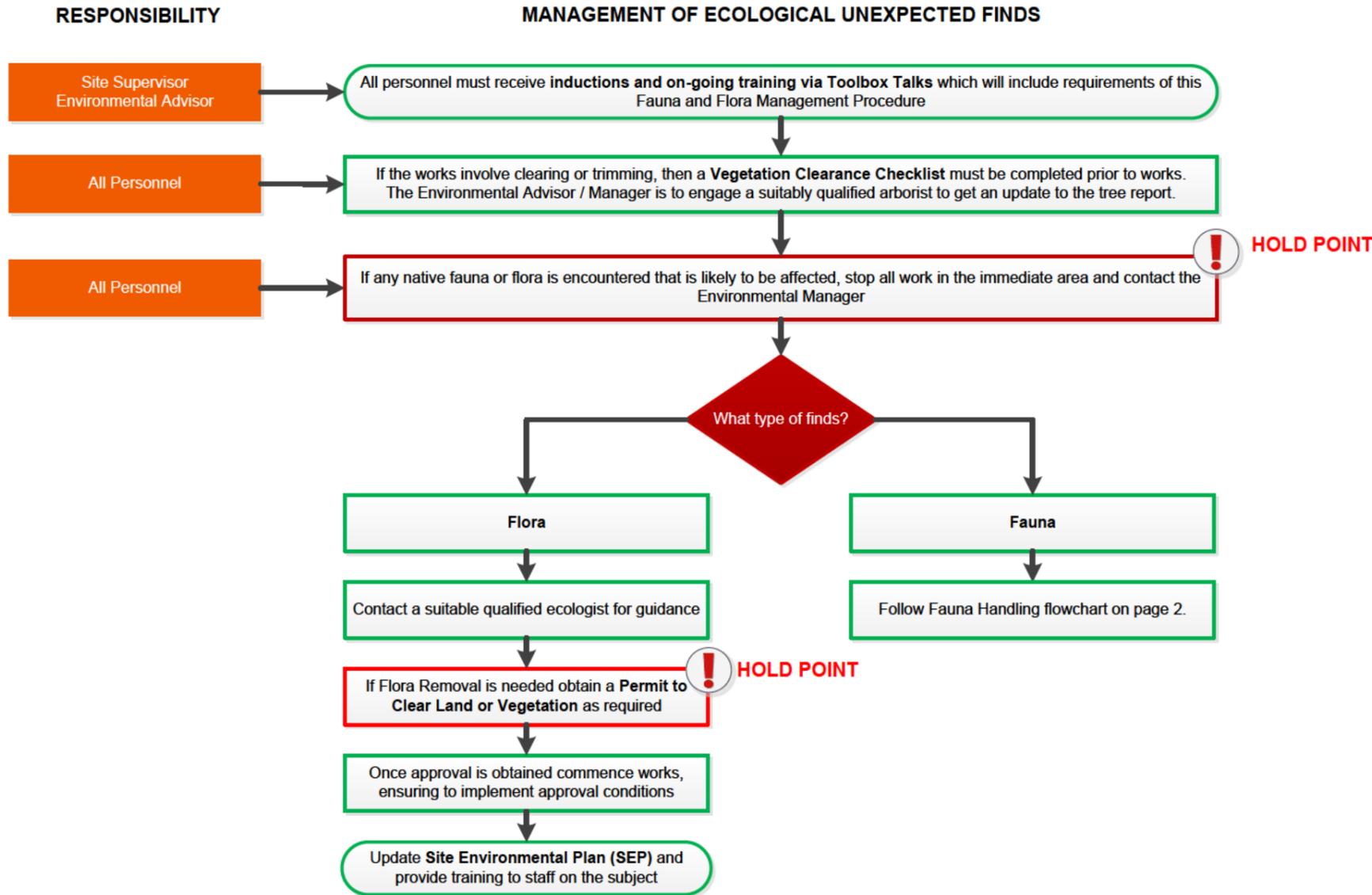
Erosion and Sediment Control Plans (ESCP) will be developed for each work area prior to the commencement of construction works. These will be signed off by the Environment Manager and Site Supervisor.

Monitoring

- Site conditions prior to and following rainfall events. Advise on any changes to ESCP.
- Weekly pre start site inspections by supervisors to review controls and advise on any changes to ESCP
- Daily monitoring of weather conditions and forecast
- Regular site inspection by project environmental representatives to review status of controls

Recording

- Site Supervisor will check that ERSED controls are in place and record in the Daily Site Report (Daily Diary).
- Records on monitoring
- Records of controls on ESCPs and in permits



NOTES

Protected or 'No-Go' Areas

- If works in these areas are required, obtain a Permit to Enter Protected or 'No-Go' Areas

Encountering Tree Roots

When tree roots are expected to be encountered excavation works are to be undertaken using a combination of the hydro-vac and manual digging. As soon as a root is exposed the use of the high-pressure water is to cease and the root is to be manually exposed. Care is to be employed to ensure that accidental damage does not occur to the exposed roots.

Although dropping the water pressure may help, it does not take much pressure at all to strip the bark off a root. Anything greater than a powerful garden hose has the potential to damage roots. If the bark is stripped off the root will die.

Small diameter roots <10mm in diameter may be pruned out of the excavation if required. However, their removal should only be undertaken as a last resort. They should be cut in a perpendicular direction, using sharp clean secateurs or pruning saw.

If all care and attention is paid to undertaking the excavations then an arborist should not be required.

Monitoring

- Workers inspect work areas prior to start of work each day
- Protection to trees at Pitt Street North to remain in place and inspected as part of site inspections

Recording

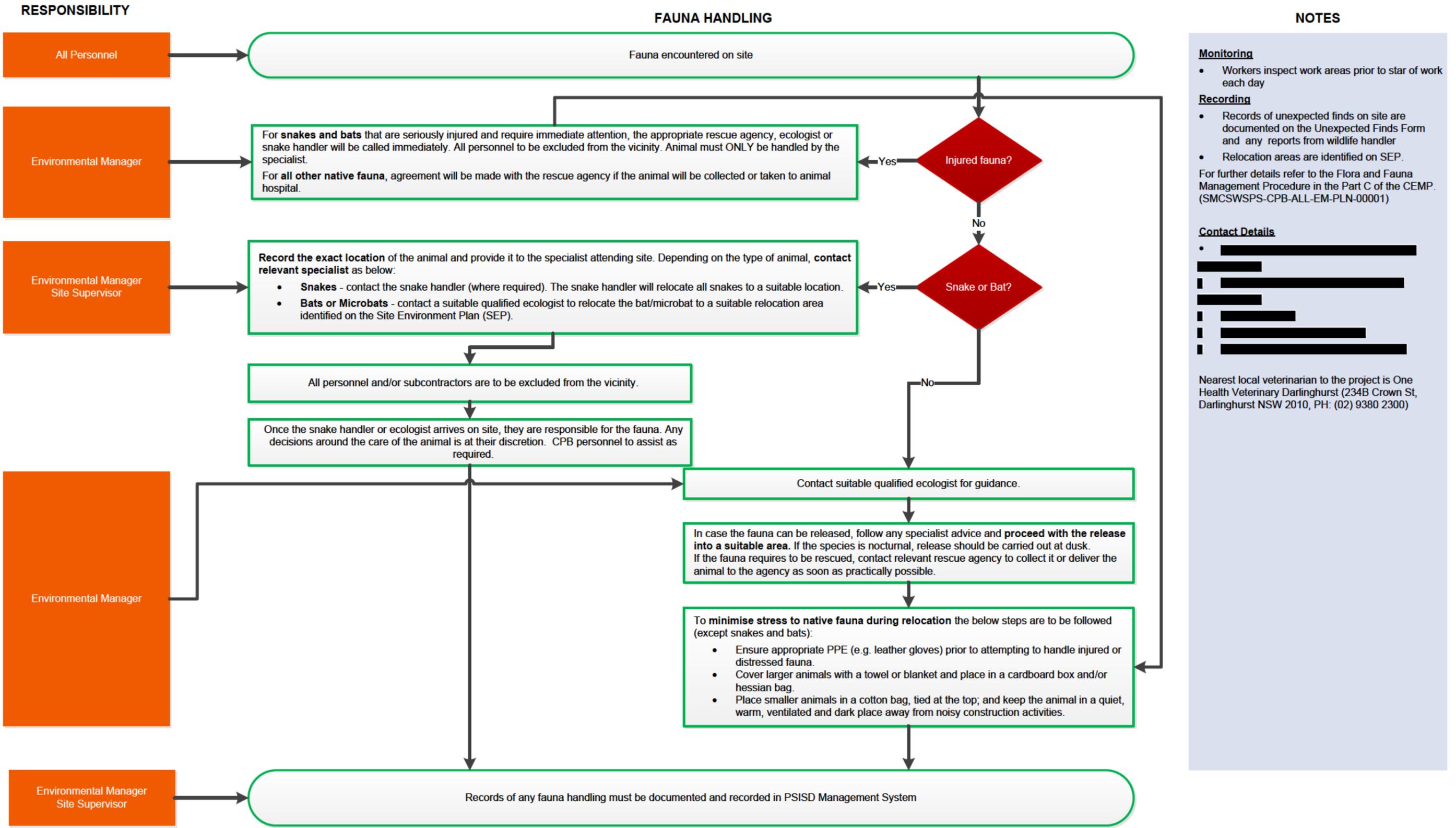
- Records of flora or fauna finds on site are documented on the Unexpected Finds Record Form and any reports from wildlife handler
- Relocation areas are identified on SEP where relevant.

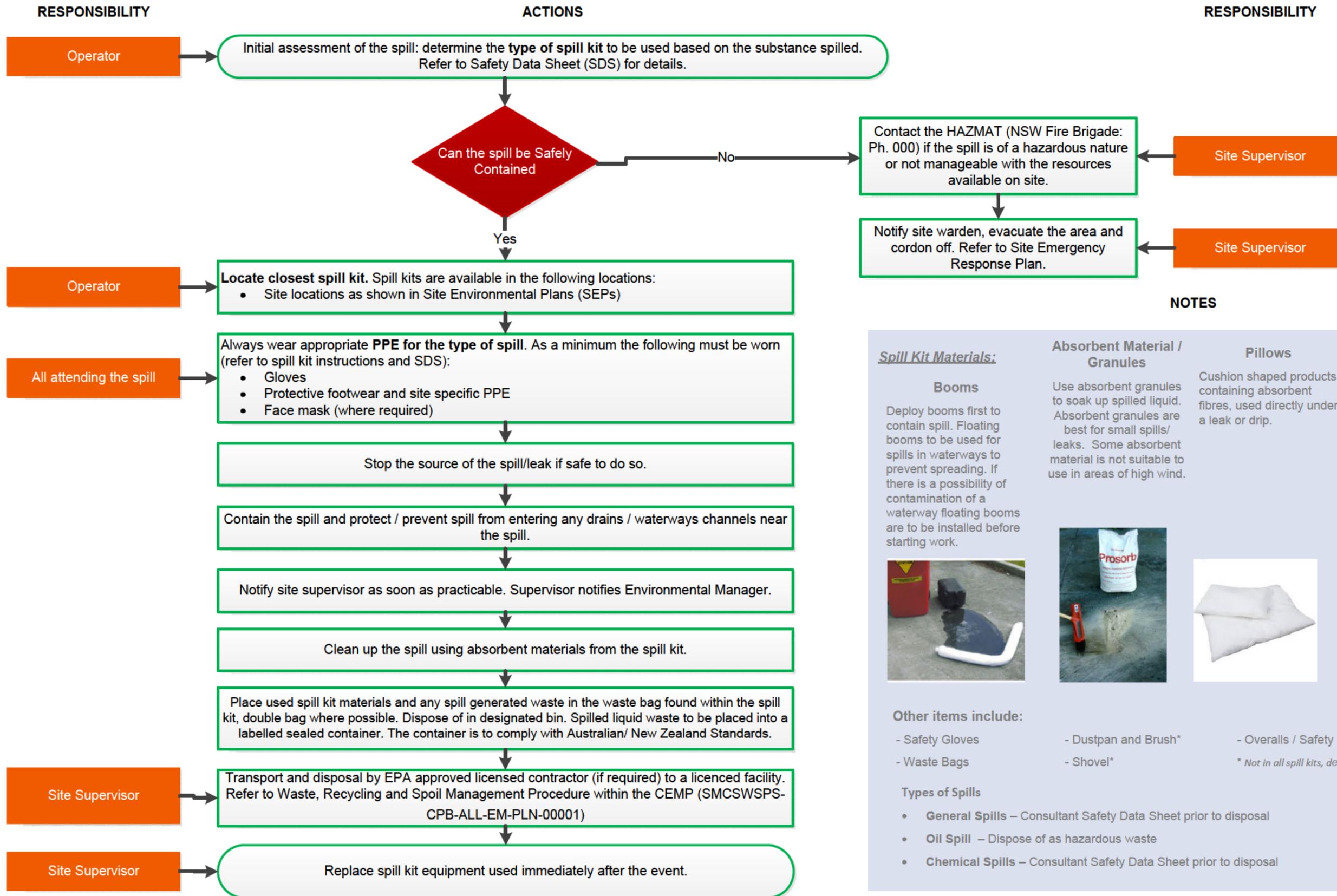
For further details refer to the Flora and Fauna Management Procedure in the Part C of the CEMP. (SMCSWSPS-CPB-ALL-EM-PLN-00001)

For further details regarding onsite Flora condition refer to Arboricultural Impact Assessment (SMCSWSPS-CPB-STA-EM-REP-000001)

Contact Details

- [Redacted]
- [Redacted] 730 848
- [Redacted]





NOTES

Spill Kit Materials:

Booms

Deploy booms first to contain spill. Floating booms to be used for spills in waterways to prevent spreading. If there is a possibility of contamination of a waterway floating booms are to be installed before starting work.



Absorbent Material / Granules

Use absorbent granules to soak up spilled liquid. Absorbent granules are best for small spills/leaks. Some absorbent material is not suitable to use in areas of high wind.



Pillows

Cushion shaped products containing absorbent fibres, used directly under a leak or drip.



Pads

Thin absorbent mats to place over and soak up spill. Hydrophobic pads to be used for spills in water.



Other items include:

- Safety Gloves
- Waste Bags

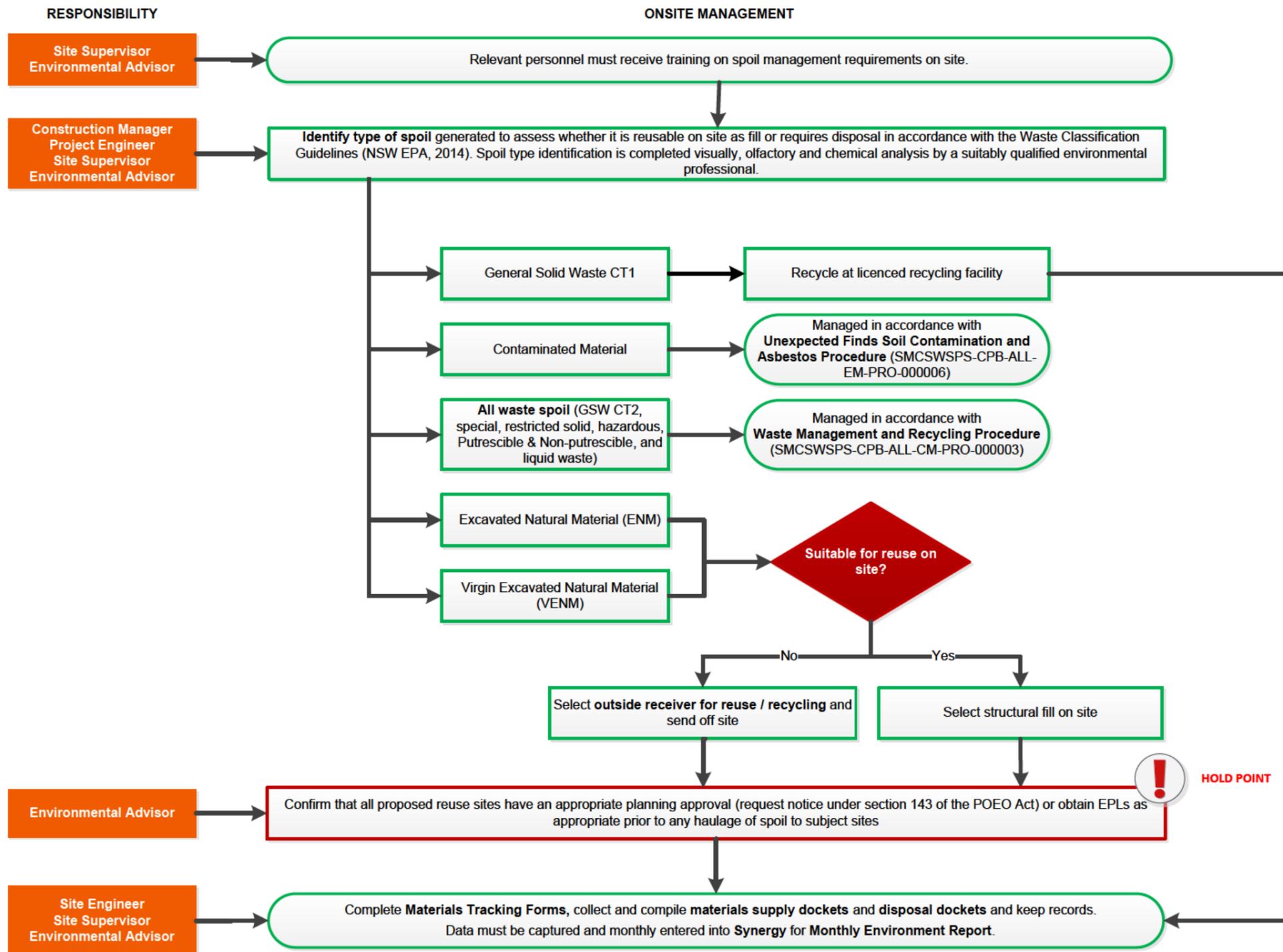
- Dustpan and Brush*
- Shovel*

- Overalls / Safety Goggles / Dust Mask*

* Not in all spill kits, depends on manufacturer / supplier ,

Types of Spills

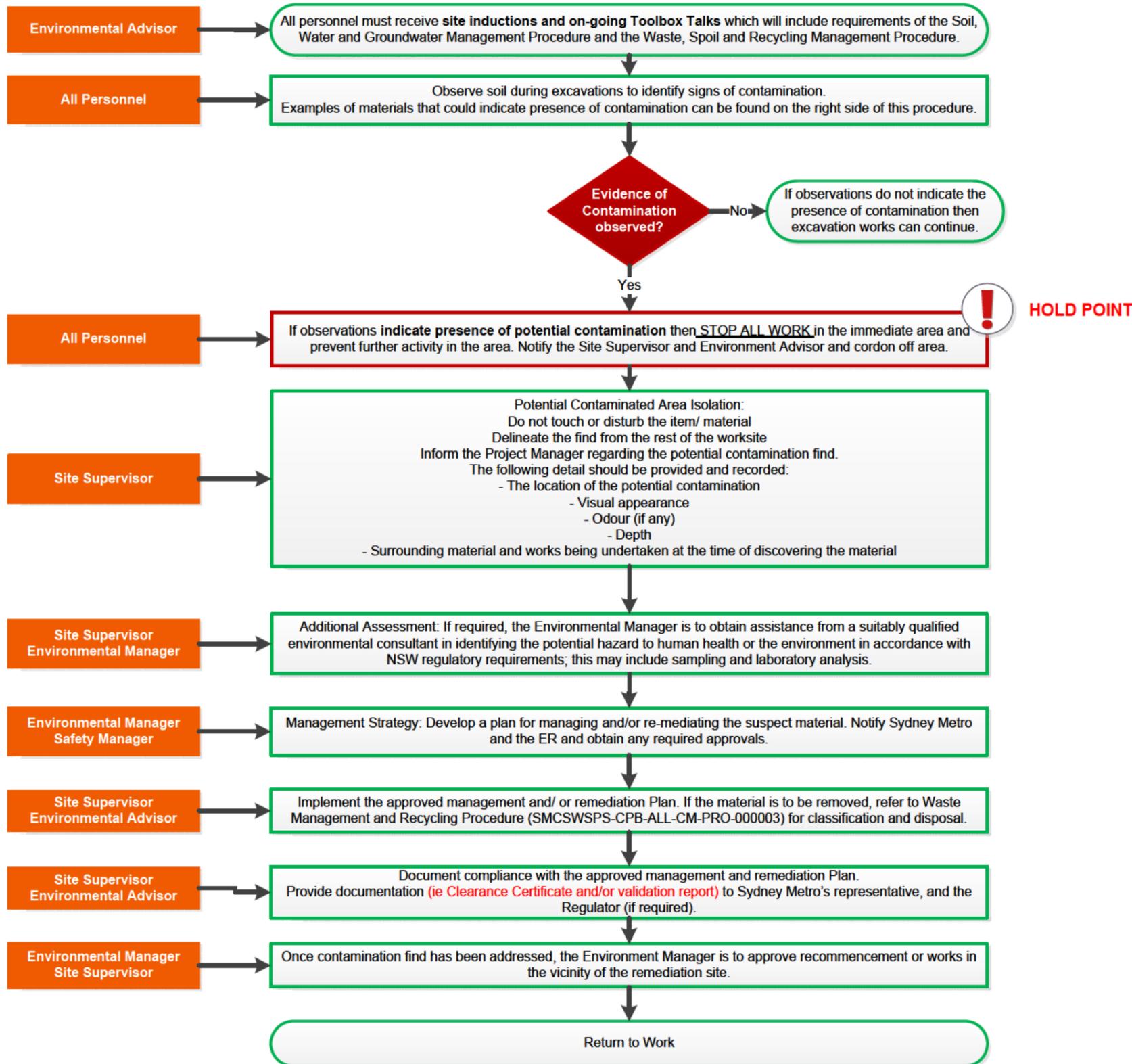
- **General Spills** – Consultant Safety Data Sheet prior to disposal
- **Oil Spill** – Dispose of as hazardous waste
- **Chemical Spills** – Consultant Safety Data Sheet prior to disposal



RESPONSIBILITY

MANAGEMENT ACTIONS

NOTES



Indicators of Contamination:
 Examples of materials that could indicate the presence of contamination include (but are not necessarily limited to):

- Asbestos cement fragments or other potentially asbestos containing materials
- Odorless or stained soil;
- Buried chemical drums or containers;
- High proportion of waste materials or building debris;
- Tar and ash material;
- Brightly or unusually coloured material;
- A yellow and/or red mottling in the soil profile indicates there may be Acid Sulphate Soils (ASS);

Asbestos:
 An unexpected find occurs when Asbestos Containing Materials (ACM) not identified in the Asbestos Register is found on site. Asbestos finds are to be managed in accordance with the Project Health and Safety Management Plan (SMCSWSPS-CPB-ALL-HS-PLN-000002). Refer to Page 2 for unexpected asbestos finds management procedure.

Acid Sulfate Soils (ASS)
 ASS are naturally occurring soils, sediments or organic substrates that are formed under waterlogged conditions in coastal areas. When exposed to air after being disturbed, soils containing iron sulfides produce sulfuric acid and often release toxic quantities of iron, aluminum and heavy metals.
 If ASS is encountered, possible management strategies include:

- Modifying the Project to avoid the area of ASS;
- Delineation and removal to a suitably licenced facility;
- Onsite treatment to neutralise the ASS, which could include the application of lime in accordance with recommendations of the suitably qualified Environmental Consultant.

Note: The management of any ASS needs to include appropriate erosion and sedimentation controls to minimise the potential for pollution to waters.

Protected or 'No-Go' Areas

- If works in these areas are required, obtain a Permit to Enter Protected or 'No-Go' Areas.

Monitoring

- Observation during excavation or following unexpected find
- As required by the contamination consultant in the event of an unexpected find

Recording

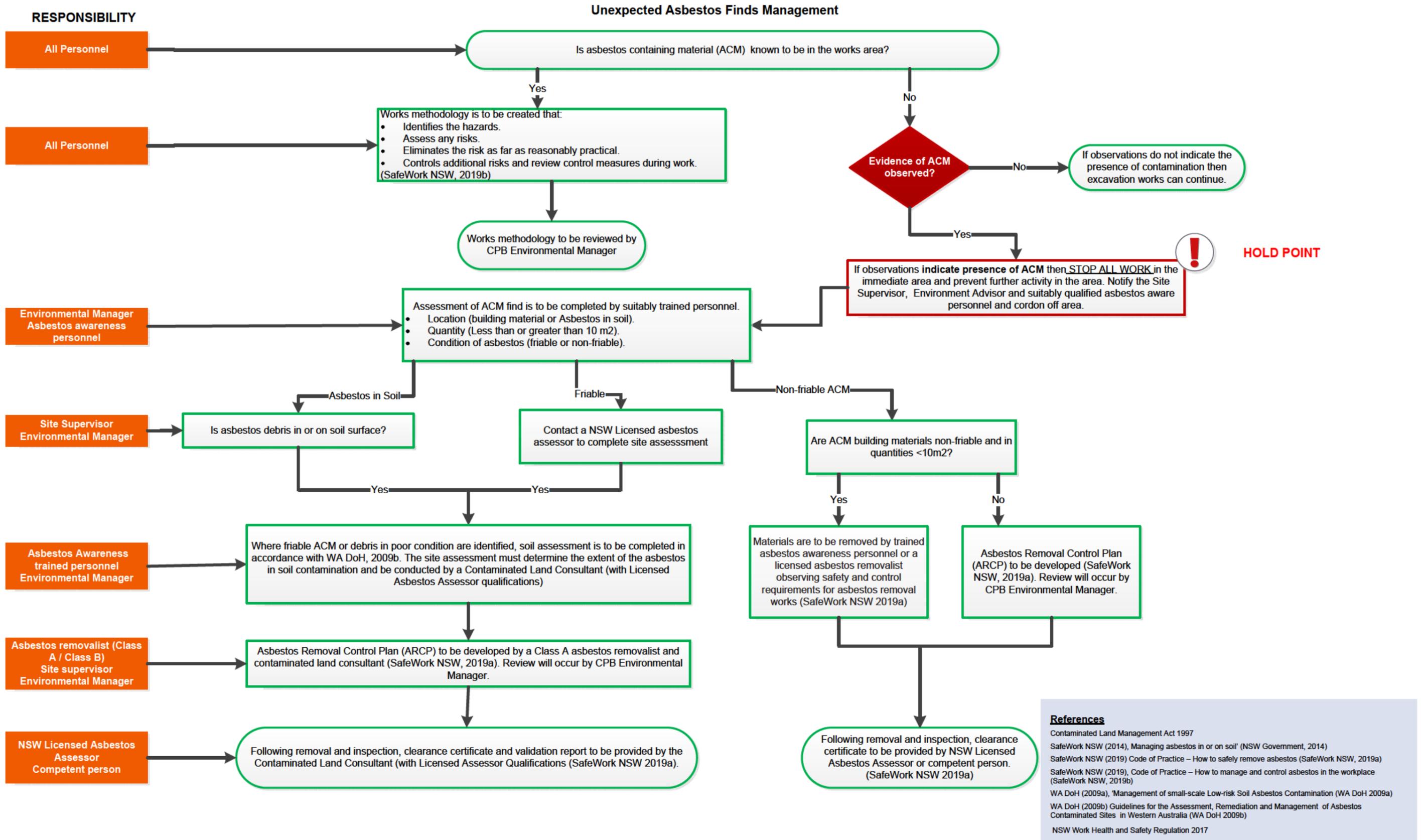
- Synergy report to raise
- Details of any additional sampling and analysis required to identify contaminant

Additional information on Contamination management is included in;

- Part D of the Project CEMP (SMCSWSPS-CPB-ALL-EM-PLN-00001)
- Waste Management and Recycling Procedure (SMCSWSPS-CPB-ALL-CM-PRO-000003)

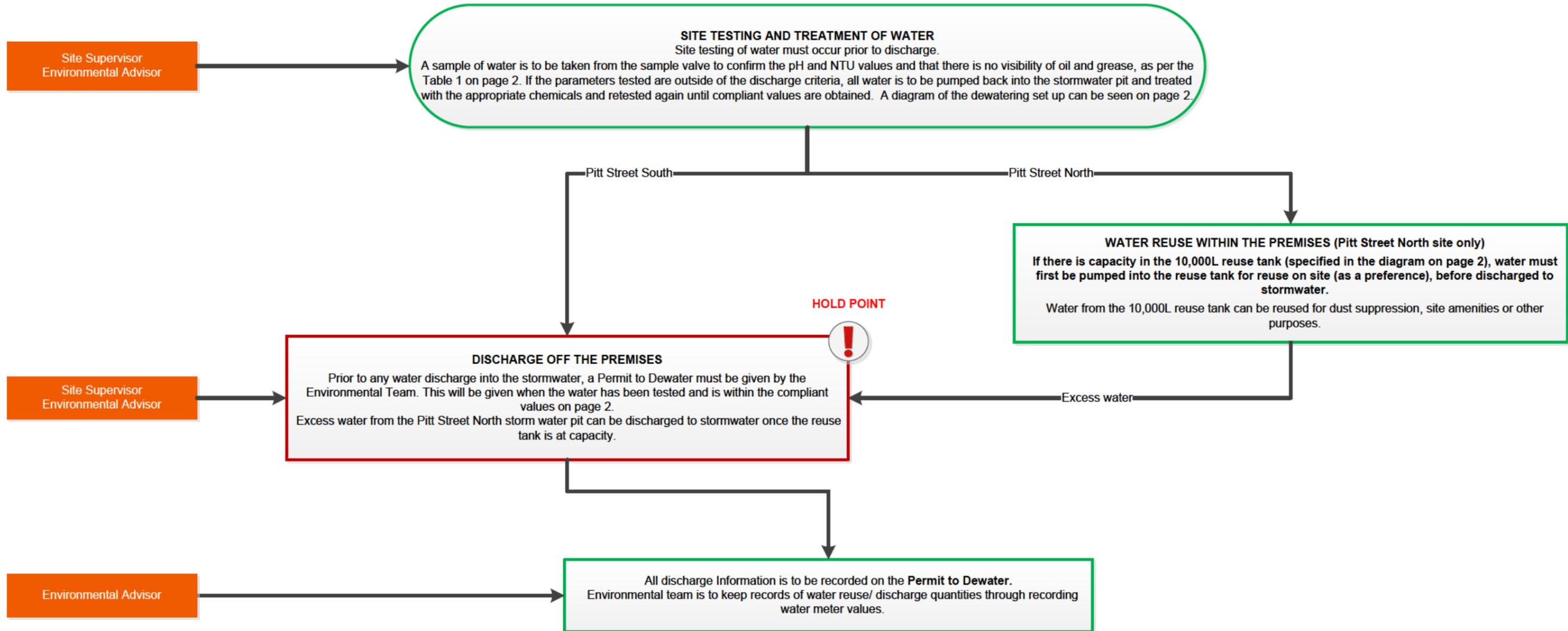
Contact Details

- [Redacted]
- [Redacted]
- [Redacted]



RESPONSIBILITY

WATER REUSE AND DISCHARGE MANAGEMENT



NOTES

Safety Requirements

- Always wear appropriate PPE (refer to Work Pack and SWMS)
- Avoid eye and skin contact with material sampled, flocculants, or products used to adjust pH. The first aid shed contains eye wash equipment if it is required.
- DO NOT breathe gases or aerosols formed from sampled material or associated preservatives in sample bottles.
- Maintain high standards of personal hygiene when sampling, DO NOT eat or smoke when sampling and ALWAYS wash hands following sampling.

Training

All personnel must receive site inductions and on-going Toolbox Talks which will include requirements of Water Management on site.
Only authorised persons to issue the permit to dewater and undertake site testing/sampling.

Monitoring

- Undertake water quality monitoring and visual inspection as per this procedures discharge requirements.
- Regular inspection of controls and discharge points are required prior to and during discharge.
- Where observations or conditions change, stop the discharge and contact Environment Team immediately.

Recording

- Records of water quality analysis on permits.
- Records of water reuse.
- Records of inspections including site inspections, on going monitoring of discharge and site diaries.
- Records of toolbox talks.

TABLE 1 - DISCHARGE MANAGEMENT PROTOCOL

	Management Workflow	Analytes & Period	Operation & Trigger Guidelines	Management Actions
Stage 0 - Verification		1. Real Time (daily): i. Turbidity ii. pH iii. Oil & Grease 2. Per Batch i. Full Suite at NATA accredited lab	<ul style="list-style-type: none"> Normal operation of water treatment plant (WTP) in the commissioning phase with batching of waste water 	<ul style="list-style-type: none"> Standard WTP operation Water treatment using a batching process without discharge Continuous sampling of discharge <ul style="list-style-type: none"> After five (5) consecutive sampling events without an exceedance of the target criteria adopt Stage 1 Protocols
Stage 1 - Standard Operations		1. Real Time (daily): i. Turbidity ii. pH iii. Oil & Grease 2. Per Month ¹ i. Full Suite at NATA accredited lab	<ul style="list-style-type: none"> Normal operation of WTP with continuous discharge of treated water 	<ul style="list-style-type: none"> Standard WTP operation
Stage 2 - Exceedance		As per Stage 1	<ul style="list-style-type: none"> 50th percentile discharge limit exceeded across three (3) consecutive sampling events 100th percentile discharge limit exceeded across one (1) sampling event 	<ul style="list-style-type: none"> Notify WTP operator of trigger Investigate the cause of the exceedance and examine the WTP processes immediately Implement new controls to address any issues identified Undertake sample of the exceeded parameter at the next available discharge
Stage 3 - Stop Work			<ul style="list-style-type: none"> 50th percentile discharge limit exceeded across five (5) consecutive sampling events 100th percentile discharge limit exceeded across two (2) consecutive sampling events 	<ul style="list-style-type: none"> Implement Stage 1 & 2 management protocols Inform Client and Environmental Representative Implement batch verification with 2x samples of the exceeded parameter to meet the criteria prior to discharge

Note: 1. Water samples will be collected monthly, where treated water is available. In the event that insufficient treated water is available for collection, a water sample is to be collected upon commencement of the next available discharge event.

RESPONSIBILITY

Environmental Advisor / authorised delegate

LABORATORY GRAB SAMPLE PROCESS

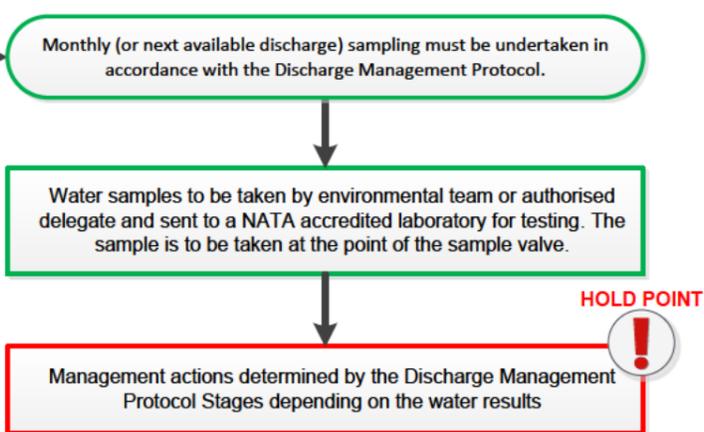
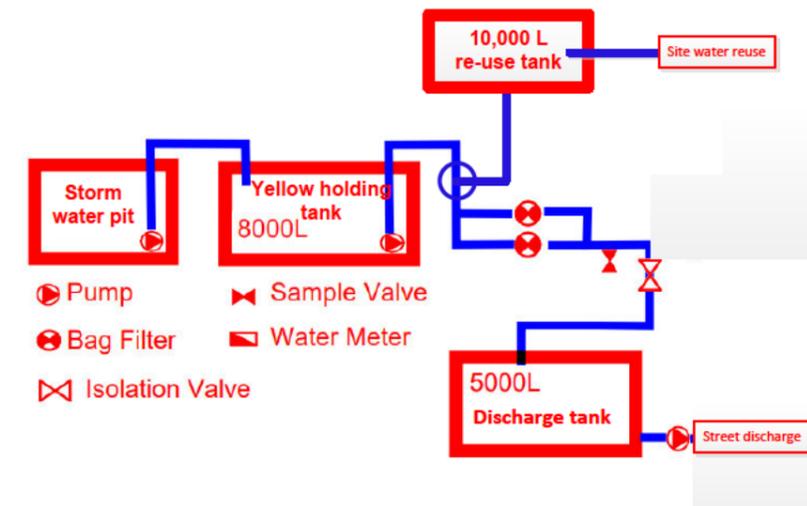


TABLE 2 - WATER QUALITY CRITERIA FOR DISCHARGE AND LABORATORY SAMPLING

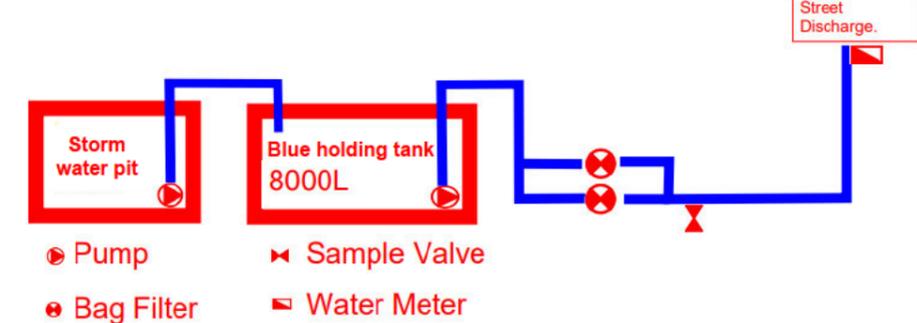
Parameter	Percentile Concentration Limit	Sample Method & Frequency	Units	Discharge Criteria
pH	100	Probe/ grab sample Prior to discharge	pH	6.5-8.5
Total Suspended Solids (TSS)*	100	Probe/ grab sample Prior to discharge	mg/L	<50
Oil and Grease	100	Visual Prior to discharge	None visual	None visual
Copper	50	Grab Sample Monthly	mg/L	0.0013
Copper	100	Grab Sample Monthly	mg/L	0.0048
Zinc	50	Grab Sample Monthly	mg/L	0.015
Zinc	100	Grab Sample Monthly	mg/L	0.043

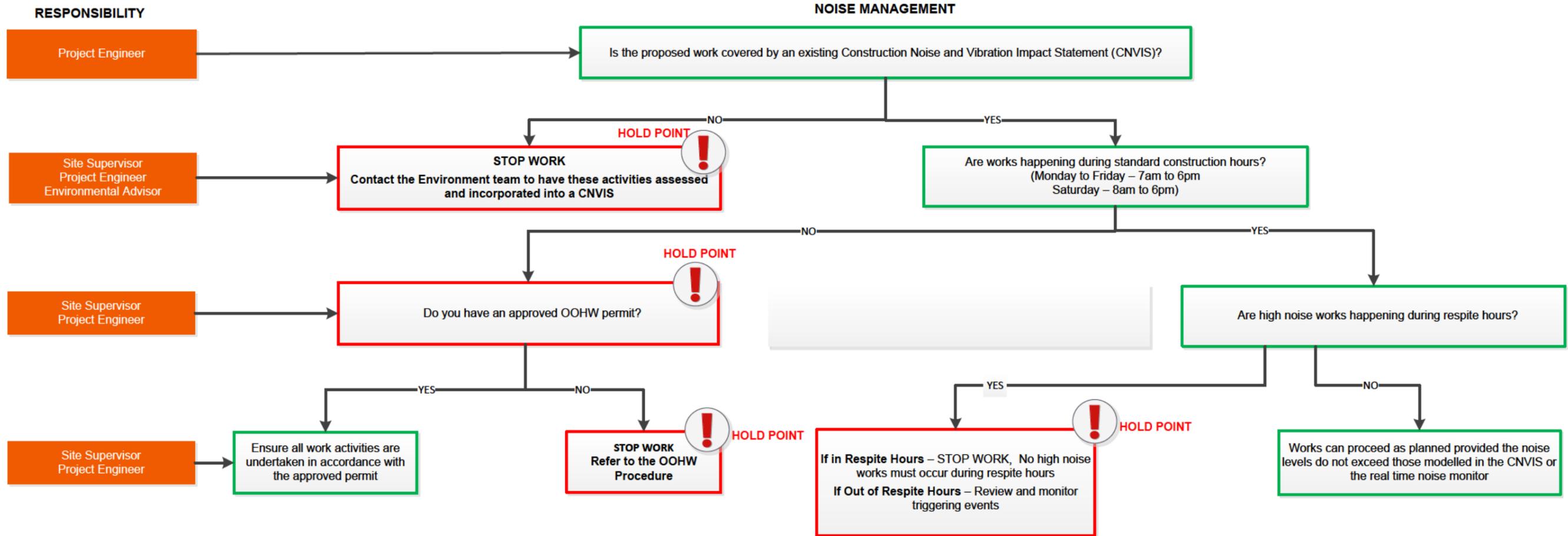
Note: an equivalent NTU value of 50 will be used instead of TSS for site testing as per correlation.

NORTH DEWATERING SET UP



SOUTH DEWATERING SET UP





Construction Hours Including Respite

Monday to Friday		Saturday		Sunday	
7am	1 hour respite from high-impact work (7am to 8am)	7am	1 hour respite from high-impact work (7am to 8am)	7am	Full day respite from high-impact work (7am-6pm)
8am	2 hour work block, high-impact work permitted (8am to 10am)	8am	2 hour work block, high-impact work permitted (8am to 10am)	8am	
9am		9am		9am	
10am	1 hour respite from high-impact work (10am to 11am)	10am	1 hour respite from high-impact work (10am to 11am)	10am	
11am	2 hour work block, high-impact work permitted (11am to 1pm)	11am	2 hour work block, high-impact work permitted (11am to 1pm)	11am	
12am		12am		12am	
1pm	1 hour respite from high-impact work (1pm to 2pm)	1pm	No high-impact work permitted (1pm-6pm)	1pm	
2pm	2.5 hour work block, high-impact work permitted (2pm to 4:30pm)	2pm		2pm	
3pm		3pm		3pm	
4pm		4pm		4pm	
5pm	1.5 hour respite from high-impact work (4:30pm to 6pm)	5pm		5pm	

OOHW

All OOHW (except in emergency situations) must be documented and approved via an OOHW Application Form in accordance with this Procedure prior to the work being carried out.

OOHW is only allowed in the following circumstances:

- ✓ As detailed in the scenarios listed in the current Construction Noise Vibration Impact Statement (CNVIS)
- ✓ For the delivery of materials required outside of standard hours by the NSW Police or other authorities (including RMS) for safety reasons
- ✓ Where it is required in an emergency to avoid the loss of lives, property and/or to prevent environmental harm
- ✓ Where a negotiated agreement has been reached with affected receivers, where the prescribed noise and vibration levels cannot be achieved
- ✓ Where the road authority requires a Road Occupancy Licence to undertake the works
- ✓ Covid impact extended hours, where there will be no high noise activities such as rock breaking, rock hammering, sheet piling, pile driving or similar activities taking place in the station boxes.
- ✓ Sydney Metro, Environmental Representative and Acoustic Advisor will consider other justification for OOHW in accordance with the Sydney Metro OOHW protocol.

RESPITE

Refer to the Standard Construction and Respite Hours table. Respite hours are subject to:

- ✓ No more than 6.5 hrs @ 80 dBA
- ✓ No more than 3.25 hrs @ 75 dBA

HIGH NOISE

High noise works include activities that may exceed a Leq15min of 80dB(A). Activities such as saw cutting and hammering cannot occur during respite hours as the noise limits may exceed the 80dB(A) threshold.

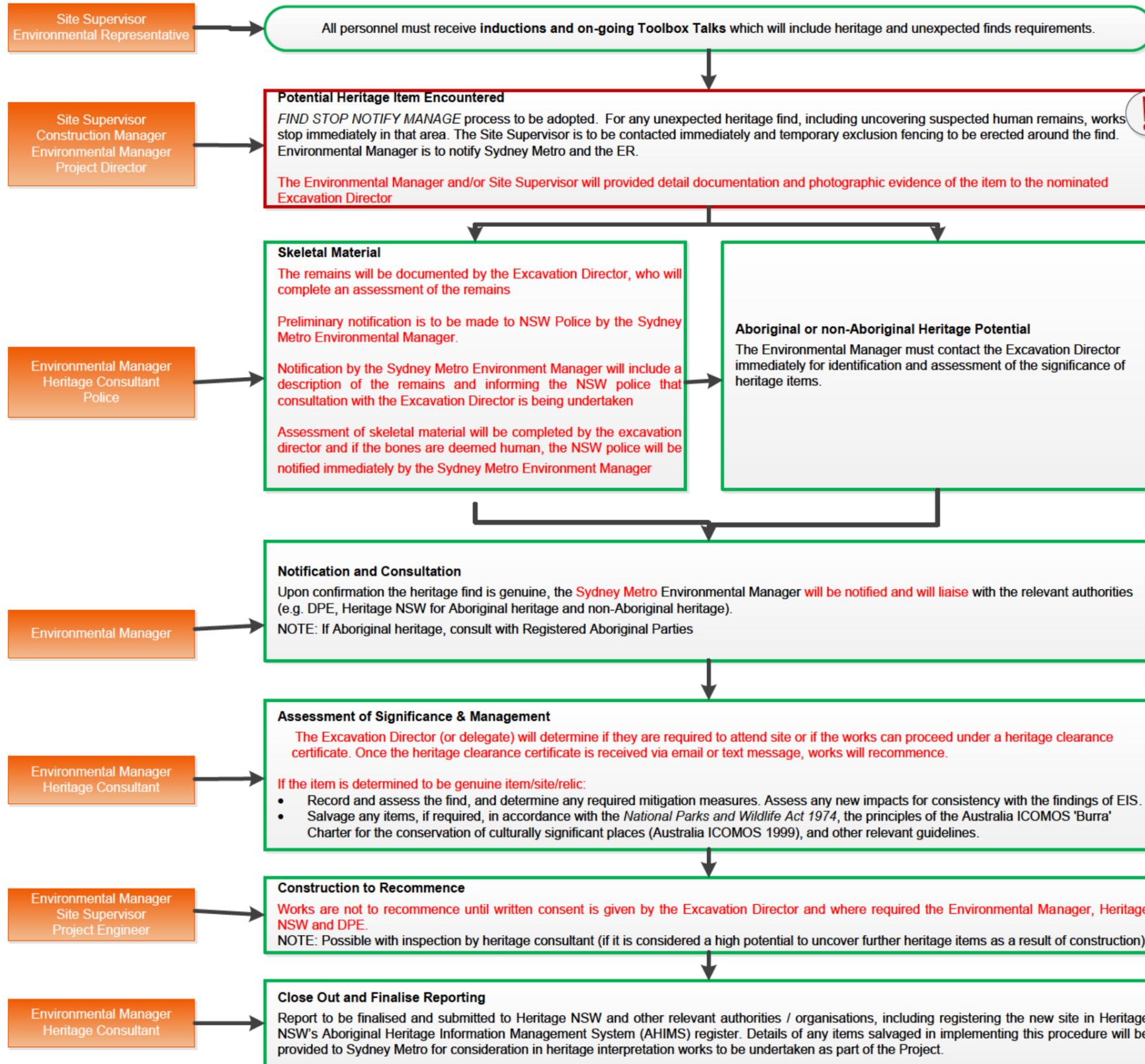
VIBRATION

Standard Construction Vibration Threshold = Maximum – 2.5mm/s. This is based on possible damage to heritage buildings.

RESPONSIBILITY

MANAGEMENT ACTIONS

NOTES



HOLD POINT

- Protected or 'No-Go' Areas
- Permit to Enter Protected or 'No-Go' Areas required to be obtained for any works in these areas.
- Unexpected Finds
- Unexpected finds can include:
- Human remains
 - Sandstone blocks
 - Former infrastructure (Tram trucks / kerbs)
 - Tools
 - Crockery and bottles
 - Recreational items
- Monitoring
- Workers inspect work areas prior to start of work each day
- Recording
- Unexpected Finds Record Form
 - Consultant reports on confirmed heritage or human remains
 - Location of unexpected finds on SEPs & register
 - Records of toolbox talks and inductions
- Note: Additional information on management of heritage and unexpected finds in Part C of the CEMP (SMCSWSPS-CPB-ALL-EM-PLN-00001).
- Contact Details
- ██
 - ██
 - ██

Appendix I Consultation Records

Appendix J DPE Approval and ER/AA Endorsements