Appendix B4

Soil and Surface Water Management Sub-plan

Western Harbour Tunnel and Warringah Freeway Upgrade

SSI-8863

Stage 2 – Warringah Freeway Upgrade

March 2022

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Contents

Document control

Approval and authorisation

Title	Warringah Freeway Upgrade Soil and Surface Water Management Sub-plan
Endorsed by Environment Representative	Maurice Pignatelli
Signed	
Dated	
Approved on behalf of TfNSW Services by	Rob Owens
Signed	
Dated	
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Document status

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Glossary/ Abbreviations

Abbreviations	Expanded text
AEP	Annual exceedance probability. The chance of a rainfall or a flood event exceeding a nominated level in any one year, usually expressed as a percentage. For example, if a peak flood level has a 5% AEP, it means that there is a five per cent chance (that is one-in-20 chance) of being exceeded in any one year. The frequency of floods is generally referred to in terms of their AEP or ARI. In this Soil and Surface Water Management Plan (SWMP) the frequency of floods generated by runoff from the study catchments is referred to in terms of their AEP, for example a 1% AEP flood.
ASS	Acid Sulfate Soil
CSSI	The Critical State Significant Infrastructure, as described in Schedule 1, the carrying out of which is approved under the terms of this approval
CEMP	Construction Environmental Management Plan
CEnvP(SC)	Certified Environmental Practitioner (Site Contamination)
CLMP	Contaminated Land Management Plan
DPI	NSW Department of Primary Industries
DPIE	NSW Department of Planning, Industry and Environment
EIS	Environmental Impact Statement
EPA	NSW Environment Protection Authority
EP&A Act	*Environmental Planning and Assessment Act 1979* (NSW)
EPL	Environment Protection Licence under the POEO Act
ER	Environmental Representative
EWMS	Environmental Work Method Statements
MCoA	Minister's Conditions of Approval
PASS	Potential Acid Sulfate Soil
PESCP	Progressive Erosion and Sediment Control Plan
PIRMP	Pollution Incident Response Management Plan

Abbreviations	Expanded text
PMF	Probable Maximum Flood. The flood that occurs as a result of the Probable Maximum Precipitation (PMP) on a study catchment. The PMF is the largest flood that could conceivably occur at a particular location, usually estimated from probable maximum precipitation coupled with the worst flood producing catchment conditions. Generally, it is not physically or economically possible to provide complete protection against this event. The PMF defines the extent of flood prone land (ie the floodplain).
POEO Act	*Protection of the Environment Operations Act 1997* (NSW)
Project, the	Warringah Freeway Upgrade
REMM	Revised Environmental Management Measures
RMS	Roads and Maritime Services
RtS	Response to Submissions Report
RUSLE	Revised Universal Soil Loss Equation
SDS	Safety Data Sheet
SEP	Site Environment Plans
SMART	Specific, Measurable, Achievable, Realistic, and Timely
SWMP	Soil and Surface Water Management Sub-plan
TfNSW	Transport for NSW
WFU	Warringah Freeway Upgrade Stage 2
WHT	Western Harbour Tunnel

1 Introduction

1.1 Context

This Soil and Water Management Sub Plan (SWMP) forms part of the Construction Environmental Management Plan (CEMP) for the Warringah Freeway Upgrade (the Project), a component of the Western Harbour Tunnel and Warringah Freeway Upgrade project.

This SWMP has been prepared to address the requirements of the Minister's Conditions of Approval (MCoA) for the Western Harbour Tunnel and Warringah Freeway Upgrade project, the Western Harbour Tunnel and Warringah Freeway Upgrade Environmental Impact Statement dated January 2020 (the EIS), the Western Harbour Tunnel and Warringah Freeway Upgrade Response to Submissions Report dated September 2020 (the RtS) and applicable guidance and legislation.

This SWMP addresses heritage management applicable to Stage 2 of the Warringah Freeway Upgrade Project as detailed in the Staging Report – Western Harbour Tunnel and Warringah Freeway Upgrade (SSI 8863) – October 2021 Rev 1.

1.2 Background and project description

The Western Harbour Tunnel and Warringah Freeway Upgrade project comprises a new motorway tunnel connection across Sydney Harbour, and an upgrade of the Warringah Freeway to integrate the new motorway infrastructure with the existing road network and to enable the future connection of the Beaches Link and Gore Hill Freeway Connection project.

The upgrade of Warringah Freeway extends from the northern end of the Sydney Harbour Bridge to Willoughby Road, and will optimise traffic flow, reducing the number of merge points along with introducing a southbound bus lane. The upgrade will also improve Ridge Street and Ernest Street bridges. The detailed project description is provided in Section 1.3 of the CEMP.

The EIS for the Western Harbour Tunnel and Warringah Freeway Upgrade project was prepared and finalised in January 2020 to assess the impacts of construction and operation of the Project. As part of the EIS development, detailed construction and operational assessments were prepared for geology, soils and groundwater, hydrodynamics and water quality, and flooding to address the Secretary's Environmental Assessment Requirements (SEARs) issued by the then Department of Planning and Environment. The assessment was included in the EIS as *Chapter 6: Geology, soils and groundwater* and in *Western Harbour Tunnel and Warringah Freeway Upgrade Technical working papers: Surface Water Quality and Hydrology; and Groundwater*, dated January 2020.

The EIS identified the potential for direct and indirect impacts on soils, groundwater quality, surface water quality and flooding but concluded that implementation of environmental management measures during further design development, construction and operation of the project will minimise any potential adverse impacts arising from the proposed work on the surrounding environment.

The Western Harbour Tunnel and Warringah Freeway Upgrade Project was approved by the Minister for Planning and Public Spaces on 21 January 2021.

The proponent, Transport for NSW (TfNSW), has contracted the CPB Contractors and Downer Joint Venture (CPB Downer JV) for the design and construction of the Project.

1.3 Scope of the Sub-Plan

The scope of this SWMP is to describe how the CPB Downer JV proposes to manage potential soil, groundwater quality, surface water quality and flooding impacts during construction of the Project. Operational impacts and operational measures do not fall within the scope of this SWMP and therefore are not included within the processes contained within this SWMP.

This Sub-plan is applicable to all Project activities under the control of the CPB Downer JV, including all areas where physical works will occur or areas that may otherwise be impacted by the construction works. All CPB Downer JV staff and sub-contractors are required to operate fully under the requirements of this Sub-plan and related environmental management plans, for the duration of the construction program.

This SWMP addresses soil and surface water management applicable to Stage 2 of the Warringah Freeway Upgrade Project as detailed in the Staging Report – Western Harbour Tunnel and Warringah Freeway Upgrade (SSI 8863) – October 2021 Rev 1.

With the approval of the Planning Secretary, the SWMP may be submitted on a progressive basis.

The ER will review this SWMP (as required by CoA A27(d)) prior to submission to the Planning Secretary to ensure it is consistent with the requirements of the Planning Approval.

1.4 Environmental management systems overview

This Sub-plan forms part of the CEMP which provides a structured and systematic approach to environmental management. The CEMP is based on the requirements of the CPB Contractors' Management System (CMS) and the requirements of the CSSI approval.

The CMS is certified to *AS/NZS SIO 14001:2015 Environmental Management Systems – requirements with guidance for use*. Additional details on the CEMP and Project environmental management system documents are provided in Section 1.5 of the CEMP.

Key interactions for this Sub-plan with other elements of the CEMP include:

- **Contaminated Land Management Sub-plan** – details the process for the investigation of potential contaminated sites and the procedure for managing unexpected contamination and asbestos
- **Ancillary Site Establishment Management Plan** – describes control measures for the stockpiling of materials.

2 Purpose and objectives

2.1 Purpose

The purpose of this SWMP is to describe how CPB Downer JV proposes to manage and protect soils, groundwater quality and surface water quality during construction on the Project.

2.2 Objectives

The key objective of the SWMP is to ensure all MCoA, environmental management measures and licence/permit requirements relevant to soil and water including water quality are described, scheduled and assigned responsibility as outlined in:

- The EIS prepared for Western Harbour Tunnel and Warringah Freeway Upgrade project
- The RtS prepared for Western Harbour Tunnel and Warringah Freeway Upgrade project
- MCoA granted to the project on 21 January 2021
- Roads and Maritime specifications G36, G38 and G40
- All relevant legislation and other requirements described in Section 3.1 of this SWMP.

Furthermore, the CPB Downer JV will aim to meet the performance outcomes from the EIS (Chapter 28, Table 28-4) as required by MCoA C2(d)(i). Relevant performance outcomes are detailed in **Table 2-1** including a cross reference to indicate how the matter is addressed in this Sub-plan.

Table 2-1 Performance Outcomes Identified in the EIS Relevant to this Sub-plan

Performance Outcome	How Addressed	Records
Long term impacts on surface water and groundwater hydrology (including drawdown, flow rates and volumes) are minimised.	The long-term impacts on water and groundwater hydrology (including drawdown, flow rates and volumes) will be minimised through the preparation and implementation of a Progressive Erosion and Sediment Control Plan (PESCP). A soil conservation specialist will be engaged for the Project duration to provide erosion and sediment control (ERSED) advice including initial preparation and ongoing review of the PESCP. The process for the preparation, implementation and review of PECSPs is located in the Erosion and Sediment Control Management Procedure (**Appendix A**).	Progressive Erosion and Sediment Control Plan

Performance Outcome	How Addressed	Records
The environmental values of nearby, connected and affected water sources, groundwater and dependent ecological systems including estuarine and marine water (if applicable) are maintained (where values are achieved) or improved and maintained (where values are not achieved).	Environmental values of nearby, connected and affected water sources, groundwater and dependent ecological systems will be maintained or improved through the implementation of management and mitigation measures detailed in **Table 7-1**.	Environmental Inspection Checklists EPL Monitoring Report
The project is designed, constructed and operated to protect the NSW Water Quality Objectives where they are currently being achieved, and contribute towards achievement of the Water Quality Objectives over time where they are currently not being achieved, including downstream of the project, to the extent of the project impact including estuarine and marine waters (if applicable).	Reflecting the requirements of MCoA E208, discharges from construction water treatment plants will not commence until receipt of an EPL which incorporates this activity. Relevant conditions of the EPL and discharge criteria will be included in this Sub-plan as required (refer to Table 7-1, MMSW43).	Permit to Dewater
The project minimises adverse impacts on existing flooding characteristics.	Detailed construction planning will be undertaken to consider flood risk at construction sites and construction support sites.	Site Environment Plans
Construction and operation of the project avoids or minimises the risk of, and adverse impacts from, infrastructure flooding, flooding hazards, or dam failure.	Detailed construction planning will be undertaken to consider flood risk at construction sites and construction support sites.	Site Environment Plans
The environmental values of land, including soils, subsoils and landforms, are protected.	Environmental values of land will be protected through the implementation of management and mitigation measures detailed in **Table 7-1**.	Environmental Inspection Checklists
Risks arising from the disturbance and excavation of land and disposal of soil are minimised, including disturbance to acid sulfate soils and site contamination.	Risks arising from the disturbance and excavation of land and disposal of soil will be minimised through the implementation of management and mitigation measures detailed in **Table 7-1**.	Environmental Inspection Checklists

2.3 Targets

The following targets have been established for the management of soil and water impacts during the project:

- Ensure full compliance with the relevant legislative requirements, MCoA and Revised Environmental Management Measures (REMMs)
- Consider opportunities for reuse of treated water during construction
- Environmental values of nearby, connected and affected water sources are improved and/or maintained
- Water discharged from construction sites meets discharge criteria that has been developed in consideration of the NSW Water Quality Objectives
- Construction is carried out in a manner that minimises the potential for adverse flooding impacts, through staging of works and the implementation of environmental management measures
- Construction support sites and construction sites are laid out such that overland flows are not significantly impeded
- Maintain or reduce flood levels within and adjacent to the alignment
- Erosion and sediment controls are implemented and comply with Managing Urban Stormwater – Soils and Construction, Volume 1 (Landcom 2004) and Volume 2D (DECC 2008)
- Acid sulfate soils are managed in accordance with good practice measures.

3 Environmental requirements

3.1 Relevant legislation and guidelines

3.1.1 Legislation

All legislation relevant to this SWMP is included in Appendix A1 of the CEMP.

3.1.2 Additional approvals, licences, permits and requirements

Refer to Appendix A1 of the CEMP.

3.1.3 Guidelines and standards

The main guidelines, specifications and policy documents relevant to this plan include:

- Acid Sulfate Soil Guidelines, Acid Sulfate Soil Management Advisory Committee, August 1998
- (National) Acid Sulfate Soil Sampling and Identification Methods Manual, Department of Agriculture and Water Resources, June 2018
- Australian and New Zealand Environment and Conservation Council (ANZECC) and Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ) Australian and New Zealand Guidelines for Fresh and Marine Water Quality, 2018
- DEC, Guidelines for Assessment and Management of Groundwater Contamination, 2007
- DEC, Environmental Best Management Practice Guideline for Concreting Contractors, 2004
- DPI, NSW Aquifer Interference Policy, 2012
- Managing Urban Stormwater: Soils and Construction (4th Edition) Volume 1 (the “Blue Book”), Landcom, 2004
- Managing Urban Stormwater: Soils and Construction (4th Edition) Volume 2A: Installation of Services, DECC, 2008
- Managing Urban Stormwater: Soils and Construction - Volume 2D: Main Road Construction, DECC, 2008
- NSW EPA, Approved Methods for the Sampling and Analysis of Water Pollutants in NSW, 2004
- NSW EPA, Contaminated Land Guidelines - Consultants reporting on contaminated land, 2020
- NSW EPA, Guidelines on the duty to report contamination under the Contaminated Land Management Act 1997, 2015
- NSW EPA, Waste Classification Guidelines, 2014
- Roads and Maritime Environmental Direction - Management of Tannins from Vegetation Mulch, 2012
- Roads and Maritime Environmental Procedure - Management of Wastes on Roads and Maritime Services Land, 2014
- Roads and Maritime, Guideline for the Management of Contamination, September 2013
- Roads and Maritime QA Specification G36 – Environmental Protection
- Roads and Maritime QA Specification G38 – Soil and Water Management
- Roads and Maritime QA Specification G40 – Clearing and Grubbing

- Roads and Maritime Technical Guideline - Management of Construction Site Dewatering, 2011
- RTA, Code of Practice for Water Management – Road Development and Management, 1999
- RTA, Erosion and Sediment Management Procedure, 2009
- RTA, Guideline for Construction Water Quality Monitoring, 2003
- RTA, Guidelines for the Management of Acid Sulphate materials: Acid Sulphate Soils, Acid Sulphate Rock and Monosulphidic Black Ooze, 2005
- RTA, 'Section 8 Erosion and Sediment', Road Design Guideline, 2003
- TfNSW, Chemical Storage and Spill Response Guidelines, 2018
- TfNSW, Concrete Washout Guideline, 2019.

3.2 Minister's Conditions of Approval

The MCoA relevant to this Sub-plan are listed in **Table 3-1**. A cross reference is also included to indicate where the condition is addressed in this Plan or other Project management documents.

Table 3-1 Conditions of Approval relevant to the SWMP

Ref #	Condition Requirements	Reference	How Addressed
General			
A5	Where the terms of this approval require a document or monitoring program to be prepared or a review to be undertaken in consultation with identified parties, evidence of the consultation undertaken must be submitted to the Planning Secretary with the document. The evidence must include: (a) documentation of the engagement with the party identified in the condition of approval that has occurred before submitting the document for approval; (b) a log of the dates of engagement or attempted engagement with the identified party; (c) documentation of the follow-up with the identified party where engagement has not occurred to confirm that they do not wish to engage or have not attempted to engage after repeated invitations; (d) outline of the issues raised by the identified party and how they have been addressed; and (e) a description of the outstanding issues raised by the identified party and the reasons why they have not been addressed.	**Table 4-1** **Appendix F**	This SWMP has been prepared in consultation with the relevant agencies identified in MCoA C4(c). Records of consultation are included in **Appendix F.**

Ref #	Condition Requirements	Reference	How Addressed
A15	With the approval of the Planning Secretary, the Proponent may submit any strategies, plans or programs required by this approval on a progressive basis. ***Notes***: *1. While any strategy, plan or program may be submitted on a progressive basis, the Proponent will need to ensure that the existing operations on site are covered by suitable strategies, plans or programs at all times; and* *2. If the submission of any strategy, plan or program is to be staged, then the relevant strategy, plan or program must clearly describe the specific stage to which strategy, plan or program applies, the relationship of this stage to any future stages, and the trigger for updating the strategy, plan or program.*	Section 1.3	Included in Section 1.3 stating that with approval of the Planning Secretary, the SWMP may be submitted on a progressive basis.
A27 (d) (i) (ii)	For the duration of the work until the commencement of operation, or as agreed with the Planning Secretary, the approved **ER** must: (d) review documents identified in **Conditions A10, A17, C1, C4** and **C11** and any other documents that are identified by the Planning 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 Planning Secretary (if those documents are required to be approved by the Planning 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 Planning Secretary / Department for information or are not required to be submitted to the Planning Secretary/Department);	Section 1.3	The ER requirements regarding review and approval of the SWMP are included in Section 1.3.
Construction Environmental Management Plan			

<table>
<tr><th>Ref #</th><th>Condition Requirements</th><th>Reference</th><th>How Addressed</th></tr>
<tr><td>C4</td><td>CEMP Sub-plans must be prepared in consultation with the relevant government agencies identified for each CEMP Sub-plan. Details of all information requested by an agency during consultation must be provided to the Planning Secretary as part of any submission of the relevant CEMP Sub-plan, including copies of all correspondence from those agencies as required by Condition A5.
<table>
<tr><th></th><th>Required CEMP Sub-plan</th><th>Relevant government agencies to be consulted for each CEMP Sub-plan</th></tr>
<tr><td>(e)</td><td>Soil and surface water</td><td>DPIE Water, EESG, EPA, Sydney Water (if Sydney Water’s assets are affected) and relevant council(s)</td></tr>
</table></td><td>Table 4-1
Appendix F</td><td>This SWMP has been prepared in consultation with the relevant agencies identified in this condition. Records of consultation are included in Appendix F.</td></tr>
<tr><td>C5</td><td>The CEMP Sub-plans must state how:
(a) the environmental performance outcomes identified in the documents listed in Condition A1 will be achieved;</td><td>Table 2-1</td><td>The environmental performance outcomes identified in the EIS and RtS are detailed in Table 2-1 together with how each outcome is addressed by this Sub-plan.</td></tr>
<tr><td></td><td>(b) the mitigation measures identified in the documents listed in Condition A1 will be implemented;</td><td>Section Error! Reference source not found.</td><td>Section Error! Reference source not found. details how the mitigation measures identified in the EIS and RtS relating to soil and water will be implemented by the CPB Downer JV.</td></tr>
<tr><td></td><td>(c) the relevant terms of this approval will be complied with; and</td><td>Section 3</td><td>Details of how CPB Downer JV will comply with the relevant terms of approval are listed in this Table, including references to the relevant sections of this Sub-plan.</td></tr>
</table>

Ref #	Condition Requirements	Reference	How Addressed
	(d) issues requiring management during construction (including cumulative impacts), as identified through ongoing environmental risk analysis, will be managed through SMART principles.	CEMP – Section 3.2.1 Section 6.2 Section **Error! Reference source not found.**.3	Soil and water issues requiring management during construction have been identified in the Environmental Risk Assessment Workshop (Section 3.2.1 of the CEMP) and Section 6.2 of this Sub-plan. Cumulative impacts are detailed in Section 6.3.
C9	The CEMP Sub-plans must be submitted to the Planning Secretary for approval along with, or subsequent to, the submission of the CEMP but in any event, no later than one month before construction.	Section 2 of the CEMP	This Sub-plan will be submitted to the Planning Secretary for approval no later than one month before construction.
C10	Construction must not commence until the CEMP and all CEMP Sub-plans have been approved, unless otherwise agreed by the Planning Secretary. The CEMP and CEMP Sub-plans, as approved by the Planning Secretary, including any minor amendments approved by the ER must be implemented for the duration of construction. Where construction of the CSSI is staged, construction of a stage must not commence until the CEMP and sub-plans for that stage have been endorsed by the ER and approved by the Planning Secretary.	Section 2 of the CEMP	Construction of the Project will not commence until the CEMP and all relevant CEMP Sub-plans have been approved, unless otherwise agreed by the Planning Secretary.
Construction Monitoring Programs			

<table>
<tr><th>Ref #</th><th>Condition Requirements</th><th>Reference</th><th>How Addressed</th></tr>
<tr><td>C11</td><td>The following Construction Monitoring Programs must be prepared in consultation with the relevant government agencies identified for each to compare actual performance of construction of the CSSI against the performance predicted in the documents listed in Condition A1 or in the CEMP:
<table>
<tr><th></th><th>Required Construction Monitoring Program</th><th>Relevant government agencies to be consulted for each Construction Monitoring Program</th></tr>
<tr><td>(c)</td><td>Surface Water Monitoring Program</td><td>DPIE Water, (Sydney Water if any Sydney Water assets are impacted), EPA</td></tr>
</table></td><td>Table 4-1
Appendix E
Appendix F</td><td>The Surface Water Monitoring Program is included in Appendix E.
The Program has been prepared in consultation with DPIE Water, Sydney Water and the EPA. Records of consultation via a Consultation Report are included in Appendix F.</td></tr>
<tr><td>C12</td><td>Each Construction Monitoring Program must provide:
(a) details of baseline data available;
(b) details of baseline data to be obtained and when;</td><td>Section 3.1 of the SWQMP (Appendix E)</td><td>Details of the surface water baseline data available, as well as data to be obtained and when, during development of the Surface Water Quality Monitoring Program are presented in Section 3.1 of the Surface Water Quality Monitoring Program.</td></tr>
<tr><td></td><td>(c) details of all monitoring of the project to be undertaken;
(d) the parameters of the project to be monitored;
(e) the parameters of the project to be monitored;
(f) the location of monitoring</td><td>Section 3.2 of the SWQMP (Appendix E)</td><td>Section 3.2 of the Surface Water Quality Monitoring Program details the reporting of monitoring and analysis against relevant criteria as well as the methods that will be used to analyse the monitoring data.</td></tr>
<tr><td></td><td>(g) the reporting of monitoring results and analysis results against relevant criteria;</td><td>Section 3.2.3 of the SWQMP (Appendix E)</td><td>Section 3.2.3 of the Surface Water Quality Monitoring Program details the reporting of monitoring and analysis against relevant criteria</td></tr>
</table>

Ref #	Condition Requirements	Reference	How Addressed
	(h) details of the methods that will be used to analyse the monitoring data;		as well as the methods that will be used to analyse the monitoring data.
	(i) procedures to identify and implement additional mitigation measures where the results of the monitoring indicate unacceptable project impacts	Section 5.3 of the SWQMP (Appendix E)	Procedures to identify and implement additional mitigation measures where results of monitoring are unsatisfactory are presented in Section 5.3 of the Surface Water Quality Monitoring Program
	(j) a consideration of SMART principles	Section 2.2 of the SWQMP (Appendix E)	SMART principles (Specific, Measurable, Achievable, Realistic and Timely) have been considered and applied within the Surface Water Monitoring Program to monitoring scope, locations, procedures, testing and reporting.
	(k) and consultation to be undertaken in relation to the monitoring programs	Section 2.3 of the SWQMP (Appendix E)	Section 2.3 of the Surface Water Quality Monitoring Program details consultation undertaken
	(l) any specific requirements as required by Conditions C13 to C16.	N/A	No specific requirements required
C17	The Construction Monitoring Programs must be developed in consultation with relevant government agencies as identified in Condition C11. Details of all information requested by an agency during consultation must be provided to the Planning Secretary as part of any submission of the relevant Construction Monitoring Programs, including copies of all correspondence from those agencies as required by Condition A5.	**Table 4-1** **Appendix F**	The Surface Water Monitoring Program has been prepared in consultation with DPIE Water, Sydney Water and the EPA. Records of consultation are included in **Appendix F.**

Ref #	Condition Requirements	Reference	How Addressed
C18	The Construction Monitoring Programs must be endorsed by the ER and then submitted to the Planning Secretary for approval at least one month before the commencement of construction.	Section 8.3	The Surface Water Monitoring Program will be endorsed by the ER and submitted to the Planning Secretary for approval at least one month before the commencement of construction (Section 8.3).
C19	Unless otherwise agreed with the Planning Secretary, construction must not commence until all of the relevant Construction Monitoring Programs have been approved by the Planning Secretary, and all relevant baseline data for the specific construction activity has been collected.	Section 8.3 **Appendix E**	The Surface Water Monitoring Program is included in **Appendix E.** Construction will not commence prior to submission of baseline data (where relevant) and approval of the monitoring program by the Planning Secretary (Section 8.3).
C20	The Construction Monitoring Programs, as approved by the Planning Secretary including any minor amendments approved by the ER must be implemented for the duration of construction and for any longer period set out in the monitoring program or specified by the Planning Secretary, whichever is the greater.	**Appendix E**	The approved Surface Water Monitoring Program will be implemented for the duration of construction and until the affected waterways are rehabilitated to an acceptable condition as certified by a suitably qualified and experienced independent expert.
C21	The results of the Construction Monitoring Programs must be submitted to the Planning Secretary, and relevant regulatory agencies, for information in the form of a Construction Monitoring Report at the frequency identified in the relevant Construction Monitoring Program. *Note: Where a relevant CEMP Sub-plan exists, the relevant Construction Monitoring Program may be incorporated into that CEMP Sub-plan.*	**Appendix E**	An Annual Construction Surface Water Quality Monitoring Report will be prepared and submitted to the Planning Secretary, DPIE Water, Sydney Water and the EPA (refer to Section 5.5 of **Appendix E**). Surface water quality and groundwater monitoring results will be reported monthly as part of the EPL Monitoring Report.

Ref #	Condition Requirements	Reference	How Addressed
Flooding			
E49	The CSSI must be designed and implemented to limit flooding characteristics to the following levels: (a) a maximum increase in inundation time of one hour in a 1 % AEP flood event; (b) a maximum increase of 10 mm in inundation at properties where floor levels are currently exceeded in a 1 % AEP flood event; (c) a maximum increase of 50 mm in inundation at properties where floor levels would not be exceeded in a 1 % AEP flood event; and (d) no inundation of floor levels which are currently not inundated in a 1% AEP flood event. Measures identified in the documents listed in Condition A1 to not worsen flood characteristics or other measures that achieve the same outcomes, must be incorporated into the detailed design of the CSSI. The incorporation of these measures must be reviewed and endorsed by a suitably qualified and experienced person in consultation with directly affected landowners, EESG, NSW State Emergency Service (SES) and relevant councils.	Design Management Plan Design Reports	As detailed in the Design Management Plan, a design review process has been established by the CPB Downer JV to ensure design documentation complies with the Planning Approval, REMMs, performance outcomes and contractual requirements. The Design Management Plan also details the assurance framework that has been developed to ensure all compliance obligations, including the requirements of this condition, have been allocated to relevant design packages. The assurance framework nominates the design stage where the requirements of this condition will be verified by the Independent Certifier. Refer to flooding response contingency planning in Section 6.2.4 and flood mapping in Section 5.6.

Ref #	Condition Requirements	Reference	How Addressed
Soils			
E114	Prior to the commencement of any work, erosion and sediment controls must be installed and maintained, as a minimum, in accordance with the publication Managing Urban Stormwater: Soils & Construction (4th edition, Landcom 2004) commonly referred to as the 'Blue Book'.	**Table 7-1** **Appendix A**	The requirements of this condition are reflected in **Table 7-1** (MMSW14). A soil conservation specialist will be engaged for the Project duration to provide ERSED advice including initial preparation and ongoing review of the PESCP. The process for the preparation, implementation and review of PECSPs is located in the Erosion and Sediment Control Management Procedure (**Appendix A**).
Contaminated sites			
E115	Prior to the commencement of any work that would result in the disturbance of moderate to high risk contaminated sites as identified in the documented listed in Condition A1, Detailed Site Investigations must be undertaken by a Contaminated Land Consultant certified under either the Environment Institute of Australia or New Zealand's "Certified Environmental Practitioner" (Site Contamination) scheme (CEnvP(SC)) or the Soil Science Australia "Certified Professional Soil Scientist Contaminated Site Assessment and Management (CPSS CSAM) scheme.	Contaminated Land Management Sub-plan	Detailed Site Investigation reports
E116	A Detailed Site Investigation Report must be prepared and submitted to the Planning Secretary for information following the completion of Detailed Site Investigations required by Condition E115. The report must be prepared in accordance with relevant guidelines made or approved by the EPA under section 105 of the *Contaminated Land Management Act 1997 (NSW)* and prepared by a Contaminated Land Consultant certified under	Contaminated Land Management Sub-plan	Detailed Site Investigation reports

Ref #	Condition Requirements	Reference	How Addressed
	either the Environment Institute of Australia or New Zealand's "Certified Environmental Practitioner" (Site Contamination) scheme (CEnvP(SC)) or the Soil Science Australia "Certified Professional Soil Scientist Contaminated Site Assessment and Management (CPSS CSAM) scheme. Nothing in this condition prevents the Proponent from preparing individual Site Contamination Reports for separate sites.		
E117	The Detailed Site Investigation Report must provide details on: (a) primary sources of contamination, for example potentially contaminating activities, infrastructure (such as underground storage tanks, fuel line, sumps or sewer lines) or site practices; (b) contaminant dispersal in air, hazardous ground gases, surface water, groundwater, soil vapour, separate phase contaminants, sediments, infrastructure (e.g. concrete), biota, soil and dust; (c) contaminant characterisation and behaviour (volatility, leachability, speciation, degradation products and physical and chemical conditions on-site which may affect how contaminants behave); (d) potential effects of contaminants on human health, including the health of occupants of built structures (for example arising from risks to service lines from hydrocarbons in groundwater, or risks to concrete from acid sulphate soils) and the environment; (e) potential and actual contaminant migration routes including potential preferential pathways; (f) the adequacy and completeness of all information available for use in the assessment of risk and for making decisions on	Contaminated Land Management Sub-plan	Detailed Site Investigation reports Refer to the Contaminated Land Management Sub-plan

Ref #	Condition Requirements	Reference	How Addressed
	management requirements, including an assessment of uncertainty; (g) the review and update of the conceptual site model from the preliminary and detailed site investigations; (h) nature and extent of any existing remediation (such as impervious surface cappings); and/or; (i) whether the land is suitable (for the intended final land use) or can be made suitable through remediation.		
E118	Should remediation be required to make land suitable for the final intended land use, a Remediation Action Plan must be prepared or reviewed and approved, by consultants certified under either the Environment Institute of Australia and New Zealand's Certified Environmental Practitioner (Site Contamination) scheme (CEnvP(SC)) or the Soil Science Australia Certified Professional Soil Scientist Contaminated Site Assessment and Management (CPSS CSAM) scheme. The Remedial Action Plan must be prepared in accordance with relevant guidelines made or approved by the EPA under section 105 of the *Contaminated Land Management Act 1997* and must include measures to remediate the contamination at the site to ensure the site will be suitable for the proposed use when the Remedial Action Plan is implemented. The Remedial Action Plan must be submitted to the Planning Secretary for information prior to undertaking remediation.	Contaminated Land Management Sub-plan	Detailed Site Investigation reports / Remedial Action Plan if required

Ref #	Condition Requirements	Reference	How Addressed
E119	The Remediation Action Plan must include measures to remediate the contamination at the site to ensure the site will be suitable for the proposed use and detail how the environmental and human health risks will be managed during the disturbance, remediation and/or removal of contaminated soil/sediment or groundwater. Nothing in this condition prevents the preparation of individual Remediation Action Plans for separate sites.	Contaminated Land Management Sub-plan Remedial Action Plan if required	Remedial Action Plan if required
E120	Prior to commencing remediation, a Section B Site Audit Statement(s) must be prepared by a NSW EPA-accredited Site Auditor that certifies that the Remediation Action Plan is appropriate and that the site can be made suitable for the proposed use. The Remedial Action Plan must be implemented and any changes to the Remedial Action Plan must be approved in writing by the NSW EPA accredited Site Auditor. Nothing in this condition prevents the Proponent from engaging the Site Auditor to prepare Site Audit Statements for separate sites.	Contaminated Land Management Sub-plan	Site Audit Report / Site Audit Statement
E121	A Section A1 or A2 Site Audit Statement (accompanied by an Environmental Management Plan) and its accompanying Site Audit Report, which state that the contaminated land disturbed by the work has been made suitable for the intended land use, must be submitted to the Planning Secretary and Council after remediation and no later than prior to the commencement of operation of the CSSI. Nothing in this condition prevents the Proponent from obtaining Section A Site Audit Statements for individual parcels of remediated land.	Contaminated Land Management Sub-plan	Site Audit Report / Site Audit Statement

Ref #	Condition Requirements	Reference	How Addressed
E122	Contaminated land must not be used for the purpose approved under the terms of this approval until a Section A1 or A2 Site Audit Statement is obtained which states that the land is suitable for that purpose and any conditions on the Section A Site Audit Statement have been complied with.	Contaminated Land Management Sub-plan	Site Audit Report / Site Audit Statement
E123	An Unexpected Finds Procedure for Contamination must be prepared before the commencement of work and must be followed should unexpected contamination or asbestos (or suspected contamination) be excavated or otherwise discovered. The procedure must include details of who will be responsible for implementing the unexpected finds procedure and the roles and responsibilities of all parties involved. The procedure must be submitted to the Planning Secretary for information.	Contaminated Land Management Sub-plan	Unexpected Finds Procedure for Contamination
E124	The Unexpected Finds Procedure for Contamination must be implemented throughout construction.	Contaminated Land Management Sub-plan	Unexpected Finds Procedure for Contamination
Sustainability			
E127	A Water Reuse Strategy must be prepared, which sets out options for the reuse of collected stormwater and groundwater during construction and operation. The Water Reuse Strategy must include, but not be limited to: (a) evaluation of reuse options; (b) details of the preferred reuse option(s), including volumes of water to be reused, proposed reuse locations and/or	Section 8.4 Sustainability Management Strategy	As detailed in Section 8.4, a Water Reuse Strategy has been prepared in accordance with the requirements of this condition. The Strategy, included in the Sustainability Management Strategy, will be applied during construction and will be made publicly available.

Ref #	Condition Requirements	Reference	How Addressed
	activities, proposed treatment (if required), and any additional licences or approvals that may be required; (c) measures to avoid misuse of recycled water as potable water; (d) consideration of the public health risks from water recycling; and (e) a time frame for the implementation of the preferred reuse option(s). The Water Reuse Strategy must be prepared based on best practice and advice sought from relevant agencies, as required. The Strategy must be applied during construction and operation. Justification must be provided to the Planning Secretary if it is concluded that no reuse options prevail. A copy of the Water Reuse Strategy must be made publicly available. *Note: Nothing in this condition prevents the Proponent from preparing separate Water Reuse Strategies for the construction and operational phases of the CSSI.*		
Waste			
E205	All waste must be classified in accordance with the EPA's Waste Classification Guidelines, with appropriate records and disposal dockets retained for audit purposes.	Waste and Resource Management Sub-plan	Refer to the Waste and Resource Management Sub-plan
Water			

Ref #	Condition Requirements	Reference	How Addressed
E206	The CSSI must be designed, 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.	Design Management Plan Design Reports **Table 7-1** **Appendix E**	As detailed in the Design Management Plan, a design review process has been established by the CPB Downer JV to ensure design documentation complies with the Planning Approval, REMMs, performance outcomes and contractual requirements. The Design Management Plan also details the assurance framework that has been developed to ensure all compliance obligations, including the requirements of this condition, have been allocated to relevant design packages. The assurance framework nominates the design stage where the requirements of this condition will be verified by the Independent Certifier. Management and mitigation measures have been developed to contribute towards achievement of the NSW Water Quality Objectives during construction (**Table 7-1**). Assurance will be provided through the implementation of the Surface Water Monitoring Program (**Appendix E**).
E207	The Proponent must consider the *Guidelines for controlled activities on waterfront land Riparian corridors* (Department of Industry 2018) when carrying out work within 40 metres of a watercourse, including its bed.	**Table 7-1**	In the event of work within 40 metres of a watercourse, including its bed, the CPB Downer JV will consider the *Guidelines for controlled activities on waterfront land Riparian corridors* (Department of Industry 2018) (**Table 7-1**, MMSW42). **Note:** No works have been identified being undertaken within 40m of a watercourse including is bed

Ref #	Condition Requirements	Reference	How Addressed
E208	Unless an EPL is in force in respect to the CSSI and that licence specifies alternative criteria, discharges from construction water treatment plants to surface waters must not exceed: (a) the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2018* (ANZG 2018) default guideline values for toxicants at the 90 per cent species protection level; (b) for physical and chemical stressors, the guideline values set out in Tables 3.3.2 and 3.3.3 of the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000*; and (c) for bioaccumulative and persistent toxicants, the ANZG 2018 values at a minimum of 95 per cent species protection level. Where the ANZG 2018 does not provide a default guideline value for a particular pollutant, the approaches set out in the ANZG 2018 for deriving guideline values, using interim guideline values and/or using other lines of evidence such as international scientific literature or water quality guidelines from other countries, must be used.	**Table 7-1**	Discharges from construction water treatment plants will not commence until receipt of an EPL which incorporates this activity. Relevant conditions of the EPL and discharge criteria will be included in this Sub-plan as required (refer to **Table 7-1**, MMSW43).
E210	If construction stage stormwater discharges are proposed, a water pollution impact assessment will be required to inform licensing consistent with section 45 of the POEO Act. Any such assessment must be prepared in consultation with the EPA and be consistent with the National Water Quality Guidelines, with a level of detail commensurate with the potential water pollution risk.	Construction Discharge Impact Assessment	A Construction Discharge Impact Assessment (SEEC, 11 October 2021) has been prepared for the Project and submitted to the EPA in support of an EPL application. The Discharge Impact Assessment will inform the EPL discharge criteria.

3.3 Environmental Management Measures

Relevant REMMs, as identified in Part D of the RtS, are listed in **Table 3-2.** A cross reference is also included to indicate where the condition is addressed in this Plan or other Project management documents.

Table 3-2 Environmental management measures relevant to this SWMP

Ref #	REMM	Reference	How Addressed
Geology and soils			
SG5	Erosion and sediment measures will be implemented at all work sites in accordance with the principles and requirements in Managing Urban Stormwater – Soils and Construction, Volume 1 (Landcom, 2004) and Volume 2D (NSW Department of Environment and Climate Change, 2008), commonly referred to as the 'Blue Book'.	**Table 7-1** **Appendix A**	The requirements of this REMM are reflected in **Table 7-1** (MMSW14). A soil conservation specialist will be engaged for the Project duration to provide ERSED advice including initial preparation and ongoing review of the PESCP. The process for the preparation, implementation and review of PECSPs is included in the Erosion and Sediment Control Management Procedure (**Appendix A**).
SG6	Potentially contaminated areas directly affected by the project will be investigated and managed in accordance with the requirements of guidance endorsed under section 105 of the *Contaminated Land Management Act 1997*. This includes, but is not limited to, further investigations in potential areas of environment interest in the project footprint, including … Warringah Freeway (from North Sydney to Cammeray). Subject to the outcomes of the investigations, a Remediation Action Plan will be implemented in the event that site remediation is warranted.	Detailed Site Investigation report	The requirements of this REMM are addressed in the Contaminated Land Management Sub-plan

Ref #	REMM	Reference	How Addressed
	The Remediation Action Plan will be prepared and implemented in accordance with Managing Land Contamination: Planning Guidelines SEPP 55 – Remediation of Land (Department of Urban Affairs and Planning and EPA, 1998). An independent NSW EPA Accredited site Auditor will be engaged where contamination is complex to review applicable contamination reports and evaluate the suitability of sites for a specified use as part of the project.		
SG7	Any soil/fill materials surplus to construction will be classified in accordance with the NSW EPA (2014a) Waste Classification Guidelines.	Waste and Resource Management Sub-plan	The requirements of this REMM are addressed in the Waste and Resource Management Sub-plan.
SG8	Asbestos handling and management will be carried out in accordance with relevant legislation, codes of practice and Australian standards.	Contaminated Land Management Sub-plan	The requirements of this REMM are addressed in the Contaminated Land Management Sub-plan
SG10	The Construction Waste Management Plan for the project will include procedures for handling and storing potentially contaminated substances.	Construction Waste Management Sub-plan	CEMP 4.11 The requirements of this REMM are addressed in the Construction Waste Management Plan
SG11	The discovery of previously unidentified contaminated material will be managed in accordance with an unexpected contaminated lands discovery procedure, as outlined in the *Guideline for the Management of Contamination* (Roads and Maritime, 2013a).	Contaminated Land Management Sub-plan	The requirements of this REMM are addressed in the Contaminated Land Management Sub-plan
SG23	Emergency Spill procedures will be developed to avoid and manage accidental spillages of fuels, chemicals, and fluids to minimise the risk of human health impacts and contamination of groundwater.	**Table 7-1** **Appendix D**	A Spill Management Procedure has been developed for the Project (**Appendix D**, **Table 7-1**, MMSW61). The procedure includes measures to avoid and manage

Ref #	REMM	Reference	How Addressed
			accidental spillages of fuels, chemicals, and fluids to minimise the risk of human health impacts and contamination of groundwater.
Hydrodynamics and water quality			
WQ1	Erosion and sediment measures will be implemented at all work sites and surface road upgrades in accordance with the principles and requirements in *Managing Urban Stormwater – Soils and Construction, Volume 1 (Landcom, 2004), Managing Urban Stormwater: Volume 2D Main Road Construction* (NSW Department of Environment and Climate Change, 2008) and relevant guidelines, procedures and specifications of Transport for NSW. A soil conservation specialist will be engaged by both Transport for NSW and the Contractor for the duration of construction of the project to provide advice regarding erosion and sediment control including review of Erosion and Sediment Control Plans (ESCPs).	**Table 7-1** **Appendix A**	The requirements of this REMM are reflected in **Table 7-1** (MMSW12). A soil conservation specialist will be engaged for the Project duration to provide ERSED advice including initial preparation and ongoing review of the PESCP (**Appendix A**).
WQ2	Emergency spill procedures will be developed to avoid and manage accidental spillages of fuels, chemicals or fluids during construction.	**Table 7-1** **Appendix D**	A Spill Management Procedure has been developed for the Project (**Appendix D**, **Table 7-1**, MMSW61). The procedure includes measures to avoid and manage accidental spillages of fuels, chemicals, and fluids to minimise the risk of human health impacts and contamination of groundwater.
WQ3	Discharges from wastewater treatment plants during the construction phase will be required to meet the following discharge criteria:	**Table 7-1**	Discharges from construction water treatment plants will not commence until receipt of an EPL which incorporates this activity. Relevant conditions of the EPL and discharge criteria will be included in

Ref #	REMM	Reference	How Addressed
	• The relevant physical and chemical stressors set out in of the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC/ARMCANZ, 2000), and • The ANZG (2018) 90 per cent species protection levels for toxicants generally, with the exception of those toxicants known to bioaccumulate, which will be treated to meet the ANZG (2018) 95 per cent species protection levels, and • The draft ANZG default guideline values for iron (in fresh and marine water, if available) and zinc (in marine water).		this Sub-plan as required (refer to **Table 7-1**, MMSW43).
WQ4	A freshwater quality monitoring program for the construction of the project will be developed and implemented, with consideration of the freshwater monitoring being carried out for the M4-M5 Link and Beaches Link and Gore Hill Freeway Connection projects. The program will be developed in consultation with the Environment Protection Authority, Department of Planning, Industry and Environment (Regions, Agriculture and Resources), Department of Planning, Industry and Environment (Water), and relevant councils. Sampling locations and monitoring methodology will be in accordance with the *Guideline for Construction Water Quality Monitoring* (RTA 2003) and ANZG (2018). If exceedances of the criteria established under the freshwater monitoring program are detected, a management response will be triggered. This response will be documented within the construction freshwater quality monitoring program.	**Table 4-1** **Appendix E** **Appendix F**	A Surface Water Monitoring Program has been developed in accordance with the requirements of this REMM (**Appendix E**). The Program has been prepared in consultation with DPIE Water, Sydney Water, the EPA and relevant councils. Records of consultation are included in **Appendix F.**
WQ7	The potential for scour and erosion of watercourse bed and banks will be considered during the design of new and augmented discharge outlets.	Design Management Plan Design reports	The potential for scour and erosion of watercourse bed and banks will be considered during the design of new and augmented discharge outlets. As detailed in the Design Management Plan, a design

Ref #	REMM	Reference	How Addressed
	Construction work activities within or next to the watercourses and drainage lines will be minimised as much as reasonably practicable to minimise disturbance of sediments in or near the waterway.	**Table 7-1**	review process has been established by the CPB Downer JV to ensure design documentation complies with the Planning Approval, REMMs, performance outcomes and contractual requirements. The Design Management Plan also details the assurance framework that has been developed to ensure all compliance obligations, including the design requirements of this REMM, have been allocated to relevant design packages. The assurance framework nominates the design stage where the requirements of this commitment will be verified by the Independent Certifier. Construction work activities within or next to watercourses and drainage lines will be minimised as much as reasonably practicable to minimise disturbance of sediments in or near the waterway (**Table 7-1**, MMSW42).
WQ13	If sediment basins are required a discharge impact assessment, commensurate with the potential risk and consistent with the National Water Quality Guidelines (ANZG (2018)) and Managing Urban Stormwater – Soils and Construction, Volume 1 (Landcom, 2004) will be prepared to inform the discharge criteria.	Construction Discharge Impact Assessment	A Construction Discharge Impact Assessment (SEEC, 11 October 2021) has been prepared for the Project and submitted to the EPA in support of an EPL application. The Discharge Impact Assessment will inform the EPL discharge criteria. The assessment captures the requirements of this REMM.
Flooding			

Ref #	REMM	Reference	How Addressed
F5	Spoil stockpiles will be located in areas which are not subject to frequent inundation by floodwater, ideally outside the 10% AEP flood extent. The exact level of flood risk accepted at stockpile sites will depend on the duration of stockpiling operations, the type of material stored, the nature of the receiving drainage lines and also the extent to which that would impact flooding conditions in adjacent development.	Ancillary Site Establishment Management Plan	Spoil stockpile locations are limited to ancillary sites. As such, the requirements of this commitment are reflected in the Ancillary Site Establishment Management Plan.
F6	Site facilities will be located outside high flood hazard areas based on a 1% AEP flood.	Ancillary Site Establishment Management Plan	The requirements of this REMM are reflected in the Ancillary Site Establishment Management Plan.
F7	Flood emergency management measures for construction and operation of the project will be incorporated into relevant environmental and/or safety management documentation.	Section 5.6 **Table 7-1**	The requirements of this REMM are reflected in Section 5.6 and **Table 7-1** (MMSW50 and MMSW51).
F8	Detailed construction planning will consider flood risk at construction sites and construction support sites. This will include: • A review of site layout and staging of construction activities to avoid or minimise obstruction of overland flow paths and limit the extent of flow diversion required • Identification of measures to not worsen flood impacts on the community and on other property and infrastructure during construction up to and including the 1% AEP flood event where reasonable and feasible • Measures to mitigate alterations to local runoff conditions due to construction activities.	Section 6.2.4	The requirements of this REMM are reflected in Section 6.2.4.
Hazards and risks			

Ref #	REMM	Reference	How Addressed
HR1	Dangerous goods and hazardous materials will be stored in accordance with supplier's instructions and relevant legislation, Australian Standards, and applicable guidelines and may include bulk storage tanks, chemical storage cabinets/containers or impervious bunds.	Ancillary Site Establishment Management Plan	The requirements of this REMM are addressed in the Ancillary Site Establishment Management Plan. Chemical storage and refuelling areas will be identified in ECMs and monitored during routine inspections. Flammable liquid cabinets shall be included at each compound where liquid chemicals area being stored. Bunded pallets will be provided for storage of chemical during works and returned to flammable liquid cabinets at the end of shift.
HR2	Dangerous goods and hazardous substances will be transported in accordance with relevant legislation and codes, including the Dangerous Goods (Road and Rail Transport) Act 2008, Road and Rail Transport (Dangerous Goods) (Road) Regulation 1998 and the Australian Code for the Transport of Dangerous Goods by Road and Rail (National Transport Commission, 2008).	Traffic, Transport and Access Management Sub-plan	This requirement is included in the Traffic, Transport and Access Management Sub-plan
Resource use and waste management			
WM5	Opportunities for wastewater reuse and recycling, including recirculating water during tunnel excavation to use for dust suppression and offsite reuse, will be investigated and implemented where feasible and reasonable.	Water Reuse Strategy Waste and Resource Management Sub-plan	The requirements of this REMM are addressed in the Water Reuse Strategy and the Waste and Resource Management Sub-plan (Table 6-1).

4 Consultation

This SWMP will be developed and finalised in consultation with nominated agencies in accordance with MCoA C4(c). Consultation with each agency, including responses received and how any issues raised were addressed in the development of this Sub-plan are included in the records of consultation included in **Appendix F**.

Community feedback and complaints relating to soil and water will be managed in accordance with the Community Communication Strategy and Complaints Management System.

5 Existing Environment

The Project is located within the North Sydney and Willoughby local government areas (LGAs). The Warringah Freeway Upgrade will be carried out on the Warringah Freeway from around Fitzroy Street at Milsons Point to around Willoughby Road at Naremburn. Upgrade works will include improvements to bridges across the Warringah Freeway, and upgrades to surrounding roads.

The areas surrounding the Project alignment and construction support sites are mostly residential, except for clusters of commercial and industrial receivers around the North Sydney central business district.

The following sections summarise what is known about factors influencing soils and water within and adjacent to the Project corridor. The key reference documents are:

- Western Harbour Tunnel and Warringah Freeway Upgrade Environmental Impact Statement (January 2020)
    - Chapter 16: Geology, soils and groundwater
    - Chapter 17: Hydrodynamics and water quality
    - Chapter 18: Flooding
    - Appendix M Technical Working Paper: Contamination
    - Appendix N Technical Working Paper: Groundwater
    - Appendix O Technical Working Paper: Surface water quality and hydrology
    - Appendix R Technical Working Paper: Flooding.

5.1 Topography and soil characteristics

The project area topography has a moderate incline towards North Sydney, reaching an elevation of around 90 metres Australian Height Datum at the Pacific Highway, North Sydney.

Hawkesbury Sandstone (Rh) underlies the majority of the project area, with isolated occurrences of Ashfield Shale (Rwa) in the north-eastern portion of the project area, around North Sydney and Neutral Bay. The solid geology within the study area is cross cut by a number of geological structural features that may impact groundwater flow. These include dykes and geological faults: mapping of these features is provided in **Figure 5-1**.

The Sydney 1:100,000 Soil Landscape Series Sheet 9130 (NSW Department of Mineral Resources, 1983) indicates that the residual soils within the project area include Blacktown (bt), Disturbed (xx), Hawkesbury (ha), and Gymea (gy) landscape groups. The majority of the project area is underlain by the Gymea landscape group with Hawkesbury landscape group surrounding the shorelines and isolated occurrences of the Blacktown landscape group around North Sydney.

The generalised acid sulfate soil probability across the project area has been assessed as follows:

- Balls Head to Crows Nest – (C4) extremely low probability/very low confidence
- Artarmon – (B4) low probability/very low confidence.

Naturally occurring soil salinity is not expected to be encountered within the project footprint. Ashfield Shale may contain marine salts which will result in saline groundwater.

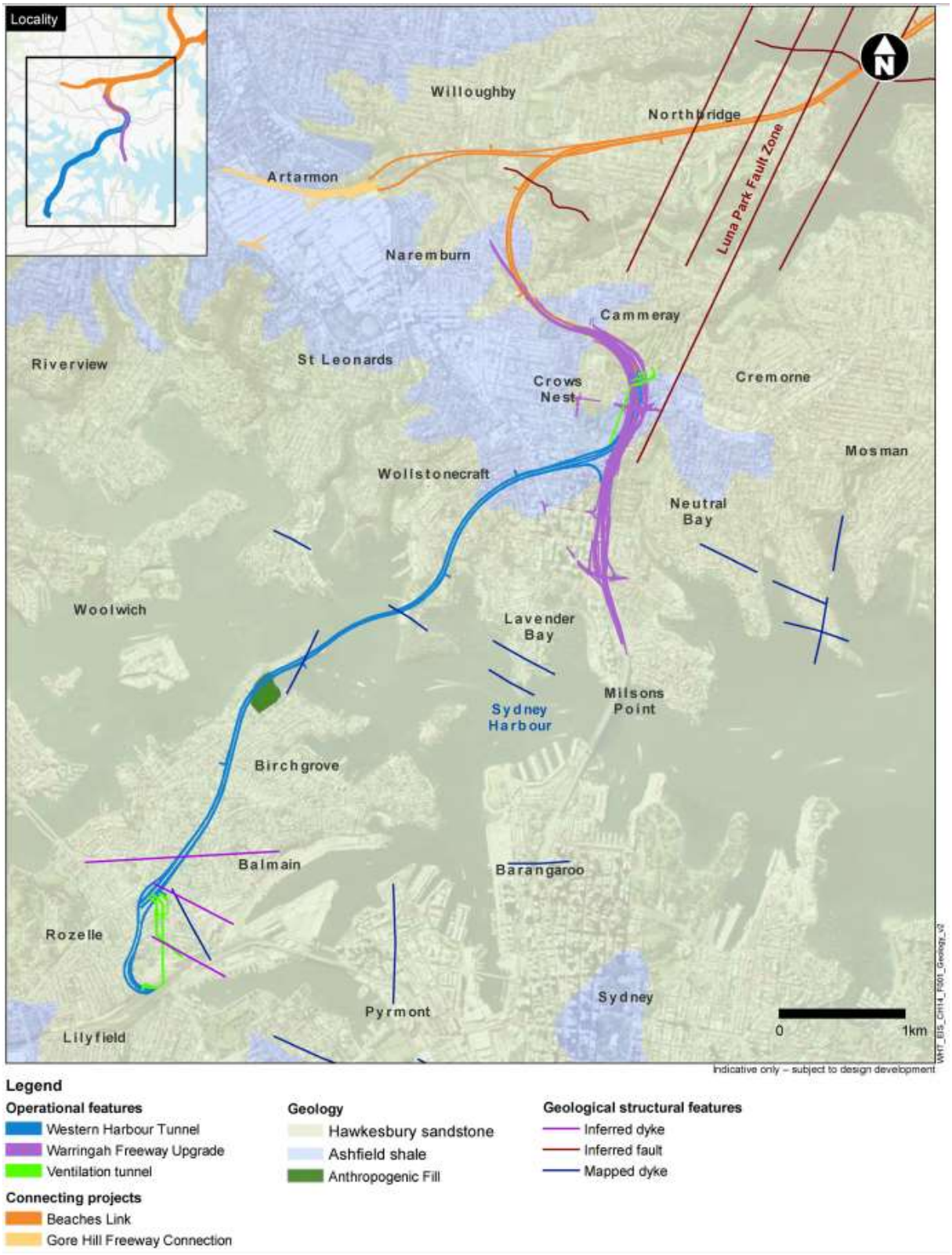


Figure 5-1 Regional Geological Context

Further detail regarding the topography, geology and soils associated with the Project are provided in Chapter 16 of the EIS.

5.2 Surface water

Surface water investigations were undertaken as part of the EIS and are presented in Appendix O of the EIS (Technical working paper: Surface water quality and hydrology) and summarised in the sections that follow.

5.2.1 Existing Drainage Regimes

The Warringah Freeway Upgrade intersects five catchment areas: Milson Park, Anderson Park, Willoughby Creek, Brook Street Tributary and Flat Rock Creek.

The main bodies of water surrounding the project area are Middle Harbour and Sydney Harbour, which are estuaries. The main waterways in proximity to the Project are Flat Rock Creek, Quarry Creek, and Willoughby Creek. All are first order streams that discharge directly to Middle Harbour. A brief description of these three waterways is provided in **Table 5-1**.

Table 5-1 Description of key waterways and catchments relevant to the Project

Waterway/catchment	Description	Relevant project features
Willoughby Creek (Willoughby Creek catchment) 	• Willoughby Creek is a small modified concrete and rock channel which drains the suburbs of Neutral Bay and Cammeray directly into Willoughby Bay at Cremorne • The development of impervious surfaces within the catchment has increased the volume and rate of runoff, which has in turn necessitated flood mitigation measures • Willoughby Bay and Long Bay are popular boating and swimming areas for local residents.	• Mid portion of Warringah Freeway Upgrade • Cammeray Golf Course (WHT10 and WFU8) and Rosalind Street east (WFU9) construction support sites.
Quarry Creek (part of Flat Rock Creek catchment) 	• Quarry Creek is a small natural estuarine tributary of Flat Rock Creek which drains Cammeray • The creek has steep embankments on both sides now densely vegetated by weeds and has limited accessibility.	Northern portion of Warringah Freeway Upgrade.
Flat Rock Creek (Flat Rock Creek catchment)  	• Flat Rock Creek is predominantly a concrete lined (open and closed) stormwater channel which drains the suburbs of Artarmon, Willoughby and Naremburn. It travels underground between Naremburn and Willoughby. The natural drainage characteristics of Flat Rock Creek have been altered by residential, commercial and industrial development • At its downstream reach the creek drains a steep catchment characterised by rocky riffle and runs. The downstream reaches are surrounded by native Coachwood forests with walking tracks which provide access to large sporting fields at Tunks Park, Cammeray • The end point of the creek is a tidally influenced naturalised estuary at the base of Flat Rock Gully discharging into Long Bay.	• Northern portion of the Warringah Freeway Upgrade • Waltham Street construction support site (WHT11). Drainage lines from this construction support site drain towards Flat Rock Creek.

The southern end of the Project will be located within the Milson Park catchment and Anderson Park catchment. These two catchments are dominated by drainage lines that drain towards Sydney Harbour, rather than watercourses.

The locations of the waterways and catchments associated with the project are shown in **Figure 5-2** and **Figure 5-3**.

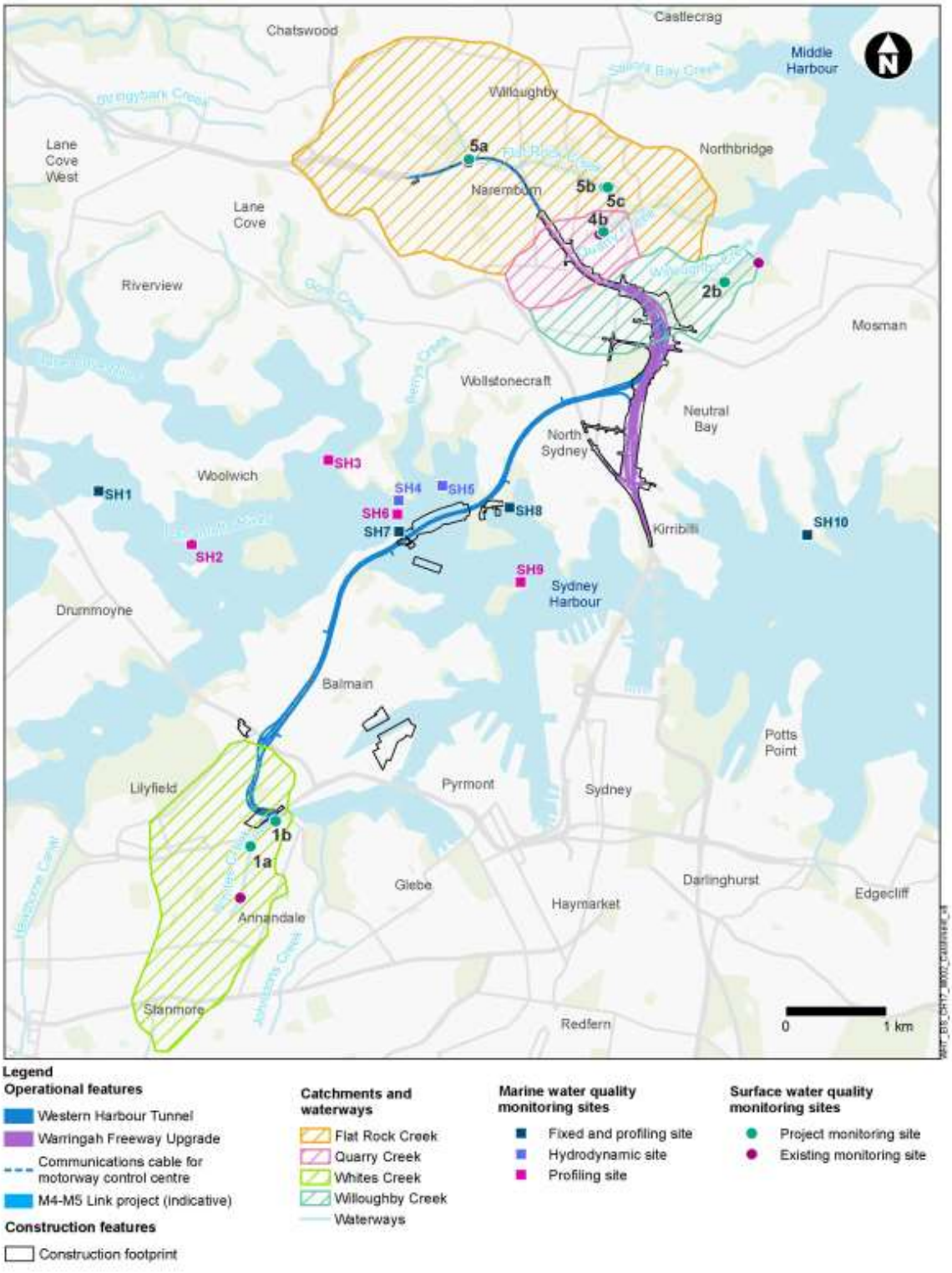


Figure 5-2 Catchments, waterways and water quality monitoring locations

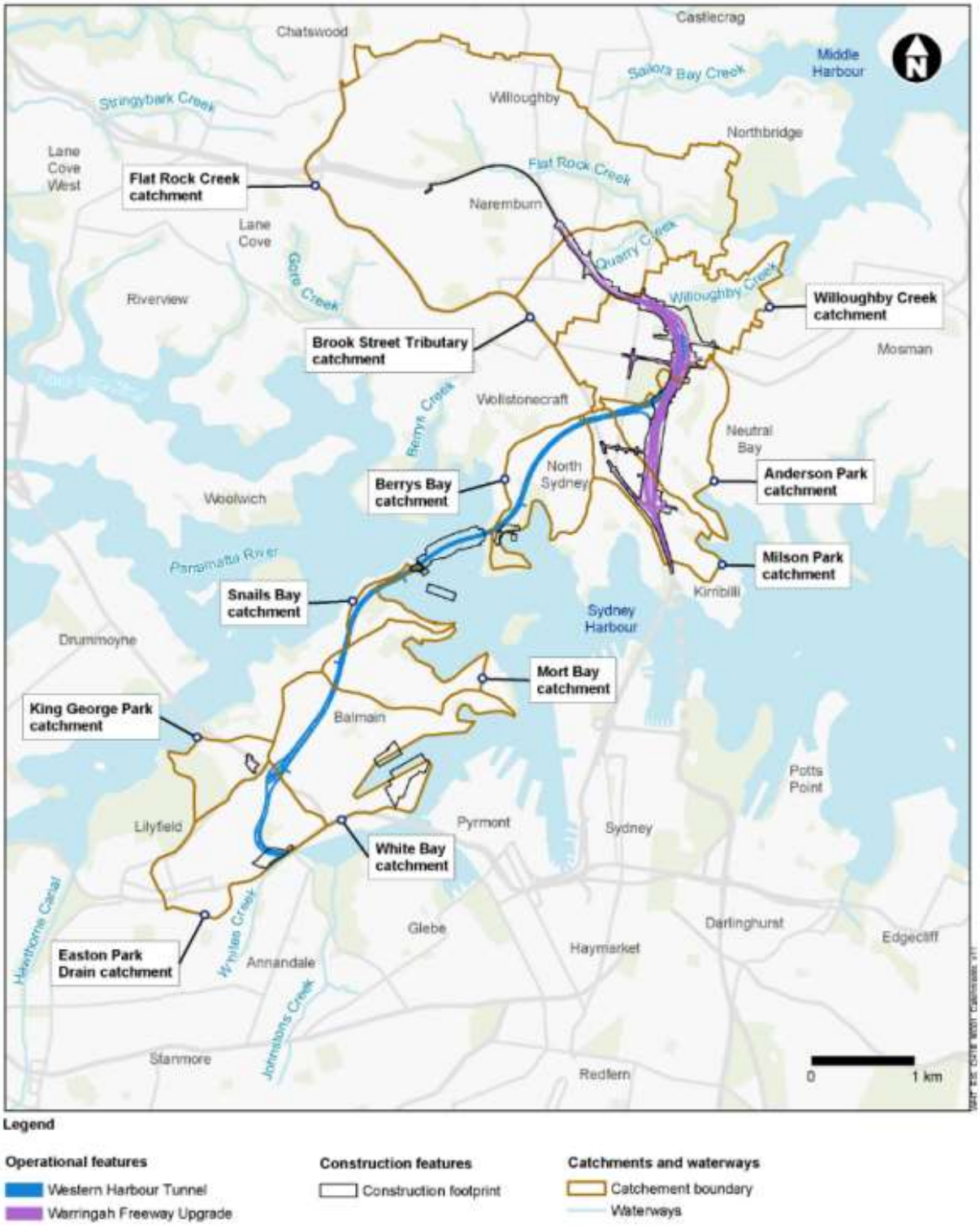


Figure 5-3 Catchment Areas

5.2.2 Surface Water Quality

The water quality of waterways relevant to the Project is influenced by several factors including:

- Current and former polluting land uses within the catchments
- Stormwater and sewage overflows and leachate from contaminated and/or reclaimed land
- Urbanisation of the catchments and subsequent reduction in permeable area, increasing run-off and pollutant loads entering waterways.

A review of the existing water quality data and site-specific water quality monitoring indicates that the waterways are in very poor condition and are representative of a heavily urbanised system.

The water quality of each assessed waterway is summarised in **Table 5-2**.

Table 5-2 Existing water quality conditions in the study area[1]

Waterway	Commentary on ANZG (2018) and ANZECC/ARMCANZ (2000) indicators	Monitoring sites/data source (refer Figure 5-2)
Willoughby Creek	• High levels of heavy metals • High nutrient concentrations • Low dissolved oxygen levels	• Site 2b
Quarry Creek	• High levels of heavy metals • High nutrient concentrations • High pH (ie alkaline conditions) • High dissolved oxygen levels • Very high faecal coliform counts indicating microbial contamination	• Site 4b • North Sydney Council
Flat Rock Creek	• High concentrations of heavy metals • Very high nutrient concentrations, indicating eutrophic conditions • Microbiological contamination • High pH (ie alkaline conditions) in some areas • Varied dissolved oxygen levels	• Sites 5a, 5b, 5c • North Sydney Council

A Surface Water Quality Monitoring Program has been prepared to meet construction conditions for the Project (refer to **Appendix E**). Further detail of the Construction Monitoring Programs is provided in Section 8.3 of this SWMP.

[1] Source: EIS Table 17-9

5.3 Ground water

The regional water table across the study area typically mimics topography and flows from areas of high topographic relief to areas of low topographic relief. The depth of the water table is highly variable and can range from close to ground surface in low lying areas to 100 metres below ground level beneath elevated ridgelines. Localised water tables may also occur due to the highly stratified nature of the Hawkesbury Sandstone.

Groundwater investigations were undertaken as part of the EIS and are presented in Appendix N (Technical working paper: Groundwater).

A composite water table contour map for the study area is presented in **Figure 5-4**. These contours were created using:

- Baseline groundwater data from the groundwater monitoring network installed for the Project
- Water levels from the DPI Water Pinneena database
- Water levels obtained from other nearby projects, including Sydney Metro City & Southwest (Chatswood to Sydenham) (Jacobs, 2016) and M4-M5 Link (AECOM, 2017a).

The contours provide a general overview of key groundwater flow directions and trends along the alignment.

Construction works associated with the Warringah Freeway Upgrade are not expected to intercept the water table except where portal construction will be undertaken for both the Western Harbour Tunnel and the Beaches Link which is not anticipated to commence until mid-2023. This SWMP will be updated prior to these works being undertaken to describe the management, processes and mitigation measures necessary to manage groundwater as a result of these works.

5.3.1 Groundwater dependent ecosystems

A search of the National Atlas of Groundwater Dependent Ecosystems (Bureau of Meteorology, 2017) did not identify any groundwater dependent ecosystems in the study area (refer to EIS Chapter 19 (Biodiversity)). The nearest groundwater dependent ecosystem (Coastal Sandstone Gully Forest, Sandstone Riparian Scrub and Coastal Sand Forest) is located in the upper reaches of Flat Rock Creek at Munro Park, around a kilometre north-east of the Warringah Freeway Upgrade and beyond the range of potential impact.

5.3.2 Existing groundwater bores

Details of groundwater bores sourced from the DPI Water Pinneena database and the Bureau of Meteorology Groundwater Explorer are shown in **Figure 5-5** and **Figure 5-5.** There were no Water Access Licence (WAL) users within 2.5 kilometres of the Project. There are several registered groundwater bores within a one kilometre radius of the Project. These are primarily bores installed for monitoring purposes. Two bores are recorded as being installed for abstractive use: one for irrigation purposes and one for water supply purposes. One further bore is for an unknown purpose.

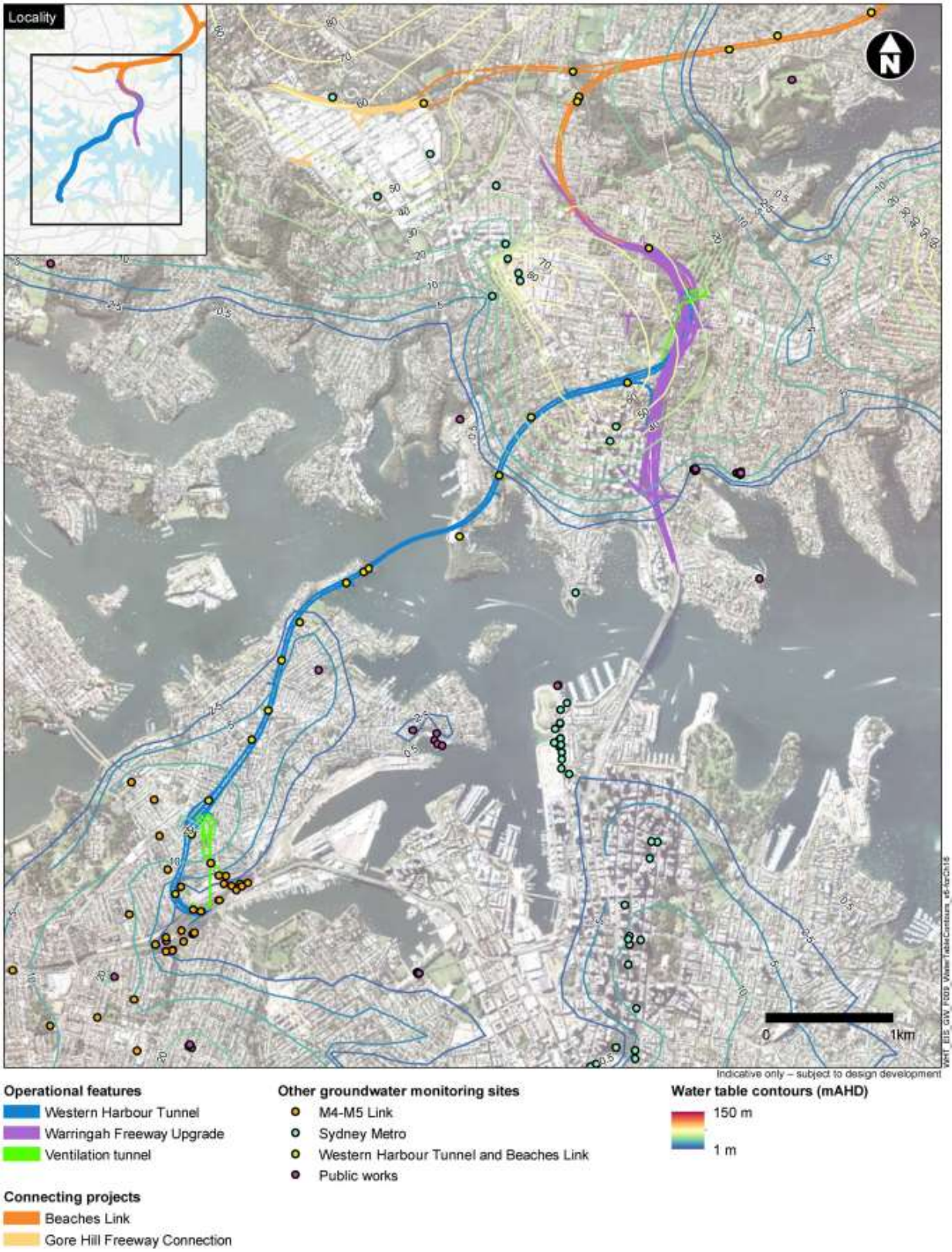


Figure 5-4 Water table contour map and groundwater monitoring network

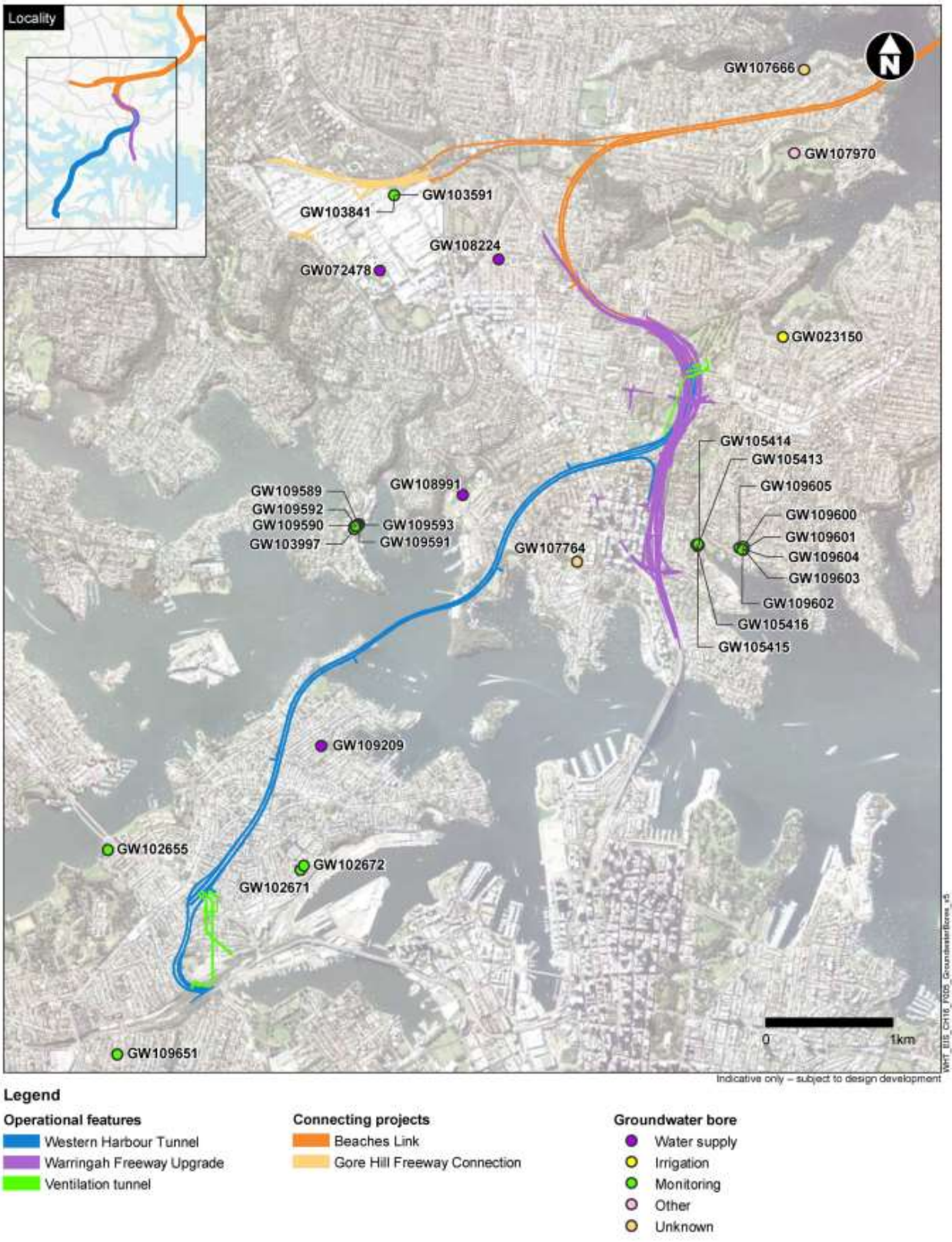


Figure 5-5 Existing groundwater bores within one kilometre of the alignment

5.4 Rainfall

Rainfall in Sydney varies substantially both year-to-year and month-to-month. Much of the variability in precipitation is due to large-scale climate variations, with El Niño Southern Oscillation being the most important. Weather data recorded at Observatory Hill, Sydney indicates that average annual rainfall is 1213 millimetres. Average annual rainfall between the years 1858 and 2020 ranged from a minimum of 583 millimetres (recorded in year 1888) to a maximum of 2194 millimetres (recorded in year 1950).

Table 5-3 Summary of rainfall records from Observatory Hill Sydney (BoM station ID: 66214) (BoM 2021)[2]

Observatory Hill Sydney (BoM station ID: 66214)				
Month	**Monthly Rainfall depth (mm)**			**Mean number of rain days**
	Mean	**Highest**	**Lowest**	
January	101	387	6	12
February	119	631	3	13
March	132	521	8	14
April	127	622	1	13
May	117	585	3	13
June	133	643	4	13
July	96	336	2	11
August	80	483	0	10
September	68	356	0	11
October	77	285	1	12
November	84	517	1	12
December	77	402	1	12

5.5 Rainfall erosivity factor

The rainfall erosivity factor is a measure of the ability of rainfall to cause erosion (referred as “R” in the Revised Universal Soil Loss Equitation RUSLE). The rainfall erosivity factor is used to determine the soil loss in tonnes per hectare over one year and is used in calculations when sizing construction sediment basins.

[2] Based on rainfall records from Years 1858 to 2020
Source: http://www.bom.gov.au/climate/averages/tables/cw_066062.shtml Retrieved 10/02/2021

The Project has a Rainfall Erosivity Factor erosion index (EI) of 3,500 EI. Sydney is the closest location with detailed R-factor data and is detailed below in **Table 5-44.** The Sydney 5-day 85th percentile rainfall depth is 38.8mm.

Table 5-4 Monthly % and annual rainfall erosivity (R - factor) values for Sydney

Monthly % and annual rainfall erosivity (R – factor) values													
	Dec	Jan	Feb	Mar	Apr	Mar	Jun	July	Aug	Sep	Oct	Nov	Year
%	6	8	10	11	10	10	11	8	7	6	6	7	100
R - Value	223	292	344	382	367	338	384	277	231	197	223	243	3500

5.6 Flooding

Table 5-5 lists the existing flood models that were used as the basis for defining the nature of flooding and drainage behaviour in the vicinity of the construction and operational components of the Project.

The flood models that were developed as part of L&A (2018) and WMA (2016) were updated in order to more accurately define flood behaviour in the vicinity of the Project operational footprint, and in particular flooding in the vicinity of the proposed tunnel portals.

Table 5-5 Source of Flood Models

Catchment	Source of flood models	Project phase
Brook Street Drain	*Flat Rock Creek Catchment Flood Study and Overland Flow Mapping (Lyall and Associates (L&A), 2018)*	Construction and operation
Willoughby Creek	*North Sydney Flood Study (WMA, 2016)*	Construction and operation
Anderson Park (Neutral Bay Harbour)		
Milson Park (Careening Cove)		Construction and operation

5.6.1 Milson Park

Up to 1% Annual Exceedance Probability (AEP)

An overland flow path is shown to occur due to surcharge of the drainage system in Mount Street and Walker Street during a 10% AEP event. Overland flow collects at the sag in Arthur Street between Mount Street and the Pacific Highway, where it surcharges onto the northbound carriageways of the Warringah Freeway. The northern section of Arthur Street near its intersections with Mount Street operates as a high hazard floodway during a 1% AEP storm event.

Flow that discharges onto the Warringah Freeway from Arthur Street and at St Leonards Park combines with local catchment runoff and pond at the sags in the northbound and southbound carriageways that are located to the north of the High Street overbridge (hereafter referred to and identified as 'the southern Warringah Freeway sag').

Surcharge of the existing trunk drainage line which runs from the southern side of the High Street southbound on ramp to the Cahill Expressway to Careening Bay causes flooding in a number of residential unit block and terrace-type developments during storms as frequent as 10% AEP. It also causes flooding of the James Milson Village (Retirement and Residential Care) development

which is located on Clark Street in North Sydney. Areas within the village that are impacted by flow which surcharges the trunk drainage line include existing basement car parking and below-ground storage facilities.

During a 1% AEP storm event, several low and high hazard floodway areas will develop along the section of the Warringah Freeway which runs through the Milson Park catchment, while a flood storage area will form at the location of the southern Warringah Freeway sag. Two flood storage areas will also develop beneath the elevated section of the Cahill Expressway west of Broughton Street during a storm of this intensity.

Refer **Figure 5-6** Flood behaviour under present day conditions – 10% AEP (Map 1)

Probable Maximum Flood (PMF)

Flow that discharges onto Warringah Freeway from Arthur Street, Hampden Street and St Leonards Park will combine with local catchment runoff and pond at the sags in the northbound carriageways to a maximum depth of over two metres. The depth of ponding at this location is sufficient to overlap the adjacent concrete barriers where floodwater will enter the tunnel portals to the Sydney Harbour Tunnel[3].

5.6.2 Anderson Park

Up to 1% AEP

Flow will surcharge onto the Warringah Freeway from St Leonards Park where it runs in a southerly direction along the northbound and southbound carriageways at depths that are typically less than 0.2 metres during a 1% AEP event.

Overland flow that surcharges the drainage system between McLaren Street and Ridge Street will pond at the sag that is located on the western side of the Berry Street on ramp to the Warringah Freeway to a maximum depth of 1.7 metres during a 10% AEP event, increasing to 2.4 metres during a 1% AEP event. The level of ponding during a 1% AEP event is about four metres below the adjacent level of the northbound on-ramp from Berry Street.

Similar to the Milson Park catchment, several low and high hazard floodway areas will develop along the section of the Warringah Freeway which runs through the Anderson Park catchment during a 1% AEP storm event. A high and low hazard flood storage area will also develop immediately to the west of the Berry Street on ramp to the Warringah Freeway during a storm of this intensity.

Refer **Figure 5-6** Flood behaviour under present day conditions – 10% AEP (Map 1)

PMF

Flow that discharges onto the Warringah Freeway from St Leonards Park runs in a southerly direction along the northbound and southbound carriageways at a maximum depth of about 0.4 metres.

Overland flow from McLaren Street and Walker Street that collects at the sag located on the western side of the Berry Street on ramp to the Warringah Freeway will pond to a maximum depth of about five metres, which is sufficient to cause floodwaters to surcharge onto the Warringah Freeway.

[3] Unlike the current project, the flood immunity requirement for the Sydney Harbour Tunnel was to prevent the ingress of floodwater to the tunnel system for storm events up to 1% AEP in intensity.

5.6.3 Willoughby Creek

Up to 1% AEP

During a 10% AEP event, flow will surcharge the trunk drainage system that forms the main arm of Willoughby Creek and overtop the sag in Ernest Street to the east of Lytton Street to a maximum depth of about 0.5 metres, increasing to 0.7 metres during a 1% AEP. Existing residential development located on the southern side of Ernest Street is also affected by flooding due to surcharge of the trunk drainage system. The main flow path which runs between St Leonards Park and ANZAC Park principally operates as a low hazard floodway, although high hazard areas are located in the vicinity of ANZAC Park, principally due to the depth of ponding that occurs in this area.

Flow that surcharges the tributary branch of Willoughby Creek that runs between Miller Street and ANZAC Avenue along the northern boundary of ANZAC Park Public School will overtop ANZAC Avenue to a maximum depth of about 0.2 metres during a 10% AEP event, increasing to 0.5 metres during a 1% AEP event.

Overland flow from Ernest Street and ANZAC Avenue will collect at the low point in ANZAC Park before entering the trunk drainage system that runs under the Warringah Freeway. The depth of ponding in ANZAC Park will occur to a maximum of 2.1 metres and 3.5 metres during a 10% and 1% AEP event, respectively, which is sufficient to result in hazardous flooding conditions to people and property.

Floodwaters that collect in ANZAC Park will pond against the noise wall that runs along the western side of the Warringah Freeway to a maximum depth of about three metres during a 1% AEP event. If the noise wall were to fail under this weight of water then floodwater will inundate the Miller Street off-ramp to a maximum depth of about two metres and will also extend across the northbound carriageways of the freeway.

During a 1% AEP storm event, a low and high hazard floodway will form to the north (downstream) of the road corridor near Cammeray Golf Course. The floodway area also extends east into an existing residential development located along Fall Street and Grafton Street.

Refer **Figure 5-8** Flood behaviour under present day conditions – 10% AEP (Map 2)

PMF

Floodwaters that collect in ANZAC Park will build up to a level that overtops the noise wall that runs along the western side of the Warringah Freeway, where it will pond across the full width of the freeway before surcharging across its eastern side and into Cammeray Golf Course.

ANZAC Park will be inundated to a maximum depth of seven metres, while the carriageways of the Warringah Freeway will be inundated over a length of about 350 metres and to a maximum depth of five metres.

5.6.4 Brook Street Tributary

Up to 1% AEP

Flow surcharges the sag in Atchison Street to the west of Willoughby Road during a 10% AEP event where it discharges in a north-easterly direction along Chandos Street and Wheatleigh Street to the underpass of the Gore Hill Freeway at Brook Street. From the Brook Street underpass overland flow continues along Palmer Street and Hamilton Lane and discharges into Flat Rock Creek to the north of Hamilton Reserve. Depths of overland flow immediately to the north and south of the Gore Hill Freeway are greater than one metre in a 1% AEP event, which is sufficient to result in hazardous flooding conditions to persons and property.

While a low and high hazard floodway will form along the valley of the catchment during a 1% AEP storm event, flooding along the section of the Warringah Freeway which runs through the Brook Street Tributary catchment is generally classified as low hazard flood fringe. The notable exception is a low and high hazard floodway area which will form along the southbound Brook Street on ramp to the freeway during a storm of this intensity.

Refer **Figure 5-7**, **5-8** Flood behaviour under present day conditions – 10% AEP (Map 3 & 4)

PMF

Depths of flow will be greater than one metre along the full length of the overland flow path that runs along Brook Street Tributary between Atchison Street and Flat Rock Creek.

5.6.5 Flat Rock Creek

Up to 1% AEP

During a 10% AEP event flow in excess of the capacity of the existing stormwater drainage system will pond in the cul-de-sac of George Place to a maximum depth of about 1 metre. During a 1% AEP event, flow will pond to a maximum depth of 1.5 metres before discharging in a south-easterly direction through the adjoining industrial development and onto the eastbound carriageway of the Gore Hill Freeway.

The eastbound carriageway of the Gore Hill Freeway acts as an overland flowpath during a 1% AEP event, conveying flows that surcharge the existing transverse drainage structures that are located in the vicinity of George Place and Reserve Road. Depths of overland flow will typically be less than 0.2 metres, but will reach up to 0.4 metres at two locations.

During a 10% AEP event, flow that surcharges the trunk drainage system in McLachlan Avenue travels in an easterly direction along the shared bicycle path to the south of the Gore Hill Freeway before discharging onto the westbound carriageway north of Hotham Street.

The westbound carriageway of the Gore Hill Freeway acts as an overland flowpath during a 1% AEP event, conveying flow that surcharges the drainage systems in McLachlan Avenue, Hotham Parade and Whiting Street. Flow along the eastbound carriageway collects at the sag below the Reserve Road overpass and ponds to a maximum depth of 0.7 metres before continuing in a southerly direction.

During a 1% AEP event, flow that surcharges the existing transverse drainage structures that are located between Herbert Street and the North Shore railway line also contributes to overland flow travelling east along the eastbound carriageway of the Gore Hill Freeway.

Flooding along the Gore Hill Freeway is of a low hazard nature, with floodway areas forming along the edge of several of the carriageways during a 1% AEP storm event.

PMF

The main carriageways and various entry and exit ramps of the Gore Hill Freeway are inundated by floodwater that discharges from the north at George Place, Reserve Road and Simpson Street, and from the south at McLachlan Avenue, Hotham Parade, Whiting Street, Herbert Street and Punch Street.

The section of Gore Hill Freeway between Reserve Road and the North Shore railway line is inundated across its full width. Depths of flow are typically 1.2 metres or less but will reach a maximum of 1.8 metres at one location.

Flood levels upstream (west) of the North Shore railway line are controlled by the rail underpass, which constricts overland flow travelling along the Gore Hill Freeway.

Refer **Figure 5-7, 5-8** Flood behaviour under present day conditions – 10% AEP (Map 3&4)

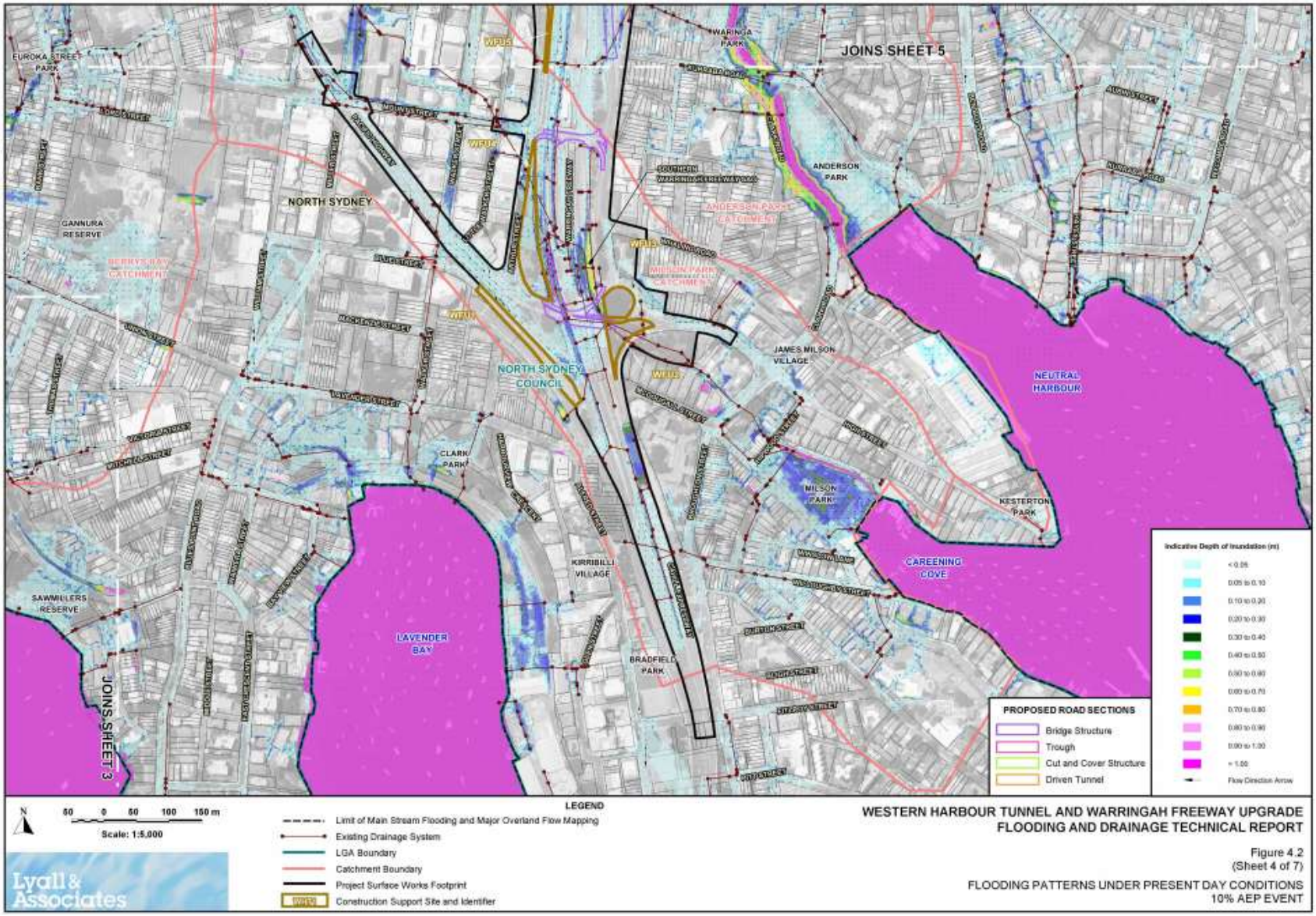


Figure 5-6 Flood behaviour under present day conditions – 10% AEP (Map 1)

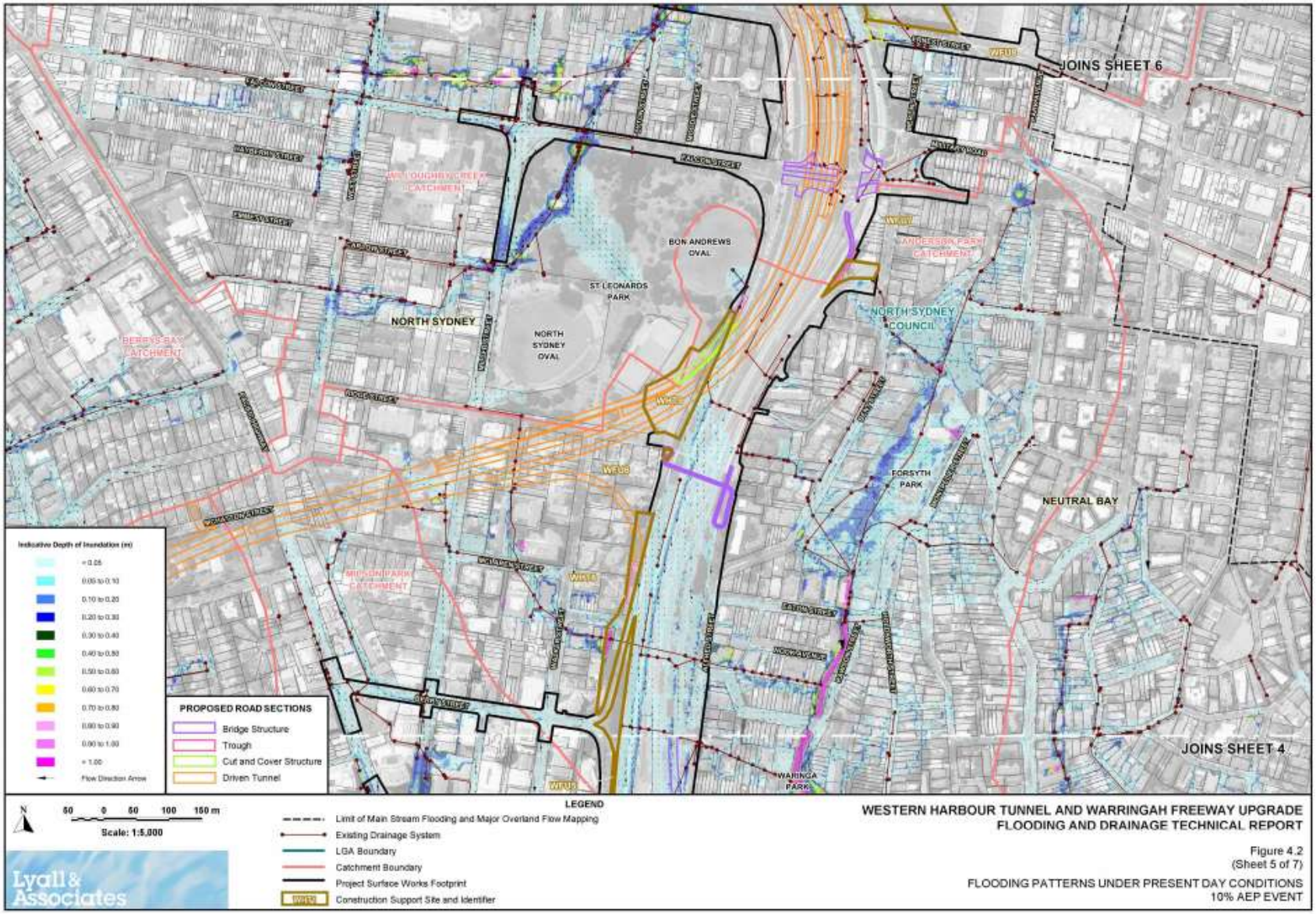


Figure 5-7 Flood behaviour under present day conditions – 10% AEP (Map 2)

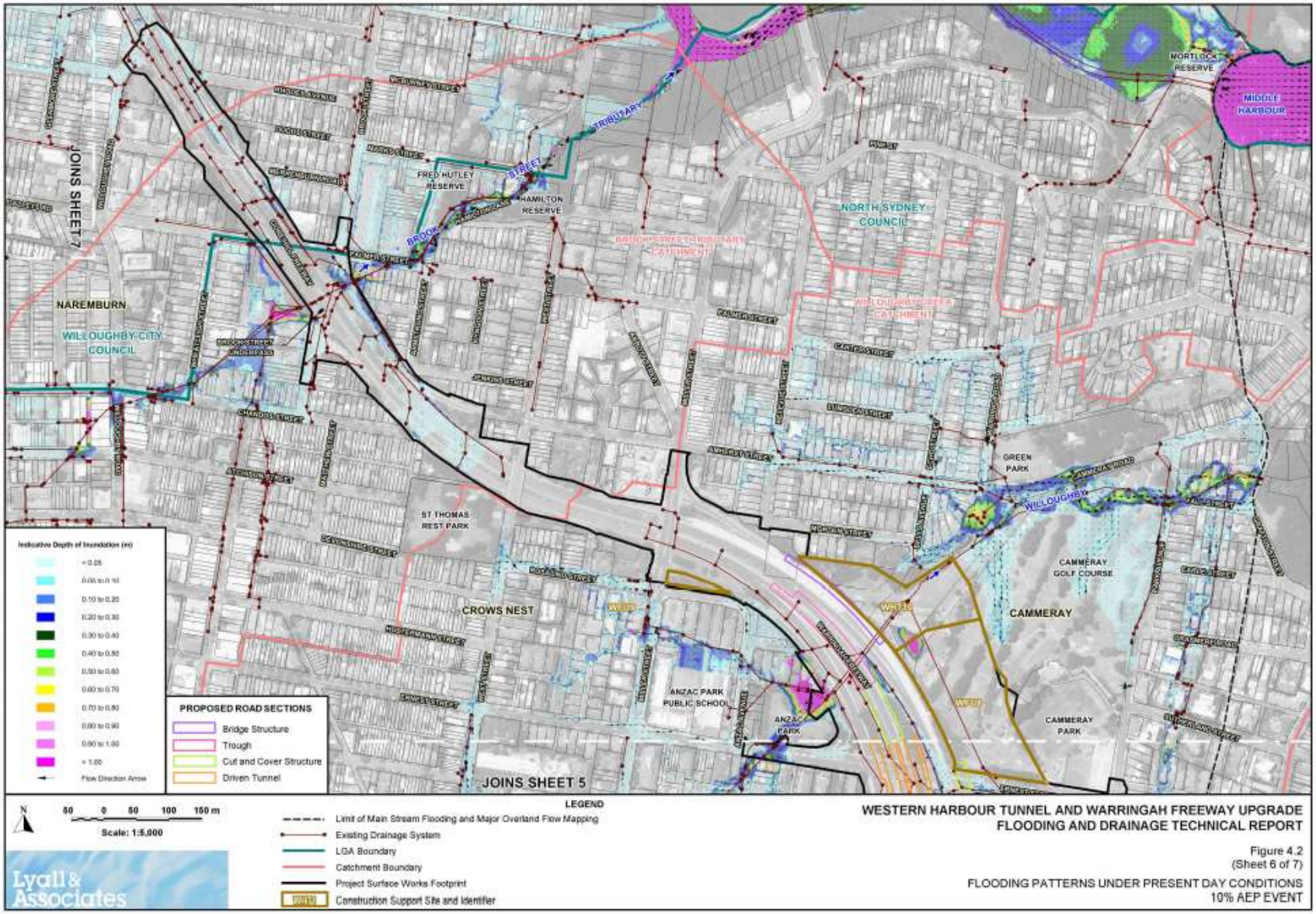


Figure 5-8 Flood behaviour under present day conditions – 10% AEP (Map 3)

6 Environmental aspects and impacts

6.1 Construction activities

Key aspects of the Project that could result in adverse impacts to soils and water include:

- Site establishment
- Vegetation clearing and topsoil stripping
- Earthworks
- Transportation of cut and fill materials
- Demolition
- Relocation of utilities
- Site access
- Culvert and drainage works
- Bridge construction
- Material stockpiles
- Paving activities
- Water use
- Compound operation including fuel and chemical storage, refuelling and chemical handling
- Noxious weed treatment including herbicide spraying
- Establishment and use of construction support sites including potential impacts on flood behaviour and vehicle wash down.

Refer also to the Aspects and Impacts Register included in Appendix A2 of the CEMP.

6.2 Impacts arising from construction

The potential for impacts on soil and water will depend on a number of factors. Primarily impacts will be dependent on the nature, extent and magnitude of construction activities and their interaction with the natural environment. Potential impacts attributable to construction might include:

- Impacts to soils
    - Erosion and sedimentation
    - Soil salinity
    - Acid sulfate soils
- Changes in surface water quality from:
    - Spills and incidents
    - Mobilisation of sediments and pollutants during surface works
- Scour and changes to channel geomorphology
- Flooding
    - Inundation of excavated portals

- Damage to facilities, infrastructure, equipment, stockpiles and downstream sensitive areas
- Increased risk of flooding of adjacent areas due to temporary loss of floodplain storage or impacts on the conveyance of floodwaters.

6.2.1 Potential Impacts to Soils

Erosion and Sedimentation

The proposed construction activities associated with the tunnel portal works, construction support site establishment works and road upgrade works will involve surface excavation and earthmoving (as described in EIS Chapter 6 – Construction works). The temporary exposure of soil to water runoff and wind could increase soil erosion potential, particularly where construction is carried out in soil landscapes characterised by a high or extreme erosion hazard (refer to EIS, Section 16.3.3). There is the potential for exposed soils and other unconsolidated materials, such as spoil, sand and other aggregates to be transported from the construction support sites into surrounding waterways via stormwater runoff.

The highest potential for soil erosion will be associated with the disturbance of soils on existing slopes during construction, particularly at the Arthur Street east (WFU4), Berry Street east (WFU5) and Ridge Street east (WFU6) construction support sites. The majority of construction support sites are not characterised by significant undulating topography and the soil erosion hazard is unlikely to be significant.

Acid Sulfate Soils

Acid sulfate soils are unlikely to be encountered during excavation. Potential impacts if they are identified may include:

- Damage to aquatic environments due to the release of sulfuric acid generated from oxidised acid sulfate soils during construction
- Mobilisation of aluminium, iron and manganese from soils as a result of increased acidity from disturbance of acid sulfate soils.

Further geotechnical testing of underlying sub soil and rock stratum will be carried out to determine the composition of rock and soil types likely to be present within excavation areas.

If acid sulfate soils are encountered, they will be effectively managed in accordance with the *Acid Sulfate Soil Manual* (Acid Sulfate Soil Management Advisory Committee, 1998b). The manual includes procedures for the investigation, handling, treatment and management of such soils.

Soil salinity

Construction of the Project has the potential to contribute to urban salinity through:

- Removal of deep-rooted vegetation or other activities which could raise the groundwater table above normal seasonal levels
- Soil compaction at areas of surface disturbance, such as at the construction support sites, which can restrict groundwater flow and result in a concentrate of salt in one area.

As outlined in Section 16.3 of the EIS, naturally occurring soil salinity is not considered a major concern within the project footprint. Salinity is considered unlikely to represent a risk to surface water and/or groundwater during the construction of the Project.

Contamination

Based on the assessment of known and potentially contaminated sites, most sites within and/or adjacent to the project area are considered to represent a low contamination risk and are not considered further. Several areas will have a moderate to high-risk rating and are considered to be potential areas of environmental interest.

The unsealed areas adjacent to the Warringah Freeway (including St Leonards Park) represent a potential source of contamination (namely lead, hydrocarbons, pesticides, PCBs and asbestos) associated with the current and historical deposition of particulates from large volume traffic flows using the Warringah Freeway.

Asbestos and PAH compounds have been detected in soil samples collected from some locations at concentrations exceeding open space and commercial/industrial guidelines protective of human health. These areas pose a moderate to high contamination risk to construction given that contamination is known and potentially present within soil which is likely to be excavated and exposed during construction of surface works and the following construction support sites: Cammeray Golf Course (WFU8), High Street south (WFU2), High Street north (WFU3), Arthur Street east (WFU4), Berry Street east (WFU5), Ridge Street east (WFU6), Merlin Street (WFU7), and Rosalind Street east (WFU9).

For further information please refer to the Contaminated Land Management Plan which has been prepared as part of the CEMP and which contains details on unexpected discovery of contamination and asbestos.

6.2.2 Potential Impacts to Groundwater

Construction of the Warringah Freeway Upgrade Project is not anticipated to intercept groundwater during construction with the exception of construction for both the Western Harbour Tunnel and Beaches link portals near Cammeray Golf Course.

Groundwater intercepted during construction of the Western Harbour Tunnel and Beaches Link portals is expected to be treated via a water treatment plant located at the Cammeray Golf Course prior to discharge to the stormwater system. As construction of the portals is not expected to commence until mid – later 2023 and information development into the specifics of a potential water treatment plant is ongoing, this plan will be updated in future with specific information in relation to that process.

Modelling undertaken as part of the EIS has indicated that there are no groundwater dependant ecosystems or groundwater dependent culturally sensitive sites within the predicted drawdown extents at the northern tunnel dive structures (Western Harbour Tunnel and Beaches Link portals).

Contamination migration from contaminated sites

Potential contamination risks within the WFU Project are detailed in the Contaminated Land Management Sub-plan.

The groundwater model was used to assess the potential groundwater level drawdown at regulated/notified sites and areas of environmental interest, assessed to have a moderate or high risk of existing groundwater contamination within 500 metres of the project alignment. The EIS identified 10 potential areas of environmental interest within the WFU Project. These were all assigned a low risk of existing groundwater contamination and therefore excluded from the assessment.

Management and monitoring measures related to contaminated groundwater where required are detailed in Section 16.7 of the EIS.

6.2.3 Surface Water

Surface Water Quality

Potential impacts to surface water quality as a result of surface works include:

- Erosion and mobilisation of exposed soils and open cuts by stormwater runoff and wind leading to sedimentation of waterways
- Potential spills of pollutants (chemicals, fuel) flowing to downstream watercourses
- Transfer of spills and pollutants to adjacent roads

- Discharges to the stormwater system from open pits, trenches and excavations.

Surface Water Discharge

In accordance with the Blue Book Volumes 1 and 2D (Landcom, 2004 and DECC, 2008), sediment basins are required where the erosion hazard in any disturbed catchment exceeds the threshold of 200 tonnes per year. On this project, this would typically apply in any construction zone where the extent of disturbance exceeded 5,580 m2 [1] (Landcom, 2004). Construction zones smaller than 5,580 m2 are generally below the threshold to trigger the requirement for a sediment basin.

Although a number of construction zones are expected to exceed the 5,580 m2 threshold, sediment basins are not feasible in those catchments (other than at the Cammeray Golf Course site) due to the nature of the environment (principally within the Warringah Freeway road corridor) and extremely limited space. As such, it is expected that rainfall in those zones would accumulate in excavations and trenches, and the collected water will be transferred to sediment basins at Cammeray Golf Course for treatment prior to discharge via licenced EPL discharge points.

A Construction Discharge Impact Assessment (SEEC, 11 October 2021) has been prepared for the Project. The Discharge Impact Assessment has been used to inform the Surface Water Monitoring Program (**Appendix E**). The assessment provides discharge criteria for both water collected in open trenches / excavations North of Falcon Street (51 NTU draining to Willoughby Creek, Quarry Creek and Flat Rock Creek) and water collected in open trenches / excavations South of Falcon Street (10 NTU draining directly to Sydney Harbour via closed stormwater channels). Surface water collected in works South of Falcon Street will either be removed from site via vacuum truck and discharged at an offsite licenced location or sent to open excavations / trenches North of Falcon Street (i.e at Cammeray Golf Course area) for treatment and discharge (meeting the 51 NTU discharge requirement) . In addition, and where space is available, above ground storage tanks will be located at the Cammeray Golf Course site to temporarily store any additional water from South of Falcon Street for treatment prior to discharge.

Note: EPL 21619 has been received from NSW EPA which has determined the discharge criteria of surface water from the Project at discharge points on the Cammeray Golf Course as follows:

- Oil and Grease: not visible
- pH: 6.5 – 8.5
- Turbidity: 51 NTU

Geomorphology

Construction of the Project has the potential to impact on geomorphology due to:

- Mobilised sediment which could build up in the streams if not appropriately managed
- Impervious surfaces created by the Project, leading to increases in the volume and rate of runoff, which could cause erosion within the instream channel
- Subsidence below watercourses, potentially impacting on channel bed and bank conditions.

If unmitigated, impacts to geomorphology as a result of increased mobilised sediment or increased surface runoff (volume or velocity) could occur where activities are near watercourses. This could include Willoughby Creek, Quarry Creek, Flat Rock Creek and along drainage lines flowing into the harbour. Potential for watercourse geomorphology impacts will be mitigated through environmental management measures outlined in **Table 7-1** of this Sub-plan.

6.2.4 Flooding

Construction activities have the potential to increase flooding conditions when compared to both present day and operational conditions. This is because construction activities typically impose a larger footprint on the floodplain due to the need to provide temporary structures outside the

operational project footprint which will be removed following the completion of construction activities.

A qualitative assessment was carried out of the potential impacts of construction activities on flood behaviour. The key findings are summarised in Table 18-2 of the EIS.

There is the potential for construction activities to impact local catchment runoff, which will be managed through appropriate local stormwater management controls to be implemented during the construction phase of the Project.

Flood response

The process to be followed in the event of heavy rainfall or a flood event for contingency planning during the construction of the Project is outlined in **Figure 6-1** below:

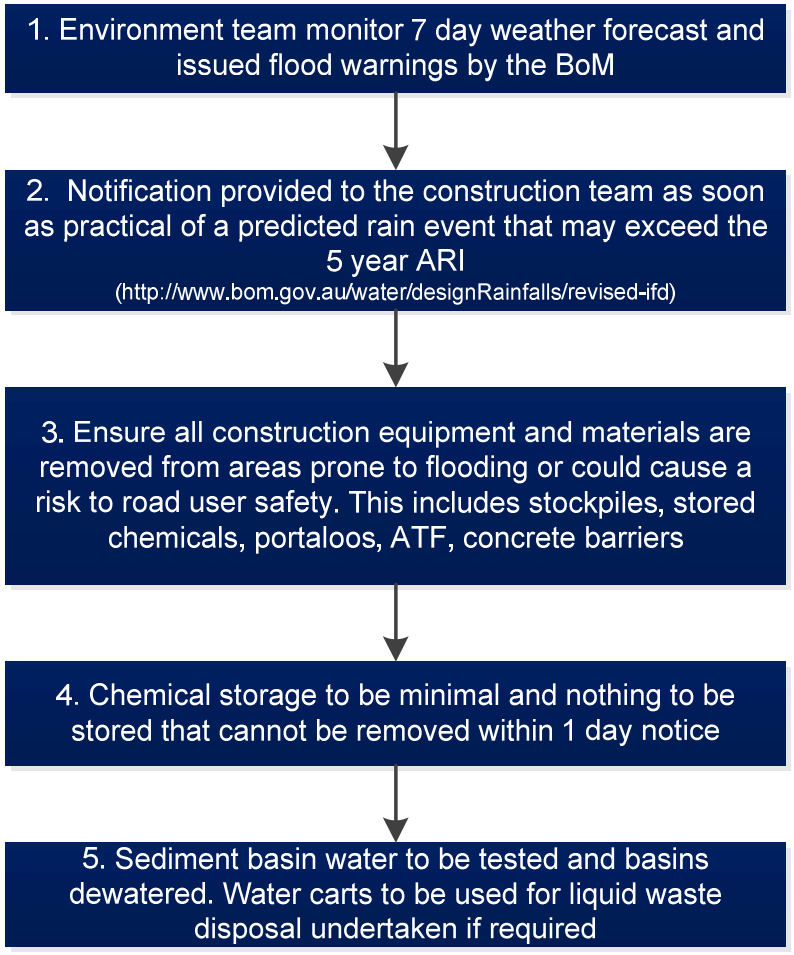


Figure 6-1 Heavy rainfall and flood event contingency planning process

6.3 Cumulative impacts

Potential cumulative impacts associated with the construction of the Project (being both Western Harbour Tunnel and Warringah Freeway Upgrade) were presented and assessed in Chapter 27 of the EIS. The assessment concluded that in all locations associated with the construction of the Project, cumulative impacts to geology, groundwater, soils, hydrology, water quality and flooding were considered to be negligible.

7 Environmental control measures

Specific measures and requirements to meet the objectives of this SWMP and to address impacts on soil and water are outlined in **Table 7-1**.

Table 7-1: Soil and Water management and mitigation measures

ID	Measure/Requirement	Resources needed	When to implement	Responsibility	Reference[4]	Evidence
General						
MMSW01	Training will be provided to relevant project personnel, including relevant subcontractors on soil, surface water and groundwater requirements through inductions, toolboxes or targeted training.	Project inductions Toolbox training	Prior to construction Construction	Construction Environmental Manager	Best practice	Induction records Toolbox talk record
MMSW02	All employees, contractors and subcontractors will receive a project induction prior to commencing work on site. The environmental component, covered in either the induction or toolboxes, will include (as a minimum): • Existence and requirements of this SWMP • Relevant legislation and guidelines • Erosion and sediment control measures • Emergency spill procedures including location and use of spill kits • Flood risk at construction sites and construction support sites	Project inductions	Prior to construction Construction	Construction Environmental Manager	Best practice	Induction records Toolbox talk record

[4] EMM Refers to *WHT & WFU Part D Revised environmental management measures (Transport for NSW September 2020);*

ID	Measure/Requirement	Resources needed	When to implement	Responsibility	Reference[4]	Evidence
	• Flood emergency management measures • Complaints reporting and recording • How to implement soil and water management measures • Roles and responsibilities for soil and water management.					
MMSW03	Weather conditions and forecasts (including rainfall prediction maps) will be monitored daily (including both during and following the clearing of vegetation) and relevant information provided to the site Superintendent/ Foremen to allow for adequate planning for significant rain events.	Weather station	Construction	Construction Environmental Manager Project Engineer	Best practice	Record of advice
Drainage Controls						
MMSW04	Hydraulic structures and controls will be installed early in the Project (before clearing and stripping) to promote successful erosion and sediment control during construction.	PESCP	Construction	Project Engineer Foreman	Best practice	Site inspection reports, ER inspection reports and ESCPs
MMSW05	Separation of 'clean' (offsite) run-on water from 'dirty' (onsite) (e.g. turbid) construction area runoff will be maximised by diverting off site run-on water around the works site as much as possible.	PESCP	Construction	Project Engineer Foreman	Best practice	Site inspection reports, ER inspection reports and ESCPs

ID	Measure/Requirement	Resources needed	When to implement	Responsibility	Reference[4]	Evidence
	Permanent cut-off drains will be used to achieve this where possible.					
MMSW06	Diversion of turbid construction runoff into sediment traps will be maximised.	PESCP	Construction	Project Engineer Foreman	Best practice	Site inspection reports, ER inspection reports and ESCPs
MMSW07	Runoff will be controlled during the construction of embankments (e.g. fill shaping and the construction of temporary dykes and batter drains).	PESCP	Construction	Project Engineer Foreman	Best practice	Site inspection reports, ER inspection reports and ESCPs
MMSW08	Formation runoff will be diverted into pits and the stormwater drainage system as soon as practical to reduce surface flow lengths.	PESCP	Construction	Project Engineer Foreman	Best practice	Site inspection reports, ER inspection reports and ESCPs
MMSW09	Slope lengths will be maintained at appropriate lengths to slow flows down and minimise erosion. Catch drains will be used to collect and divert runoff from the slopes.	PESCP	Construction	Project Engineer Foreman	Best practice	Site inspection reports, ER inspection reports and ESCPs
MMSW10	Geotextile linings will be used to provide temporary surface protection in areas where appropriate (e.g. batter drains, culvert construction).	PESCP	Construction	Project Engineer Foreman	Best practice	Site inspection reports, ER inspection reports and ESCPs

ID	Measure/Requirement	Resources needed	When to implement	Responsibility	Reference[4]	Evidence
MMSW11	Check dams will be placed within diversion drains where required to slow flows and minimise erosion within the drains.	PESCP	Construction	Project Engineer Foreman	Best practice	Site inspection reports, ER inspection reports and ESCPs
Erosion and sediment control						
MMSW12	Engage a soil conservation specialist for Project duration to provide ERSED advice including initial preparation and ongoing review of PESCP's and regular site inspection of controls (minimum monthly attendance).	Soil Conservationist PESCP	Prior to construction Construction	Construction Environmental Manager Soil Conservationist	G38 Sect 1.2.8	Inspection reports PESCP

ID	Measure/Requirement	Resources needed	When to implement	Responsibility	Reference[4]	Evidence
MMSW13	A PESCP will be developed for the Project. ESCPs will include "enhanced erosion controls" as guided by Section 6.3.4 (g) of Landcom (2004). These may include (but are not limited to): • Detailed weather forecast monitoring, with the use of "triggers" for the implementation of temporary enhanced erosion controls. • The use of biodegradable soil binders over batters and other exposed areas to reduce dust rise and minimise erosion during wet weather. • The use of temporary ground covers such as organic fibre matting, fabrics or plastics over batters and other exposed surfaces during wet weather. These would be installed prior to forecast wet weather. • The use of short-interval bunds and slope breaks to reduce flow velocities, thereby minimising erosion. • The use of multiple short-interval localised bunds to redirect flows, maximise capacity and detain sediment-laden water.	Soil Conservationist PESCP	Prior to construction	Construction Environmental Manager	MCoA E114	PESCP

ID	Measure/Requirement	Resources needed	When to implement	Responsibility	Reference[4]	Evidence
MMSW14	Erosion and sediment control measures will be implemented at all work sites in accordance with the publication Managing Urban Stormwater: Soils & Construction (4th edition, Landcom 2004) ('Blue Book'). ERSED measures will be installed: • Prior to soil disturbance occurring • Prior to the commencement of any clearing, stripping or earthworks • To minimise sediment moving off-site • To minimise sediment laden water entering any watercourse, drainage lines, or drain inlets • To reduce water velocity and capture sediment on site • To minimise the amount of material transported from site to surrounding pavement surfaces. • To divert off site water around the site.	PESCP	Construction	Project Engineer Foreman Construction Environmental Manager	MCoA E114 REMM SG5 REMM WQ1	Site inspection reports, ER inspection reports and ESCPs
MMSW15	Erosion and sedimentation controls will be checked and maintained on a regular basis (including clearing of sediment from behind barriers).	Site inspection reports	Construction	Project Engineer Foreman Construction Environmental Manager	MCoA E114 REMM WQ1	Site inspection reports, ER inspection reports and ESCPs

ID	Measure/Requirement	Resources needed	When to implement	Responsibility	Reference[4]	Evidence
MMSW16	Sediment fencing or suitable alternative sediment controls will be provided downslope of any disturbed areas.	PESCP	Construction	Project Engineer Foreman	Best practice	Site inspection reports, ER inspection reports and ESCPs
MMSW17	Sediment controls will be installed around stormwater inlet pits where appropriate and where they will not cause or exacerbate flooding. Traffic management and safety requirements will be considered if installing such devices on live traffic roads.	PESCP	Construction	Project Engineer Foreman	Best practice	Site inspection reports, ER inspection reports and ESCPs
MMSW18	Records of erosion and sediment control activities will be maintained and provided on request.	Site inspection reports PESCP	Prior to construction Construction	Construction Environmental Manager	Best practice	Site inspection reports
MMSW19	Sediment controls will be removed only after adequate stabilisation of disturbed surfaces is achieved.	PESCP	Construction	Project Engineer Foreman	Best practice	Site inspection reports
MMSW20	Mud tracking from site compounds / work areas will be minimised by the use of rumble grids, large aggregate at entry/exit points or wheel wash facilities.	Rumble grids Wheel wash Aggregate	Construction	Project Engineer Foreman	G36	Site inspection reports
Site de-watering and water re-use						

ID	Measure/Requirement	Resources needed	When to implement	Responsibility	Reference[4]	Evidence
MMSW21	The Dewatering Procedure (**Appendix B**) will be implemented for the duration of construction works.	Dewatering Procedure	Prior to construction	Construction Environmental Manager	Best practice	**Appendix B** – Dewatering Procedure
MMSW22	Wherever possible, water detained onsite will be re-used for dust control and other non-potable uses where of suitable quality. This includes water accumulating within excavations, traps, trenches or at low points on site.	Water Reuse Strategy	Construction	Foreman	MCoA E127 REMM WM5	**Appendix B** – Permit to Dewater
MMSW23	Water accumulating within any excavation, trap or low point on site that cannot be re-used in construction or dust suppression will be tested and, if necessary, treated prior to release or disposed of to a licenced facility.	**Appendix B** – Permit to Dewater	Construction	Project Engineer Foreman Construction Environmental Manager	REMM WM5	EPL records **Appendix B** – Permit to Dewater

ID	Measure/Requirement	Resources needed	When to implement	Responsibility	Reference[4]	Evidence
MMSW24	When necessary, sediment will be settled out of surface water to be discharged using a flocculent such as Gypsum within 24 hours of the conclusion of the last rainfall event. Note: • Only coagulants and/or flocculants with known low-toxicity or well-established low-risk ecotoxicity data would be used (e.g. gypsum); and • Procedures for the use of those coagulants and/or flocculants would minimise the risk of residual active coagulant and/or flocculant being present in discharge waters (i.e. the coagulant and/or flocculant has been detained onsite because it is bonded onto the settled sediment).	**Appendix B** – Permit to Dewater	Construction	Project Engineer Foreman Construction Environmental Manager	Best practice	**Appendix B** – Permit to Dewater
MMSW25	Necessary approvals and permits/ licences will be obtained prior to any dewatering related to the Project and records will be maintained throughout the Project.	EPL Discharge Impact Assessment	Prior to construction Construction	Project Engineer Foreman Construction Environmental Manager	Best practice	Dewatering approvals EPL records **Appendix B** – Permit to Dewater

ID	Measure/Requirement	Resources needed	When to implement	Responsibility	Reference[4]	Evidence
MMSW26	There will be no release of sediment-laden water into drainage lines and/or waterways.	Project Inductions	Construction	Project Engineer Foreman Construction Environmental Manager	MCoA E206 MCoA E210	Site inspection reports, ER inspection reports
MMSW27	Non-potable water will be used for wash down where practical.	Wash down equipment	Construction	Project Engineer Foreman	Best practice	Water use records
MMSW28	A containment material will to be used to capture/filter water used in wash down.	Bunds and water filters	Construction	Project Engineer Foreman	Best practice	Water use records
Stockpile management						
MMSW29	A Stockpile Management Procedure has been developed for the Project.	Stockpile Management Procedure	Prior to construction	Construction Environmental Manager	REMM F5	Stockpile Management Procedure
MMSW30	Maintenance of stockpile sites during construction will be in accordance with TfNSW Technical Guideline *Stockpile Site Management Guideline (EMS-TG-10).*	Stockpile Management Procedure	Construction	Project Engineer Foreman	REMM F5	Site inspection reports, ER inspection reports
Stabilisation of disturbed areas						

ID	Measure/Requirement	Resources needed	When to implement	Responsibility	Reference[4]	Evidence
MMSW31	Stabilisation of waterways, including their beds and banks, will commence during and following the clearing of vegetation and immediately after the completion of any works within these areas.	PESCP	Construction	Project Engineer Foreman	Best practice	Site inspection reports, ER inspection reports
Surface water quality management						
MMSW32	A Heavy Rainfall Event Procedure will be developed for the Project.	Heavy Rainfall Event Procedure	Prior to construction	Construction Environmental Manager	Best practice	Heavy Rainfall Event Procedure
MMSW33	Prior to forecast heavy rainfall events and prior to and following the clearing of vegetation, the Construction Environmental Manager or delegate will inspect the site and note any areas requiring additional management measures	Environment team	Construction	Construction Environmental Manager	Best practice	Site inspection reports
MMSW34	Prior to forecast heavy rainfall events, end-of-day controls will be implemented throughout the worksite to help reduce erosion and control sediment. These will include one or more of the following: • Check dams • Slope breaks • Batter chutes • Fill windrows	Environment team	Construction	Project Engineer Foreman	Best practice	Site inspection reports

ID	Measure/Requirement	Resources needed	When to implement	Responsibility	Reference[4]	Evidence
	• Temporary ground covers.					
MMSW35	When testing, treating and discharging construction water, the identified water quality criteria stated in the permit (EPL criteria) will be met. The applicable water quality criteria will be determined in accordance with relevant legislation and guidelines and authorities.	**Appendix B** – Permit to Dewater	Prior to construction Construction	Project Engineer Foreman Construction Environmental Manager	MCoA E206 MCoA E210	Dewatering approvals EPL records Dewatering records
MMSW36	If water is to be re-used for dust suppression this water does not need to be tested or treated providing water does not leave the site (either directly or indirectly via runoff).	**Appendix B** – Permit to Dewater	Construction	Foreman	Best practice	Dewatering approvals Site inspection reports
MMSW37	The results of any monitoring will be recorded and maintained: • In a legible form, or in a form that can readily be reduced to a legible form • For at least 4 years after the monitoring or recording event to which they relate took place, and • So that they can be produced in a legible form to any authorised officer of the EPA who asks to see them.	Environment team	Construction Post Construction	Construction Environmental Manager	MCoA C11 MCoA C12 MCoA C21	Water quality monitoring results
MMSW38	Vehicles and machinery will be properly maintained and routinely inspected to minimise the risk of fuel/oil leaks.	Pre-start inspection	Construction	Foreman	Best Practice	Pre-start inspection records

ID	Measure/Requirement	Resources needed	When to implement	Responsibility	Reference[4]	Evidence
MMSW39	Not used	Not used	Not used	Not used	Not used	Not used
MMSW40	Residual risk to sensitive receiving environments and environmental values, will be kept low as reasonably practicable through the implementation, maintenance, and monitoring of the proposed management measures.	Environment team Construction team	Construction	Construction Environmental Manager Project Engineer Foreman	Best practice	Site inspection reports, ER inspection reports
MMSW41	Undertake a water discharge impact assessment to inform water discharge / licencing requirements prior to the discharge of water from sediment basins.	Discharge impact assessment	Prior to construction	Construction Environmental Manager	CoA E210 REMM WQ13	Discharge Impact Assessment EPL
MMSW42	Stage construction work activities within or next to the watercourses and drainage lines as much as reasonably practicable to minimise disturbance of sediments. Consider the *Guidelines for controlled activities on waterfront land Riparian corridors* (Department of Industry 2018) when carrying out work within 40 metres of a watercourse, including its bed.	Soil Conservationist PESCP	Prior to construction	Construction Environmental Manager	MC0A E207 REMM WQ7	PESCP
Construction Wastewater						
MMSW43	Construction wastewater treatment trains will be designed to maintain or improve the water quality of the receiving ambient environment.	EPL Discharge Impact Assessment	Prior to construction Construction	Design Manager	MCoA E206 MCoA E208 REMM WQ3	Dewatering approvals EPL records

ID	Measure/Requirement	Resources needed	When to implement	Responsibility	Reference[4]	Evidence
	Discharges from wastewater treatment plants will not commence until receipt of an EPL which incorporates this activity. Relevant conditions of the EPL and discharge criteria will be included in this Sub-plan as required.			Construction Environmental Manager	EIS Section 17.4.3	Dewatering records
Groundwater Management						
MMSW44	Should any groundwater be encountered and need to be disposed of during construction, disposal would be undertaken in accordance with the Construction Site Dewatering Procedure and relevant legislation and guidelines.	**Appendix B** – Permit to Dewater	Construction	Construction Environmental Manager	CoA E206 CoA E208	**Appendix B**- Dewatering procedure
MMSW45	The Construction Site Dewatering Procedure will identify monitoring and measures for contaminated groundwater management. These will be implemented if contaminated groundwater is encountered.	**Appendix B** – Permit to Dewater	Prior to construction Construction	Construction Environmental Manager	MCoA C11 MCoA C12 MCoA C14 MCoA E208	**Appendix B**- Dewatering procedure
MMSW46	Groundwater inflows will be treated to meet the ANZECC/ARMCANZ (2000) requirements.	EPL Discharge Impact Assessment	Prior to operation of WTP at Cammeray Golf Course	Construction Environmental Manager	EIS Section 16.4.6	**Appendix B** – Permit to Dewater EPL records

ID	Measure/Requirement	Resources needed	When to implement	Responsibility	Reference[4]	Evidence
Management of Contamination and Acid Sulfate Soils						
MMSW47	An Environmental Work Method Statement will be prepared by the CPB Downer JV and approved by the TfNSW Environmental Manager prior to commencement of any work that would result in disturbance in the vicinity of contamination. Refer to the Contaminated Land Management Sub-plan (Section 6.6).	Contaminated Land Consultant	Prior to construction	Construction Environmental Manager	MCoA E123 MCoA E124	EWMS
MMSW48	An Acid Sulfate Management Plan will be developed for the Project if investigation identifies their potential	Contaminated Land Consultant	Prior to construction	Construction Environmental Manager	Best practice	Acid Sulfate Management Plan (if required)
MMSW49	If acid sulfate soils or potential acid sulfate soils are encountered, they will be managed in accordance with the *Acid Sulfate Soil Manual* (Acid Sulfate Soil Management Advisory Committee, 1998).	Environment team	Construction	Construction Environmental Manager	Best practice	Acid Sulfate Management Plan (if required)
Flooding						
MMSW50	Flood emergency management measures will be developed for the Project.	Environment team	Prior to construction	Construction Environmental Manager Project Engineer	REMM F7	PESCP

ID	Measure/Requirement	Resources needed	When to implement	Responsibility	Reference[4]	Evidence
MMSW51	Measures to manage the diversion of floodwater either through or around the construction areas will be planned, implemented and maintained. This will include: • A review of site layout and staging of construction activities to avoid or minimise obstruction of overland flow paths and limit the extent of flow diversion required • Identification of measures to not worsen flood impacts on the community and on other property and infrastructure during construction up to and including the 10% AEP flood event where reasonable and feasible • Measures to mitigate alterations to local runoff conditions due to construction activities.	Environment team Construction team	Prior to construction Construction	Construction Environmental Manager Project Engineer Foreman	REMM F7 EIS Section 18.5.1	PESCP
MMSW52	Spoil management and stockpile areas will be located outside the 10% AEP flood extent	Ancillary Site Establishment Management Plan	Construction	Construction Environmental Manager Project Engineer	REMM F5 EIS Section 18.5.1	Site inspection reports
MMSW53	The existing Sydney Water and Council drainage systems will remain operational and be protected throughout construction	Construction team	Construction	Foreman	Best practice	Site inspection reports

ID	Measure/Requirement	Resources needed	When to implement	Responsibility	Reference[4]	Evidence
MMSW54	Where possible ensure that excavated materials are not placed within 20m of drainage lines	Construction team	Construction	Foreman	G36 Sect 2.1.2	Site inspection reports
Concreting, Saw Cutting and Asphalting						
MMSW55	Concrete mixers, pumps, concrete tools and other equipment will be washed at specially designated washout areas that are constructed in a manner that will prevent stormwater surface run-off from being contaminated.	Concrete washout facilities	Construction	Project Engineer Foreman	Best practice	Site inspection reports PESCP
MMSW56	Designated equipment washdown and cleaning areas will be allocated for major asphalt works with appropriate environmental controls in place to prevent washout water from reaching the receiving environment.	Concrete washout facilities	Construction	Project Engineer Foreman	Best practice	Site inspection reports PESCP
MMSW57	Washout areas will be located within areas that are not subject to natural surface storm water run-off and away from drainage lines. Signs will be posted to advise workers of their locations.	Concrete washout facilities	Construction	Project Engineer Foreman	Best practice	Site inspection reports PESCP
MMSW58	Washout areas will be constructed with an impermeable material capable of retaining contaminated water and concrete residue.	Concrete washout facilities	Construction	Project Engineer Foreman	Best practice	Site inspection reports PESCP

ID	Measure/Requirement	Resources needed	When to implement	Responsibility	Reference[4]	Evidence
MMSW59	Washout areas will be monitored to ensure that they are draining correctly and washing activity is not contaminating the surrounding area.	Environment team	Construction	Project Engineer Foreman Construction Environmental Manager	Best practice	Site inspection reports
MMSW60	As part of the project induction program, all personnel performing concreting or saw cutting activities will be advised of the concrete washout areas and their obligations to: • Clean their plant, tools and equipment within the designated area • Maintain the area in a clean condition • Ensure that contaminated water associated with their activities is appropriately controlled and prevented from reaching stormwater surface drainage areas.	Project inductions Toolbox training	Construction	Construction Environmental Manager	Best practice	Induction records Toolbox talk records
Spill Response and Management						
MMSW61	A Spill Management Procedure will be developed for the Project.	Environment team	Prior to Construction	Construction Environmental Manager	Best Practice	**Appendix D** - Spill Management Procedure

ID	Measure/Requirement	Resources needed	When to implement	Responsibility	Reference[4]	Evidence
MMSW62	Any spills of fuel or bitumen materials will be promptly contained and collected using spill kits.	Spill Management Procedure	Construction	Foreman Project Engineer	REMM SG23 EM WQ2	Incident reports
MMSW63	Spill kits and fire extinguishers will be maintained at all times on site in close proximity to potential spill sources.	Spill kits Fire extinguishers	Construction	Foreman Project Engineer	Best practice	Site inspection reports
MMSW64	All spills will be promptly reported to the Environmental Manager.	Project inductions	Construction	Foreman Project Engineer	Best practice	Incident reports
Storage and Handling of Fuels and Chemicals						
MMSW65	A Safety Data Sheet (SDS) and Hazardous Products Register and copies of all SDS documents will be maintained in the site office within an SDS folder.	SDS and Hazardous Products Register	Construction	Safety Manager Project Engineer	Best practice	SDS and Hazardous Products Register
MMSW66	Liquid and dry chemicals (including oils and fuels) will be clearly labelled, used and handled in accordance with the instructions provided in the relevant SDS documents.	SDS and Hazardous Products Register	Construction	Safety Manager Project Engineer	Best practice	SDS and Hazardous Products Register
MMSW67	Liquid chemicals and fuels will be stored in appropriate containers in roofed and bunded areas. Bunded areas will have the capacity to hold 110% of the liquid waste volume for bulk storage or 120% of the	Appropriate containers and bunded areas	Construction	Safety Manager Project Engineer Foreman	REMM HR1	Site inspection reports

ID	Measure/Requirement	Resources needed	When to implement	Responsibility	Reference[4]	Evidence
	volume of the largest container for smaller packaged storage.					
MMSW68	Where practicable, storage areas will not be located within 50 metres of natural surface drainage areas, storm drainage systems, poorly drained or flood prone areas or any area with a slope steeper than 10%.	Appropriate containers and bunded areas	Construction	Project Engineer Foreman	REMM HR1	Site inspection reports
MMSW69	Where practicable, designated plant refuelling areas, plant service / maintenance areas and concrete / plant wash down areas will be located at least 5 metres from native vegetation and at least 50 metres from: • a natural surface drainage area, and • a built drainage structure such as a storm water pipe or box culvert.	Refuelling bunds	Construction	Project Engineer Foreman	REMM HR1	Site inspection reports
MMSW70	During site induction, all personnel will be advised of the following: • The location of bunded storage areas, liquid absorbent materials and other spill containment materials and kits. • Storage of large quantities of fuel for construction plant is not permitted. Appropriately bunded licensed fuel trucks carrying emergency fuel spill kits	Project induction	Construction	Construction Environmental Manager	REMM SG23 REMM WQ2	Induction records

ID	Measure/Requirement	Resources needed	When to implement	Responsibility	Reference[4]	Evidence
	must be used to service plant and equipment. • All drums and decanted containers must be labelled and stored within bunded areas whenever they are not in use. Whenever practical, all unattended drums/containers must be returned to the bunded storage area. • All personnel will be trained in the Spill Response and Management Procedure and the protocol to be implemented in the event of a spill or leak.					

8 Compliance management

8.1 Roles and responsibilities

The CPB Downer JV Project Team's organisational structure and overall roles and responsibilities are outlined in Section 3.3 of the CEMP. Specific responsibilities for the implementation of environmental controls are detailed in Section 7 of this SWMP.

8.2 Training

All employees, contractors and utility staff working on site will undergo site induction training relating to soil and surface water management issues. The induction training will address elements related to soil and water management including:

- Existence and requirements of this SWMP
- Relevant legislation and guidelines
- Roles and responsibilities for soil and water management
- Erosion and sediment control measures
- Emergency spill procedures including location and use of spill kits
- Flood risk at construction sites and construction support sites
- Flood emergency management measures
- Complaints reporting and recording
- How to implement soil and surface water management measures.

Targeted training in the form of toolbox talks or specific training (dewatering, water discharge permits, use of water monitoring equipment) will also be provided to personnel with a key role in soil and water management.

Further details regarding staff induction and training are outlined in Section 3.5 of the CEMP.

8.3 Monitoring and inspection

Monitoring requirements are outlined in the Surface Water Monitoring Program (**Appendix E**).

At least one month before the commencement of construction, the Surface Water Monitoring Program will be endorsed by the ER and then submitted to the Planning Secretary for approval. Construction will not commence until the documents have been approved by the Planning Secretary, and all relevant baseline data has been collected. Monitoring will be undertaken for the duration of construction as defined in the Surface Water Monitoring Program.

The monitoring programs will continue for the duration of construction and until the affected waterways are rehabilitated to an acceptable condition as certified by a suitably qualified and experienced independent expert.

Inspection requirements are outlined in **Table 8-1**.

Additional requirements and responsibilities in relation to inspections are documented in Section 3.9.1 and Section 3.9.2 of the CEMP.

Table 8-1 Monitoring and inspection requirements

Monitoring details	Location	Record	Responsibility	Frequency
Inspection of erosion and sedimentation controls	All	Weekly Inspection Records	Construction Environmental Manager	Weekly
Inspection of erosion and sedimentation controls	All	Inspection Report	Soil Conservationist	Minimum monthly
Inspection of erosion and sedimentation controls	All	Pre and post Rainfall Inspection Records	Construction Environmental Manager	Before and after heavy rainfall events
Meteorological data including daily rainfall, hourly temperature, relative humidity, wind (direction and speed) and barometric pressure	All	Onsite monitoring station at Warringah Freeway construction compound Daily rainfall records from closest BOM or DPIE station	Construction Environmental Manager	Daily
Water discharge monitoring	At discharge location	Water discharge permit / water monitoring record	Construction Environmental Manager	Prior to and during discharge
Surface water monitoring to be as per the Surface Water Monitoring Program	**Appendix E**	Physiochemical Parameters	Construction Environmental Manager	Monthly and wet weather monitoring (at least once every three months following 25 mm of continuous rainfall)

8.4 Water reuse

A Water Reuse Strategy will be prepared prepared to meet MCoA E127 and is contained as part of the Sustainability Management Strategy. The Water Reuse Strategy includes:

- An evaluation of reuse options
- Details of the preferred reuse option(s), including volumes of water to be reused, proposed reuse locations and/or activities, proposed treatment (if required), and any additional licences or approvals that may be required
- Measures to avoid misuse of recycled water as potable water
- Consideration of the public health risks from water recycling
- A time frame for the implementation of the preferred reuse option.

The Water Reuse Strategy will be prepared based on best practice and advice sought from relevant agencies where required. The Water Reuse Strategy will be applied during construction and will be made publicly available.

As detailed in the Water Reuse Strategy, opportunities for captured stormwater and runoff reuse will be implemented during construction where feasible and reasonable. Examples of construction water reuse include:

- Use as construction water (where specifications allow)
- Dust suppression
- Rehabilitation of vegetated areas
- Vehicle washdowns.

Note: Justification will be provided to the Planning Secretary if it is concluded that no reuse options prevail.

Reuse of construction water will be regulated and monitored by the Permit to Dewater contained in **Appendix B**.

8.5 Licences and permits

The Project construction activities will be regulated by an EPL issued by the EPA. EPLs typically prescribe water quality parameters to be measured and associated discharge criteria for the licensed discharge points. The EPL will also detail the monitoring and analytical requirements by reference to authority publications (e.g. *Approved Methods for Sampling and Analysis of Water Pollutants in NSW* (EPA 2004)).

No other relevant licences or permits relating to soil and water are planned to be obtained for the Project.

8.6 Weather monitoring

Weather conditions and forecasts (including rainfall prediction maps) will be monitored daily and the relevant information passed on to site personnel to allow for adequate planning for significant rain events.

Rainfall at each construction support site will be measured and recorded in millimetres per 24-hour period at the same time each day from the time that the construction support site is established.

Weather station installation will be in accordance with Roads and Maritime specification R272. One automatic weather monitoring station will be installed at the Cammeray Golf Course (WFU8) site.

8.7 Auditing

Audits (both internal and external) will be undertaken to assess the effectiveness of environmental controls, compliance with this sub plan, MCoA and other relevant approvals, licences and guidelines.

Auditing is to comply with Conditions of Approval A37 to A42 inclusive. Audit requirements are detailed in Section 3.9.3 of the CEMP.

8.8 Reporting

Reporting requirements and responsibilities are documented in Section 3.9.4 and 3.9.5 of the CEMP. Additional reporting will also be generated as required by the Surface Water Monitoring Procedure (**Appendix E**).

Specific reports prepared in response to soil and water management requirements are listed in **Table 8-2**.

Table 8-2 SWMP Reporting Requirements

MCoA	Report	Timing
Sustainability		
E127	Water Reuse Strategy	Prior to construction and operation commencing
Water		
E223	Stormwater Drainage Report	One month prior to the subject works/discharges commencing

9 Review and improvement

9.1 Continuous improvement

Continuous improvement of this Sub-plan will be achieved by the ongoing evaluation of environmental management performance against environmental policies, objectives and targets for the purpose of identifying opportunities for improvement.

The continuous improvement process will be designed to:

- Identify areas of opportunity for improvement of environmental management and performance
- Determine the cause or causes of non-conformances and deficiencies
- Develop and implement a plan of corrective and preventative action to address any non-conformances and deficiencies
- Verify the effectiveness of the corrective and preventative actions
- Document any changes in procedures resulting from process improvement
- Make comparisons with objectives and targets.

9.2 SWMP update and amendment

The processes described in Section 3.9 to Section 3.13 of the CEMP may result in the need to update or revise this Sub-plan. This will occur as needed.

Only the CPB Downer JV Construction Environment Manager, or delegate, has the authority to change any of the environmental management documentation.

The ER will review this SWMP (as required by CoA A27(d)) prior to submission to the Planning Secretary to ensure it is consistent with the requirements of the Planning Approval.

A copy of the updated Sub-plan and changes will be distributed to all relevant stakeholders in accordance with the approved document control procedure (refer to Section 3.11.2 of the CEMP).

Appendix A – Erosion and Sediment Control Management Procedure

EROSION AND SEDIMENT CONTROL MANAGEMENT PROCEDURE

RESPONSIBILITY | **MANAGEMENT ACTIONS**

Site Supervisor / Project Manager

Assess potential risks related with Erosion and Sediment Control following the below questions:

1) Has there been significant rainfall (i.e. >10mm/24hr)?
2) Are works commencing in a new area?
3) Have current works changed?
4) Will the ground be disturbed?
5) Does the excavation permit need revalidating?

HOLD POINT

Answer is yes to any of the above questions?

No → No further action required

Yes

Site Supervisor / Project Engineer / Environmental Coordinator

Excavation/Earthworks cannot commence/recommence until Erosion and Sediment Control Plan (ESCP) is developed or updated

HOLD POINT

Project Engineer

Notify the Environmental & Sustainability Team of the proposed excavation works

Environmental Coordinator / Site Supervisor

Undertake a site inspection to obtain an understanding of any constraints and if any additional environmental controls are required

Environmental Coordinator / Project Engineer / Soil Conservationist

Develop ESCP in consultation with site Supervisor, Soil Conservationist and Project Engineers.
The ESCP must comply with Blue Book requirements and be signed off by the CPB Downer JV Environment Operations Manager, Soil Conservationist and Project Engineer/ Site Supervisor.

Environmental Coordinator / Project Engineer

Permit to Excavate or Penetrate must be signed off and ESCP included in the permit

NOTES

ERSED Principles

- The implementation of temporary erosion and sediment controls will be progressive and continual.
- Minimal 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.
- If a sediment basin is at or near capacity works that direct water towards the basin cannot be undertaken.

Hold Point for Erosion and Sediment Control

Erosion and Sediment Control Plans (ESCP) will be developed for each work area prior to the start of construction works. These will be signed off by the CPB Downer JV Environment Operations Manager, Soil Conservationist and Project Engineer / Site Supervisor.

Monitoring

- Site conditions following rainfall events
- Daily pre start site inspections by supervisors to review controls and advise on any changes to ESCP
- Regular site inspection by environmental representatives to review status of controls
- Monthly inspection as a minimum to be undertaken by the Soil Conservationist

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
- Inspection Reports prepared by the Soil Conservationist

Appendix B – Dewatering Procedure

Dewatering Procedure

Project Name: Warringah Freeway Upgrade

Project number:	20.0000301755.1100
Document number:	WHTBLWFU-CPBD-NWW-WA-PRO-000001-B
Revision date:	11/11/2021
Revision:	D

Document Approval

Rev.	Date	Prepared by	Reviewed by	Recommended by	Approved by	Remarks
A	15/02/2021	S. Williams				Draft for Tender
B	01/10/2021	S. Williams	H. Chemney	H. Chemney	H. Chemney	Response to TfNSW
C	22/10/2021	S. Williams	H. Chemney	H. Chemney	H. Chemney	Internal review
D	11/11/21	S. Williams	H. Chemney	H. Chemney	H. Chemney	Amended based on ER / EPA comments
Signature:						

Details of Revision Amendments

Document Control

The Project Manager is responsible for ensuring that this WFU Dewatering Procedure (Procedure) is reviewed and approved. The Construction Environmental Manager is responsible for updating this Procedure to reflect changes to the Project, legal and other requirements, as required.

Amendments

Any revisions or amendments must be approved by the Project Manager before being distributed or implemented.

Revision Details

Revision	Details
A	First draft for tender
B	Response to TfNSW comments
C	Internal review
D	Amended based on ER / EPA comments

Contents

1. Introduction

1.1 Purpose

In accordance with the NSW *Protection of the Environment Operations Act 1997* (POEO Act), there is a legal responsibility to ensure that water leaving site has an acceptable water quality standard.

Successful water management is critical to demonstrating our capacity to manage environmental impacts and our overall commitment to the environment. Poor management of water can cause pollution of land and waterways and may result in project penalties, reputational damage and prosecution.

This Procedure has been prepared to meet the requirements of the requirements of TfNSW G38 and ensure all water discharged from site meets acceptable water quality standards (**Table 1.1**). The requirements of this Procedure will be tool-boxed to all site personnel involved in dewatering activities.

Table 1.1 Procedure requirements

Details	Location
a detailed description and justification of the selected dewatering methods	Section 2.1
a map showing areas of the Site that will require dewatering	To be provided in individual Progressive Erosion and Sediment Control Plans
a description on onsite water reuse requirements	Section 2.1.3
a map showing the proposed discharge locations for any offsite discharge;	Attachment 2 – Approved Discharge Locations
design requirements for each offsite discharge location to prevent erosion at the discharge location or in the receiving environment;	To be provided in individual Progressive Erosion and Sediment Control Plans
water quality objectives relevant to the dewatering activity; and	To be determined
description of the water quality treatment techniques to be used.	Section 2.3

The following document can be referred to for further guidance:

- RMS Technical Guideline: Environmental Management of Construction Site Dewatering (RTA, 2011);

2. Process

Water can accumulate in excavations, low lying areas and sediment basins. This water can be or become impacted by a range of pollutants including trace metals, sediment, oil, grease, hydrocarbons, chemicals, and concrete waste water depending on the nature of the construction activities on the site.

As such, this site water must be treated to an acceptable standard in accordance with the Project EPL before it is discharged from the site to the environment. This will be ensured via the correct implementation of the '*Water Release Approval (permit to pump)*' (**Attachment 1**) which is required to be completed and approved by the Environmental Manager prior to discharge site water.

2.1 General

2.1.1 Identify Equipment and Materials Required

Accountability: Construction Environmental Manager, Project Manager

Obtain and commission equipment and materials to facilitate efficient and effective treatment and disposal of water as well as necessary monitoring equipment. Equipment and materials may include, but not be limited to:

- flocculation materials (gypsum)
- pH neutralising chemicals such as lime or acid
- water quality probes
- laboratory sampling jars
- oil water separator
- mobile water treatment facility
- pumps
- pumps with floating intakes
- sediment basin outlet.

Ensure the material safety data sheet (MSDS) for the storage and handling of the flocculants and other chemicals is strictly followed.

All water quality treatment devices including sediment basins, pumps and other water treatment system must be commissioned prior to first usage to ensure they are fit for operation.

2.1.2 Select Appropriate Personnel

Accountability: Construction Environmental Manager, Project Director Manager

- Identify personnel to be involved with the Project's de-watering activities
- Ensure that selected personnel have the required competencies to perform dewatering procedures
- Where flocculants and other chemicals are to be used, ensure that project personnel are aware of and understand the MSDS pertaining to the handling of those materials.

2.1.3 Identify Opportunity for Reuse

Accountability: Construction Environmental Manager

To reduce the amount of water requiring treatment on the project, ensure that measures are in place so that site water is reused, wherever practical, for:

- Compaction of material
- Dust control
- Watering of preserved vegetation onsite and ground cover.

Site water which is free of oil and grease can be reused onsite for dust suppression without flocculent or pH treatment. If water is to be discharged off-site, testing will be required.

2.2 Testing

2.2.1 Calibrate Monitoring Equipment

Accountability: Environmental Coordinator

Calibrate all monitoring equipment prior to first usage and in accordance with manufacturer specifications.

Pre-calibration results must be taken and recorded as part of the equipment calibration. Include date and time of calibration, equipment calibrated and the serial number of equipment calibrated.

Obtain calibration solutions from an appropriate supplier and store them in accordance with manufacturer specifications.

A test following calibration should be carried out in the calibration solution following the calibration. This should also be recorded.

Retain calibration records onsite in accordance with Project requirements.

2.2.2 Determine Water Quality

Accountability: Construction Environmental Manager

Test the quality of the water to be discharged to determine if treatment is required before it is removed from the site.

Assess water quality against Blue Book requirements, TfNSW Specification G38 3.3 and the RMS Technical Guideline – Environmental Management of Construction Site Dewatering (EMS-TG-011) and the outcomes of the Discharge Impact Assessment:

- Turbidity (NTU): *to be determined*
- pH: *to be determined*
- Oil and Grease: *to be determined*

Note: *The final discharge criteria will be determined by NSW EPA via review of a Discharge Impact Assessment and included in the EPL for the Project. References to discharge water quality criteria in this Dewatering Procedure will be subsequently amended as necessary*

Note: Section 120 of the POEO Act states it is an offence to pollute any waters. Ensure that the water sampling method is robust, conducted in accordance with AS/NZS 5667.1 Water Quality -Sampling.

2.2.3 External Testing

Accountability: Construction Environmental Manager

If testing is to be undertaken by an external party, prepare a Chain of Custody using the laboratory specified template. Ensure that this form is attached to the sample when forwarding to the external party for testing. All laboratory testing must be undertaken by a National Association of Testing Authorities (NATA) accredited laboratory.

Upon receipt, enter test results into the Water Quality Monitoring spreadsheet.

2.3 Testing

Accountability: Construction Environmental Manager / Coordinator

Treat water based on testing outcomes detailed in the sections below.

2.3.1 pH

1. Test water with appropriately calibrated pH meter.
2. No action if pH reading between 6.5 and 8.5.
3. Lime to be added if pH below 6.5.
4. Hydrochloric Acid (32% Muriatic) or Sulfuric Acid to be added if pH above 8.5.
5. Determine volume of water in basin or excavation.
6. Bucket Test. Determine percentage of lime or acid required by taking a 10 litre sample of basin or excavation water and adding a known amount of lime or acid (initially 0.004%). If the pH is still not acceptable, vary the amount of lime or acid until within the limits.
7. Once the required percentage has been determined, calculate the actual amount of lime or acid to be added by multiplying the volume of water in the basin or excavation by the determined percentage.
8. Add the required amount of lime or acid to the basin or excavation.
9. Mix the water in the sediment basin or excavation by pumping water to recirculate.
10. Treat for pH prior to TSS.

Note: Refer to MSDS for Hydraulic or Sulfuric Acid prior to handling. The following PPE must be worn at all times when handling Hydrochloric or Sulfuric Acid:

- Safety glasses with side shields, chemical goggles or full-face shields.
- Impervious PVC or butyl rubber gloves.
- PVC overalls/jacket/apron and butyl rubber Wellington boots.
- If handling indoors, approved respirator with replaceable vapour/mist filter.

Note: Refer to SDS for Lime prior to handling. The following PPE must be worn at all times when handling Lime:

- Safety glasses.
- If handling indoors, approved P2 face mask.

2.3.2 Suspended Solids (Turbidity)

1. Prior to establishing a TSS and turbidity (NTU) correlation, collect a sample of basin or excavation water using a laboratory supplied container (an appropriately calibrated water quality probe will be used after the establishment of a TSS/NTU correlation).
2. If the TSS result is below nominated criteria (Section 2.2.2), dewatering can commence. If TSS is above nominated criteria, the water should treated with a flocculent.

   Note: TSS /NTU correlation will be established early during the project to assist in reducing the time between testing and dewatering of basins.

3. If basin or excavation require flocculation, gypsum is to be immediately applied evenly across the top of the water at a rate of 30kg per 100 cubic metres of water. Allow 36 – 48 hours for flocculation to occur.

   Note: Alternative flocculants may only be used subject to approval from the NSW EPA / TfNSW Representative in accordance with G38 3.3. Alternative flocculants must be applied at the manufacturers recommended dosage. Lime to be added if pH below 6.5. Hydrochloric Acid (32% Muriatic) or Sulfuric Acid to be added if pH above 8.5. Determine volume of water in basin or excavation.

4. Methods of application to include:
   - Broadcast by shovels recommended dosage is 30kg – 50kg/100 cubic meters. Spreading powder evenly and thinly (i.e. “dusting”) is recommend.

- Mixing in a drum with water and pumping through a hose on large basins or excavations (i.e. >200m^3).
- When spraying flocculants the mixture must hit the water at between 10 to 20 degrees to increase surface areas exposure to the water column.
- When using liquid gypsum or liquid flocculants, the solution must be mixed before use to ensure the product is evenly suspended throughout mixture. To be applied as per manufacturer instructions.

5. Basins or excavations should be monitored and recorded daily after flocculation until desired turbidity is achieved and to assist in determination of optimal dosage levels.

Note: Refer to MSDS for Gypsum **prior** to handling. The following PPE **must** be worn at all times when handling Gypsum:

- Safety glasses with side shields, chemical goggles.
- If handling indoors, approved P2 face mask.

2.3.3 Oil and Grease

1. Examine surface of water for evidence (e.g. sheen, discoloration).
2. No action if no visual contamination.
3. Oil absorbent material to be removed if there is contamination with absorbent materials (e.g. Xtrasorb, floating booms, pads and socks) and/or an oil/water separator. Leave basins to compensate for 24 to 48 hours.

2.4 Discharge Water

Accountability: Construction Environmental Manager

Ensure that the water is tested and a Permit to Pump is approved and issued prior to discharge to ensure that water quality criteria have been achieved. Water quality results to be recorded and entered into the Water Quality Monitoring spreadsheet. Retain the approved Permit to Pump and Checklist on site in accordance with project document management requirements.

Confirm the characteristics of the location of the water (e.g. deep excavation or elevated sediment basin) and determine a suitable method for discharge (e.g. pumping, decanting, siphon).

Ensure that any water discharge activities, whether offsite or onsite, are under constant supervision to prevent unacceptable environmental impacts.

Monitor discharge and record observations on the *Water Release Approval (permit to pump)* (**Attachment 1**) and keep on file. Discharge locations are only those that are contained in **Attachment 2 – Approved Discharge Locations** and approved by the project EPL.

Do not pump water to the environment unless the discharge criteria detailed in Section 2.2.2 are achieved. Record results on the Permit to Pump and Checklist.

2.5 Non-compliance and incidents

Accountability: Construction Environmental Manager / Site Supervisor

If non-compliances arise, ensure that site processes are reviewed and corrective actions implemented to prevent recurrence.

Consult with the Supervisor or Construction Manager, if applicable.

Notify the Construction Environmental Manager

The incident is to be logged and reported as outlined in the Construction Environmental Management Plan (CEMP) Section 3.8 and with the Environmental Incident Classification and Reporting Procedure contained in Appendix A6 of the CEMP.

Attachment 1 – Permit to Dewater

Attachment 2 – Approved Discharge Locations

To be updated after obtaining an EPL.

Appendix C – Stockpile Management Procedure

Stockpile Management Protocol

Project Name: Warringah Freeway Upgrade

Project number:	20.0000301755.1100
Document number:	WHTBLWFU-CPBD-NWW-WA-PRO-000002-C
Revision date:	28/01/2022
Revision:	D

Document Approval

Rev.	Date	Prepared by	Reviewed by	Recommended by	Approved by	Remarks
A	15/02/2021	S. Williams				Draft for Tender
B	01/10/2021	S. Williams	H. Chemney	H. Chemney	H. Chemney	Response to TfNSW
C	22/10/2021	S. Williams	H. Chemney	H. Chemney	H. Chemney	Internal review and response to consultation
D	28/01/22	S. Williams	H. Chemney	H. Chemney	H. Chemney	Updated based on DPIE comments
Signature:						

Details of Revision Amendments

Document Control

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

Amendments

Any revisions or amendments must be approved by the Project Manager before being distributed or implemented.

Revision Details

Revision	Details
A	First draft for tender
B	Response to TfNSW comments
C	Internal review and response to consultation

Contents

1. Introduction

1.1 Purpose

This Stockpile Management Protocol (Protocol) has been prepared to ensure that stockpiles are appropriately designed, established, operated and decommissioned to minimise impacts to the environment during construction of the Warringah Freeway Upgrade (the Project). This Protocol outlines the locational criteria used to guide the placement of temporary stockpiles and provides both standard and site-specific mitigation measures to be implemented to minimise impacts on the environment.

This Protocol has been developed in accordance with:

- Managing Urban Stormwater: Soils and Construction (Landcom, 2004)
- Stockpile Site Management Guidelines (Roads and Maritime, 2015)
- TfNSW G36 and G38 specifications.

1.2 Scope

This Protocol is relevant to the planning, placement and management of all stockpiles on or related to the Project. Stockpile sites may typically be required to store material including, but not limited to temporary storage of:

- excavated material unsuitable for reuse on the Project
- excess concrete, pavement, rock, soils and aggregate stored for potential reuse in the Project or prior to removal from site
- imported sands, soils, aggregates, recycled concrete products, topsoils, rock and engineered fills for use in the Project
- topsoil, mulch, timber for landscaping and revegetation works.

Temporary stockpiles will be removed for re-use within the Project or disposed of off-site.

Temporary stockpiles located outside of the Construction footprint are defined as a part of an ancillary facility in accordance with the Planning Approval as follows:

> *Ancillary Facility - a temporary facility for construction of the CSSI including an office and amenities compound, construction compound, material crushing and screening plant, materials storage compound, maintenance workshop, testing laboratory, material stockpile area and car parking facilities.*
>
> *Note: where an approved CEMP contains a stockpile management protocol, a material stockpile area located within the construction boundary is not considered to be an ancillary facility.*

Stockpiles that are within the Construction footprint and are in place for less than 10 days are not subject to this Protocol and will be subject to the requirements of the relevant Erosion and Sedimentation Control Plans (ESCP).

Stockpiles likely to be in place for more than 20 days that are proposed to be located outside of the construction footprint are deemed to be temporary facilities and therefore Minister's Conditions of Approval (MCoA) A19 apply as relevant to the location and set up of the stockpiles:

MCoA	Details
A19	Minor Construction Ancillary Facilities Lunch sheds, office sheds, portable toilet facilities, car parking, material storage, and the like, can be established and used where they have been assessed in the documents listed in Condition A1 or satisfy the following criteria: (a) are located within or adjacent to the construction boundary; 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, and (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.

2. Process

2.1 Criteria

Stockpiles at the Project will be located:

1. In accordance with MCoA A19 for minor construction ancillary facilities as relevant
2. Outside of the tree protection zone of trees or native vegetation identified for retention
3. On land that does not require the removal of threatened species, Endangered Ecological Communities or roosting habitat for listed threatened fauna species or native vegetation clearing beyond what is already required for the Project
4. At least 50 m from likely areas of concentrated water flows
5. So that any slump of the stockpile will not affect erosion and sediment control measures or infringe specified minimum clearance requirements
6. To ensure no cross contamination of contaminated materials with non-contaminated materials
7. In areas of low heritage conservation significance and not impact on heritage sites beyond those already impacted by the Project
8. A suitable distance from sensitive noise and vibration receivers to minimise disruption
9. So that the appropriate erosion and sediment control measures can be installed and will operate effectively
10. Readily accessible via the Project or road network
11. To minimise the need for heavy vehicles to travel on local roads
12. On relatively level land
13. On land above 10 year ARI flood levels
14. Within an identified Construction compound
15. Outside of utility easement corridors
16. Within the approved EPL boundary
17. With consideration of the potential contamination status of the material.

All proposed stockpiles will be assessed in accordance with the criteria listed above. In addition, boundary screening, per MCoA A20 shall be erected around all minor construction ancillary facilities that are adjacent to sensitive receivers for the duration of Construction unless otherwise agreed with the affected receivers(s).

2.2 Stockpile Register

CPB Contractors and Downer Joint Venture (CPB Downer JV) will include approved stockpile locations on relevant ESCP and will maintain a record of stockpile locations in an onsite Stockpile Register. An example Stockpile Register (**Attachment 1**) is provided.

The Stockpile Register will also include the purpose of the stockpile, the type and maximum quantity of material contained, timing for establishment and removal.

3. Stockpile Management

3.1 Stockpile location approval

Prior to the establishment of any stockpile on site as part of the Project, CPB Downer JV will detail how the stockpile site meets each of the criteria in Section 2.1 above.

Before establishing a new stockpile site, CPB Downer JV will consider whether any existing stockpile site can be used and consult with the Project Soil Conservationist to determine any risks to the surrounding environment or road user safety. CPB Downer JV will undertake a land condition survey in accordance with TfNSW G36 prior to disturbance of any intended land to be used for stockpiles outside of the Construction footprint.

The proposed locations and maximum dimensions of the proposed stockpiles will be submitted to the TfNSW Environmental Manager (or delegate) and the TfNSW Project Manager for concurrence at least 10 working days before stockpiling is due to commence. Stockpiles likely to be in place longer than 20 days will be shown on relevant ESCPs.

Stockpile sites will be clearly signposted to identify their locations on the construction site.

3.2 Stockpile Management

The type of environmental controls required for stockpile management will depend on the location, surrounding environment and material being stored at the stockpile site. Given that the Project will be undertaken with a complex, dense urban environment, the controls for a particular stockpile site may change during construction depending on the type of material being stored at any particular time and the limited nature of space and access arrangements. Any change in use will be reflected where required on the ESCPs and the Stockpile Register.

Site-specific mitigation measures, where they are necessary to further reduce impacts, will be detailed on the ESCP. Mitigation measures for each stockpile site will include as a minimum:

- An ESCP including:
    - delineation of the perimeter of the stockpile with a bund, fencing or barrier
    - erosion and sediment controls to be erected between the stockpile site and any drainage lines, down-slope areas and native vegetation.
    - temporary sediment basins
    - covers, or other erosion protections for stockpiles that will be in place for more than 20 days as well as any temporary stockpiles that are susceptible to wind or water erosion, within 5 days of forming each stockpile
    - diversion of stockpile run-off through sediment traps and into pits and the stormwater drainage system
    - water diversion bunds
- Where practical, keep topsoil stockpile heights to no greater than 2m and slopes to no steeper than 2:1
- Dust management measures will be implemented in accordance with the Air Quality Management Sub-plan
- Monitoring of odours and odour control measures (where necessary)
- Exit points from stockpile areas will be stabilised and include controls to prevent mud tracking
- Install and maintain large, clearly legible signs on each stockpile, stating contents and date of stockpiling
- Progressively rehabilitate stockpile sites in accordance with TfNSW Specification R178
- Avoid locating stockpile weed contaminated topsoil or other contaminated materials adjacent to areas of native vegetation (minimum setback of 5m).
- Stockpiles will be located outside the 10% AEP flood extent

Stockpiles should also be setback from threatened species, endangered ecological communities, or roosting habitat for listed threatened fauna species and native vegetation by an appropriate distance to avoid impacting these entities.

3.2.1 Mulch Stockpiles

Mulch will be stockpiled and composted prior to use in order to reduce the effects of nitrogen drawdown and tannin leaching. Minimum stockpiling times vary depending on species from which the mulch is derived (typically six months). Mulch stockpiles will be monitored and turned over as required to avoid spontaneous combustion. Mulch stockpiles will not be located close to creeks or tributaries and will be bunded or positioned to drain into a sediment basin. Mulch stockpiles in high tannin generating vegetation will be:

- Located 50 m from waterways, for mulch stockpiles that will be in place for duration of more than 1 month
- Located 20 m from waterways, for mulch stockpiles that will be in place for duration of less than 1 month
- Located on elevated ground
- Trimmed to a regular shape, with a height not exceeding 2m and batter slopes not steeper than 2:1
- Fully bunded to ensure up-gradient water is prevented from entering the stockpile site, and to capture tannin impacted water. Bunds will be impervious and 300 mm high at a minimum.

All bunded stockpiles that are in place for a period longer than one month will include a lined discharge point for overflow in extreme rainfall events be managed in accordance with all other requirements specified in the Tannins Management Procedure (refer to the Soil and Water Management Sub-plan – Appendix B3).

3.2.2 Topsoil Stockpiles

CPB Downer JV will comply with the following measures in regard to topsoil stockpiles:

- Prior to stockpiling topsoil, carry out a survey in accordance with TfNSW Specification G71 to determine the surface levels at each stockpile area
- Stripped topsoil will be sieved and any lumps of clay, weeds and other deleterious material will be removed prior to adding to any stockpile
- Topsoil that is not contaminated by noxious weeds will be kept in stockpiles for later spreading on fill batters and other areas. Other material may also be stockpiled but kept separated from the topsoil stockpiles
- Topsoil stockpiles will:
    - Be free from weeds, subsoil, other excavated materials, contaminated materials (including asbestos), refuse, clay lumps and stones, timber or other rubbish
    - Be managed to ensure no growth of weeds
    - Be trimmed to a regular shape to facilitate measuring with a height not exceeding 2 m and batter slopes not steeper than 2:1
    - Have their batters track rolled or stabilised by other means
    - Seeded in accordance with TfNSW Specification R178, to encourage vegetation cover
    - Be less than 1,000 m³ each.

CPB Downer JV will use only stockpiled topsoil suitable for use in revegetation works as topsoil. Topsoil handling and stockpile contamination risk will be managed to ensure the success of the revegetation.

3.2.3 Contaminated Material Stockpiles

CPB Downer JV will comply with the following measures in regard to stockpiles of contaminated material:

- All stockpiles containing contaminated (or suspected contaminated) materials will be covered (with geotextile or plastic as required)
- Additional downslope controls (such as bund/sandbags and/or sump depending on location of stockpile) will be installed as required
- Stockpiles will be sign posted as a warning for potential contamination present.

- Contaminated material stockpiles will only be located in areas which are explicitly approved for the strorage of contaminated materials

Further details of stockpiling of contaminated materials will be contained in a Remedial Action Plan prepared in the event that contamination is identified.

3.3 Decommissioning of Stockpile Sites

Decommissioning of stockpile sites after use will be conducted to reinstate the stockpile site to its previous natural condition.

Stockpile sites will be progressively rehabilitated in accordance with TfNSW Specification R178.

Decommissioning and rehabilitation of stockpile sites will involve the following activities:

- Clearing all stockpile material from the site and recycling or disposing of it at a licensed facility
- Stabilising the site by planting and/or landscaping the site
- Removing control measures such as erosion and sedimentation devices once the stabilisation has occurred
- Undertaking an inspection of the site
- Notifying the TfNSW Environmental Manager (or delegate) that the stockpile site has been removed
- Updating records in the Stockpile Register.

4. Inspection, Monitoring and Reporting

4.1 Stockpile location approval

Compliance with this Protocol will be tracked through weekly environmental inspections of stockpile sites.

Inspections will monitor the effectiveness of the control measures and ensure the environmental impacts of stockpiles are minimised. The checklist of items to be inspected will include general condition of surrounding environment, erosion and sedimentation control devices, pits and catch drains, bunding, fencing, stockpile height and condition (evidence of weeds, odour, litter etc).

In the event of uncovering material with a noxious odour, or detection of nuisance odours (nuisance to workers or confirmed beyond boundaries), CPB Downer JV will investigate and implement any necessary management measures identified in the investigation process per Air Quality Management Sub-plan and mitigation measure MMAQ20.

Identified non-compliances will be reported to the TfNSW Environmental Manager (or delegate) and the appropriate management measures will be put in place to ensure ongoing compliance.

Attachment 1 – Stockpile Register

Stockpile Reference	Material Type	Stockpile commencement date	Location (Chainage & east/west of alignment)	Is site bunded? Y/N	Maximum stockpile size proposed	Location Criteria																Comments

Appendix D – Spill Management Procedure

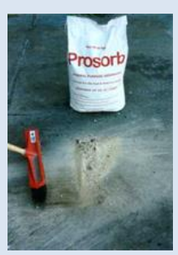
SPILL MANAGEMENT PROCEDURE

RESPONSIBILITY	ACTIONS	RESPONSIBILITY
Operator	Initial assessment of the spill: determine the **type of spill kit** to be used based on the substance spilled. Refer to Safety Data Sheet for details.	
	Containable spill?	
	No → Contact the HAZMAT (NSW Fire Brigade: Ph. 000) if the spill is of a hazardous nature or not manageable with the resources available on site.	Site Supervisor
	Notify site warden, evacuate the area and cordon off. Refer to Site Emergency Response Plan.	Site Supervisor
	Activate PIRMP (if required under EPL).	Site Supervisor
	Yes	
Operator	**Locate closest spill kit.** Spill kits are available in the following locations: • Site Supervisor's utes and site trucks • Site locations as shown in Site Evacuation Plans	
All attending the spill	Wear adequate **PPE for the type of spill**. As a minimum the following must be worn (refer to spill kit instructions and SDS): • Gloves • Protective footwear • Face mask where required	
	Stop the source of the spill/leak if safe to do so.	
	Contain the spill and protect any drains/waterways channels near the spill.	
	Notify site supervisor as soon as practicable.	
	Clean up the spill using absorbent materials from the spill kit.	
	Place used spill kit materials and any spill generated waste in the waste bag found within the spill kit. Dispose in designated bin. Spilled liquid waste to be placed into a labelled sealed container. The container is to comply with Australian/ New Zealand Standards.	
Site Supervisor	Transport and disposal by EPA approved licensed contractor (if required) to a licenced facility. Refer to the CEMP Appendix B7 Waste and Resource Management Sub-plan (WHTBLWFU-CPBD-NWW-WM-PLN-000010).	
Site Supervisor	Replace spill kit equipment used immediately after the event.	

NOTES

Spill Kit Materials:

Booms	Granules / Particulate	Pillows	Pads
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.	If the booms alone cannot absorb the spill/ leak, then use absorbent granules to soak up spilled liquid. Absorbent granules are best for small spills/ leaks.	Cushion shaped products containing absorbent fibres, used directly under a leak or drip.	Thin absorbent mats place over spill and used like blotting paper.



Appendix E – Surface Water Monitoring Program

Appendix B3

Surface Water Monitoring Program

Warringah Freeway Upgrade

March 2022

WHTBLWFU-CPBD-NWW-WA-PRG-000003-2

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Contents

Document status

Rev	Date	Prepared by	Reviewed by	Approved by	Remarks
A	15/03/2021	S. Williams			Draft for Tender
B	11/10/2021	S. Williams and A. Macleod	H. Chemney	H. Chemney	Response to TfNSW
C	22/10/2021	S. Williams	H. Chemney	H. Chemney	Internal review
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1	28/01/2022	S. Williams	H. Chemney	H. Chemney	Amended based on DPI&E and EPA comments
2	25/03/2022	H. Chemney	H. Chemney	H. Chemney	Amended based on DPIE Water comments

Distribution of controlled copies

This Surface Water Monitoring Program as part of the CEMP is available to all personnel and sub-contractors via the Project document control management system. An electronic copy can be found on the Project website.

The document is uncontrolled when printed. One controlled hard copy of the Surface Water Monitoring program as part of the CEMP and supporting documentation will be maintained by the Quality Manager at the Project office and on the project website [https://caportal.com.au/rms/wht].

Copy number	Issued to	Version

Glossary/ Abbreviations

Abbreviations	Expanded Text
BoM	Bureau of Meteorology
CEMP	Construction Environmental Management Plan
MCoA	Minister's Conditions of Approval
CPB Downer JV	CPB Contractors and Downer Joint Venture
DPIE Water	Water group of the Department of Planning, Industry and Environment
EC	Electrical Conductivity
EIS	Western Harbour Tunnel and Warringah Freeway Upgrade Environmental Impact Statement
EPL	Environment Protection Licence
REMM	Revised Environmental Management Measures
RMS	Roads and Maritime Services
SSTV	SSTV Site Specific Trigger Values
SWMP	Soil and Water Management Sub-plan
Program	Surface Water Monitoring Program
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
TfNSW	Transport for New South Wales
WTP	WTP Water Treatment Plant

1 Introduction

1.1 Context

This Surface Water Monitoring Program (the Program) has been prepared for the design and construction of the Warringah Freeway Upgrade Project (the Project). The Program forms **Appendix C** of the Soil and Water Management Sub-plan (SWMP).

The Program addresses the requirements of the Minister's Conditions of Approval (MCoA), the Western Harbour Tunnel and Warringah Freeway Upgrade Environmental Impact Statement (EIS), and the Revised Environmental Management Measures (REMM) listed in the Western Harbour Tunnel and Warringah Freeway Upgrade Submissions Report.

1.2 Scope of the Monitoring Program

The scope of this Program is to describe how CPB Contractors and Downer Joint Venture (CPB Downer JV) proposes to monitor potential impacts to surface water during construction of the Project. Operational monitoring and operation measures do not fall within the scope of the construction phase and therefore are not included within this Program.

2 Purpose and objectives

2.1 Purpose

The purpose of this Program is to describe how CPB Downer JV will monitor surface water quality during construction of the Project.

The Program will be implemented to monitor the effectiveness of mitigation measures applied during the construction phase of the Project. Monitoring of surface water will be undertaken to identify potential impacts and ensure an appropriate management regime can be implemented to address those impacts and manage local surface water quality.

This Program provides details of the surface water monitoring network, frequency of monitoring, and test parameters. This Program supplements the SWMP, which itself is an appendix of the Construction Environmental Management Plan (CEMP).

2.2 Objectives

The key objectives of this Program are to ensure all MCoAs, REMMs, and licence/permit requirements relating to surface water monitoring are described, scheduled, and assigned responsibility as outlined in:

- The EIS prepared for Warringah Freeway Upgrade
- The Submissions Report prepared for Warringah Freeway Upgrade
- Conditions of Approval granted to the project on 21 January 2021
- RMS specifications G36, G38 and G40
- The Project's Environment Protection Licence (EPL)
- All relevant legislation and other requirements described in Section 3 of the SWMP.

SMART principles (Specific, Measurable, Achievable, Realistic and Timely) have been considered and applied within this Surface Water Monitoring Program to monitoring scope, locations, procedures, testing and reporting.

2.3 Consultation

This Program was developed and finalised in consultation with DPIE Water, Sydney Water and the EPA in accordance with MCoA C11c). Consultation with each agency, including responses received and how any issues raised were addressed in the development of this Program are included in **Table 4-1** of the SWMP. Records of consultation are included in **Appendix E** of the SWMP.

Ongoing consultation with relevant councils and other stakeholders, including any unique local receivers, will be undertaken for particular issues pertaining to the Project's impact on soil and surface water. Community feedback and complaints relating to surface water quality will be managed in accordance with the Communication Strategy and Complaints Management System.

3 Surface Water Monitoring

3.1 Baseline Monitoring

3.1.1 Overview

In October 2017 a baseline surface water monitoring program was implemented as part of the project EIS (Jacobs, 2020). The program was based on a desktop assessment involving a review of the existing surface water environment across the project area, including:

- Information obtained from geotechnical investigations and assessments carried out as part of the project
- Information and water quality monitoring data from the EIS and the Westconnex M4-M5 Link EIS relevant to surface water within the project area
- Data relevant to the existing surface water conditions in the study area from sources including North Sydney Council, Willoughby Council and NSW Government agencies including Sydney Water.

Following publication of the EIS, Transport for NSW (TfNSW) have continued to obtain baseline samples from three locations in close proximity to the project between December 2020 and August 2021. The baseline surface water monitoring program was implemented to:

- Evaluate the existing surface water quality at key locations in the project area
- Identify potential pathways of pollutants to surface water receivers
- Monitor and assess the surface water quality in the project area to form a baseline of environmental conditions, to measure the environmental performance of the project during the construction and operation of the project.

3.1.2 Monitoring Network

Baseline water quality monitoring locations were located upstream and downstream of the Project alignment and ancillary facilities as shown in **Figure 3.1** and listed in **Table 3-1**. Monitoring locations SW03 and SW04 shown on **Figure 3.1** are associated with the M4-M5 Link Mainline Tunnels Project and are not included in the monitoring program established by this Program.

Table 3-1: Baseline water quality monitoring sites

Sample ID	Waterway	Location
2b	Willoughby Creek downstream	Primrose Park, Cremorne
4b	Quarry Creek	Quarry Street, Naremburn
5a	Flat Rock Creek upstream	Grandview Street, Naremburn
5b	Flat Rock Creek downstream (upstream of Quarry Creek inflow)	Flat Rock Gully
5c	Flat Rock Creek downstream (downstream of Quarry Creek inflow)	Tunks Park, Northbridge suspension bridge

3.1.3 Surface water quality

The baseline surface water quality sampling program (**Table 3-2**) included the following analytes:

- Physio-chemical (field) parameters (dissolved oxygen, electrical conductivity, pH, Turbidity, total suspended solids)
- Dissolved metals (arsenic, cadmium, chromium, copper, lead, manganese, nickel, zinc, iron and mercury)
- Oxidised nitrogen
- Total Kjeldahl nitrogen
- Total phosphorous
- Chlorophyll-a.

Summary tables of the baseline water quality data are included in Annexures A and B. Interpretation of the baseline surface water monitoring data is included in the EIS (Jacobs, 2020) and summarised in **Table 3-3** and **Table 3-3**. The results are compared against the ANZECC (2000a) water quality guidelines. It should be noted that these guidelines are not to be used as a mandatory standard; rather they provide a guideline for the environmental values of water resources.

Table 3-2: Baseline surface water quality monitoring sampling program

Sample ID	Number of samples	Baseline monitoring period(s)	Minimum Frequency
2b	14	October 2017 – February 2018 December 2020 – August 2021	Monthly
4b	4	October 2017 – February 2018	Monthly
5a	13	October 2017 – February 2018 January 2021 – August 2021	Monthly
5b	13	October 2017 – February 2018 January 2021 – August 2021	Monthly
5c	6	October 2017 – February 2018	Monthly

Table 3-3: Baseline water quality conditions in the Project area

Waterway	Baseline data obtained	Description of water quality
Willoughby Creek	Samples collected at 2b Data from Jacobs (2020) and TfNSW (2021)	High levels of nutrients (oxidised nitrogen, total nitrogen and total phosphorous) Elevated concentrations of heavy metals (iron, copper and zinc Dissolved oxygen was low
Quarry Creek	Samples collected at 4b Data from North Sydney Council (Jacobs, 2020)	High levels of nutrients (oxidised nitrogen, total nitrogen and total phosphorous) Elevated concentrations of heavy metals (copper and zinc) High pH and dissolved oxygen High faecal coliform counts
Flat Rock Creek	Samples collected at 5a, 5b and 5c Data from North Sydney Council (Jacobs, 2020) and TfNSW (2021)	High levels of nutrients (oxidised nitrogen, total nitrogen and total phosphorous) Elevated concentrations of heavy metals (iron, copper and zinc) High pH upstream Low dissolved oxygen downstream Microbial contamination

3.2 Surface water quality construction monitoring

3.2.1 Overview

The mobilisation of sediments and pollutants during the above-ground surface construction works is identified as a potential impact on surface water within the highly urbanised and disturbed catchments and waterways. A soil conservation specialist will be engaged to provide design input.

Table 3-5 contains the parameters to be tested as part of this Program. Site specific trigger values (SSTVs) are identified in

Table 3-6 and will be used to assess potential impacts on sensitive receiving environments.

Variation in physio-chemical parameters (

Table 3-6) provides an indication of a change to overall water quality triggering the assigned performance criteria and further impact assessment. The Project EPL may authorise discharge of water from specific locations or premises and establish criteria that differ from those given in this Program. In such circumstances the EPL, and any conditions and criteria of that EPL, take precedence and this Program will be revised to ensure consistency.

3.2.2 Rainfall monitoring

To provide data to assess water quality trends, daily rainfall will be monitored during the construction phase via a rain gauge located at Cammeray Golf Course which will be checked on each workday or automated using an electronic weather station. Where this data is not available, rainfall data for both Observatory Hill and Chatswood bowling club will be gained from the Bureau of Meteorology website.

3.2.3 Monitoring locations

Surface water quality monitoring will be carried out during construction at five sites, listed in **Table 3-4** and shown in **Figure 3-1**. The monitoring program will commence prior to any ground disturbance being undertaken.

Construction phase monitoring will commence following approval by DPIE of this Program. The monitoring allows for the assessment trends in water quality, including natural variations, and will allow sufficient data to enable assessment of any potential impacts measured during construction.

Table 3-4: Construction phase surface water monitoring program

Sample ID[1]	Sample location	Ancillary facility	Receiving environment	Analysis suite[2]	Sampling frequency
2b	Willoughby Creek downstream	General upgrade works	Sydney Harbour	• Physiochemical Parameters • Dissolved Metals • Nutrients	Monthly / wet weather[3]
4b	Quarry Creek	General upgrade works	Sydney Harbour	• Physiochemical Parameters • Dissolved Metals • Nutrients	Monthly / wet weather[3]
5a	Flat Rock Creek upstream	General upgrade works	Sydney Harbour	• Physiochemical Parameters • Dissolved Metals • Nutrients	Monthly / wet weather[3]

Sample ID[1]	Sample location	Ancillary facility	Receiving environment	Analysis suite[2]	Sampling frequency
5b	Flat Rock Creek downstream (upstream of Quarry Creek inflow)	General upgrade works	Sydney Harbour	• Physiochemical Parameters • Dissolved Metals • Nutrients	Monthly / wet weather[3]
5c	Flat Rock Creek downstream (downstream of Quarry Creek inflow). Note that this site is sometimes affected by tidal activity.	General upgrade works	Sydney Harbour	• Physiochemical Parameters • Dissolved Metals • Nutrients	Monthly / wet weather[3]

Note:

1. Sample location ID's retained from EIS for consistency
2. Specific analytes as detailed in **Table 3-5**
3. Quarterly wet weather monitoring (at least once every 3 months following 25 mm of continuous rainfall – see **Section 3.2.4 Sampling frequency**).

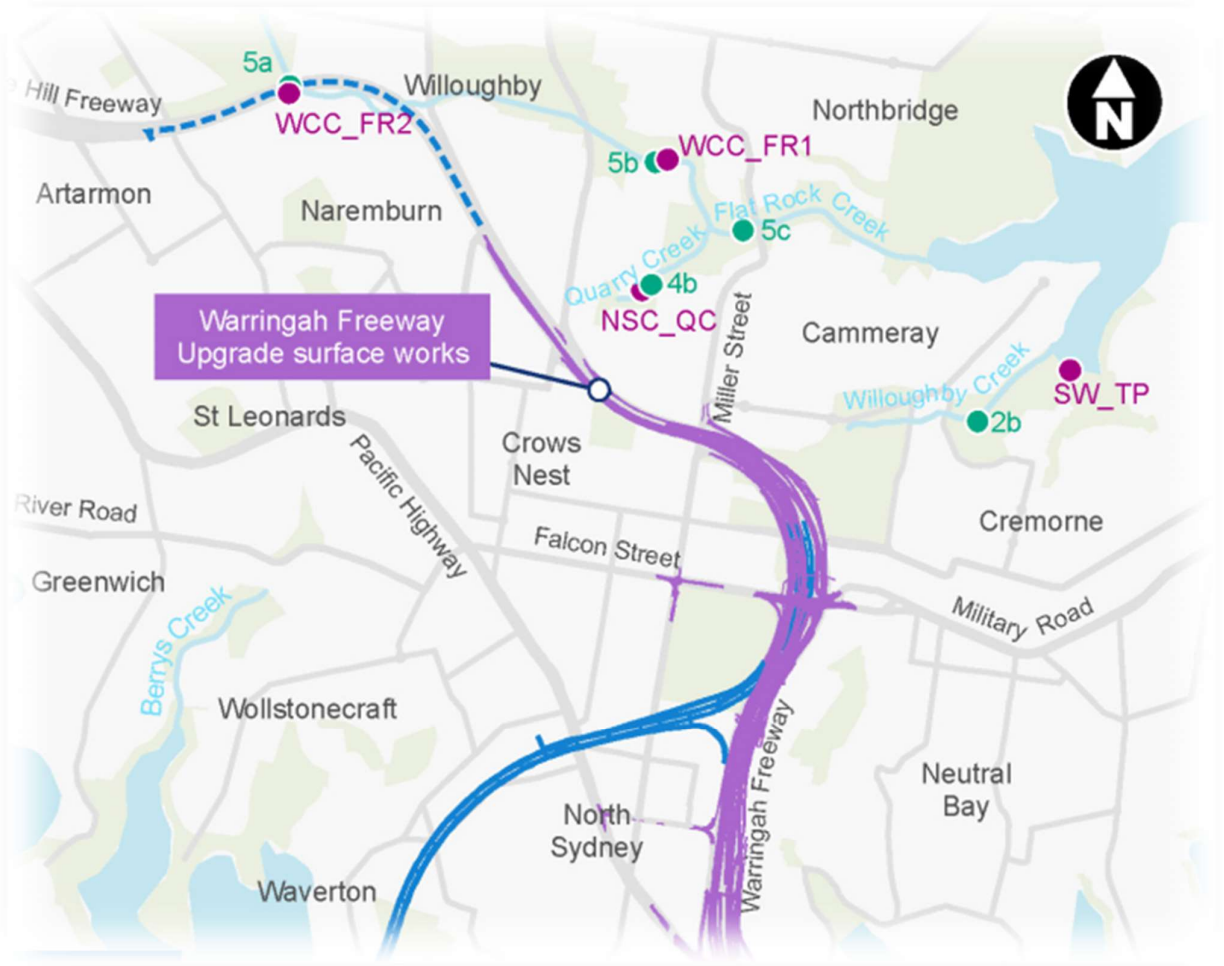

Figure 3-1: Baseline and construction monitoring locations

3.2.4 Sampling frequency

During the construction phase water quality sampling will be undertaken monthly.

Wet weather monitoring will be carried out when a continuous rainfall event of >25 mm is received in the local catchment during a 24-hour period (as recorded at the Project's rain gauge or nearby BoM weather station) and has generated runoff from the Project.

A wet weather monitoring event will be undertaken at a minimum of once per 3 months where rainfall exceeds 25 mm within a 3 month period.

For safety reasons sampling will not be undertaken during peak stormflows. Sampling will be completed when flows are reasonably constant and monitoring points can be safely accessed. Where possible, monitoring locations will be selected to enable safe monitoring during all weather conditions.

The monitoring program will continue for the duration of construction and until the construction areas are rehabilitated (i.e. stabilised using permanent ground covers) to an acceptable condition as certified by a suitably qualified and experienced independent expert.

3.2.5 Surface water quality parameters

Table 3-5 details the analytes that will be monitored during the construction phase surface water monitoring, at the locations listed in **Table 3-4** and shown in **Figure 3-1**.

Table 3-5: Surface water quality monitoring parameters

Category	Parameters	Measurement
Physio-chemical parameters	• Temperature (˚C) • Dissolved Oxygen (mg/L) • Electrical Conductivity (µS/cm) • Reduction-Oxidation Potential (Redox) (mV) • pH • Total dissolved solids (TDS) • Turbidity (NTU) • Visible oil and grease	Measured in the field using calibrated multi-probe water quality meter(s)
	• Total suspended solids (TSS)	Measured in a National Association of Testing Authorities (NATA) accredited laboratory
Metals (dissolved)	• Arsenic • Cadmium • Chromium • Copper • Lead • Manganese • Nickel • Zinc • Iron • Mercury	
Nutrients	• Oxidised nitrogen • Total Kjeldahl nitrogen • Total nitrogen • Total phosphorus • Chlorophyll-a	

Surface water quality analysis results will be assessed and compared to baseline conditions, rainfall records, upstream monitoring results, and the performance criteria described in the sections that follow.

3.2.6 Performance criteria

Baseline monitoring shows that some surface water quality parameters exceed the default ANZECC (2000a) water quality trigger values for slightly to moderately disturbed ecosystems.

This is not unexpected given the highly urbanised and disturbed area and receiving waterways surrounding the project.

Location specific performance criteria (site-specific trigger values (SSTVs)) have been developed for downstream (potentially impacted) surface water monitoring locations (see

Table 3-6).

SSTVs for physical and chemical stressors were developed for appropriate parameters using baseline monitoring data (Annexures A and B) and ANZG (2018) guideline criteria for slightly to moderately disturbed ecosystems (generally protecting 90% of species) (

Table 3-6).

Note that analysis of the two baseline data sets (reported in Jacobs, 2020 (data collected in 2017 and 2018) and collected by TfNSW during 2021) showed significantly different values for key analytes of concern at sites 2b, 5a and 5b, namely for Electrical Conductivity (EC) and Turbidity. As such, the two data sets were analysed separately and the SSTVs developed as follows:

- The mean of the 80th percentile of the two baseline data sets is used as the SSTV for those parameters/locations that exceeded the relevant ANZECC (2000a) guideline criteria. It is noted that exceedances of the ANZECC (2000a) guideline criteria are not unexpected due to the highly disturbed nature of the urban catchment area,
- The relevant ANZECC (2000a) guideline criteria are used as the SSTV for parameters where the 80th percentile of baseline data was below the relevant ANZECC (2000a) guideline criteria.

Table 3-6: Site specific trigger values

Parameter	Units	ANZECC guidelines[1]	2b	4b	5a	5b	5c[2]
pH	pH	7.0-8.5	7.0-8.5	7.0-8.5	7.0-8.5	7.0-8.5	7.0-8.5
Electrical conductivity	µS /cm	125 – 2200	422.91	362	376.72	2095.6	27977
Turbidity	NTU	6 – 50	255.82	37.7	85.42	225.94	16.9
Arsenic	mg/L	0.013	0.013	0.013	0.013	0.013	0.013
Cadmium	mg/L	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Chromium	mg/L	0.001	0.013	0.003	0.001	0.010	0.001
Copper	mg/L	0.0014	0.0148	0.0188	0.0070	0.08	0.017
Lead	mg/L	0.0034	0.0258	0.0036	0.0034	0.0034	0.005
Manganese	mg/L	1.9	1.9	1.9	1.9	1.9	1.9
Nickel	mg/L	0.011	0.011	0.011	0.011	0.011	0.011
Zinc	mg/L	0.008	0.104	0.182	0.074	0.102	0.097
Iron	mg/L	0.3	0.54	1.24	0.75	0.77	0.76
Mercury	mg/L	0.00006	0.0001	0.0001	0.0001	0.0001	0.0001
Oxidised nitrogen	mg/L	0.04	3.18	0.99	5.62	2.85	2.73
Total Kjeldahl nitrogen	mg/L	No guideline value	1.00	1.26	2.60	1.30	1.40
Total nitrogen	mg/L	0.35	4.20	1.66	7.40	4.20	3.60
Total phosphorus	mg/L	0.025	0.140	0.18	0.070	0.08	0.23
Chlorophyll-a	mg/L	3	3	1	4	2	1

[1] ANZECC guideline criteria for freshwater slightly to moderately disturbed ecosystems used
[2] Site 5c is representative of marine water and the ANZG (2018) marine toxicant trigger values are recommended to be compared to for estuarine ecosystems

ANZG (2018) indicates that data collected over 2 years of monthly sampling are regarded as sufficient to indicate ecosystem variability and are therefore suitable for guideline value derivation. The adopted data were collected monthly from October 2017 to February 2018 and additional monthly samples were collected by TfNSW from January 2021. Although this is not a consistent data set across two full calendar years, the data is quite varied highlighting the potential change in water quality in the receiving environment. ANZG (2018) also recommends that for slightly to moderately disturbed ecosystems that the 80th percentile guideline values should be adopted. This increases to the 90th percentile for highly disturbed ecosystems, Given the system is highly disturbed the 90th percentile value is appropriate however the conservative 80th percentile value has been adopted as the full two years worth of sampling data is not currently available.

ANZG (2018) states that ideal reference sites are similar to the monitoring sites (e.g. similar climate, relief and geology) but are minimally impacted, have limited exposure to anthropogenic drivers, and have sufficient historical data to characterise water quality condition and variability. However an undisturbed reference site representing this completely developed, highly impacted catchment is not readily available. Even if one was available, it would represent an unattainable goal given the current condition of the catchment. The reference sites were adopted as they are representative of the existing land uses within the catchment.

3.2.7 Project Discharges

As detailed in the Construction Discharge Impact Assessment (SEEC, 2021), discharges of surface water detained in excavations, sumps or sediment basins would be as nominated in **Table 3-7.**

Table 3-7: Nominated discharge limits (from SEEC, 2021)

Waterway	Discharge limit
Willoughby Creek	51 NTU
Quarry Creek	51 NTU
Flat Rock Creek	51 NTU
Sydney Harbour (i.e. all areas south of Falcon Street)	10 NTU

The above discharge limits will be reviewed as part of this Surface Water Monitoring Program to ensure they are considerate of catchment conditions and the Water Quality Objectives in the receiving waterways.

Discharge water quality monitoring will be undertaken as per the requirements of the Dewatering Procedure (Appendix B of the Soil and Water Management Sub-plan).

In addition to the above, EPL 21619 has been received from NSW EPA which has determined the discharge criteria of surface water from the Project at licenced discharge points are as follows:

- Oil and Grease: not visible
- pH: 6.5 – 8.5
- Turbidity: 51 NTU

4 Monitoring methodology / Sampling protocol

4.1 Sampling collection

Grab samples will be collected manually from the sampling locations identified in **Table 3-4** and **Figure 3-1**. The volume of sample collected will be sufficient for the required physio-chemical (field) parameter analysis using a multi-probe water quality meter(s). For metals and nutrient analysis, analysis will be undertaken by a NATA accredited laboratory. The appropriate preserved containers for each analyte will be used based on the laboratory requirements. Samples for dissolved metals will be filtered in the field using a 0.45 micron filter.

4.2 Field measures

Field physio-chemical parameters including EC, pH, DO, TDS, ORP, temperature, and turbidity will be measured at each sampling location using a fully calibrated multi-probe water quality meter(s) or provided for laboratory analysis. Other observations including odour and colour may also be recorded, where relevant.

The multi-probe field water quality meter(s) will be calibrated against known standards, as supplied by the manufacturer, at the start and completion of each day of water quality sampling.

4.3 Recording of field results

Results for each monitoring location will be recorded on appropriate field sheets (hard copy or digital) using unique sampling identification nomenclature consisting of the sample date, location, and sampler details.

4.4 Decontamination

Sampling equipment will be cleaned (decontaminated) between each sample. Where a sample site shows evidence of contamination (e.g. algal bloom or strong odour) equipment will need to be cleaned thoroughly. In addition, equipment will need to be cleaned periodically to prevent a build-up of dirt.

The following decontamination method will be followed:

- Rinse the equipment in tap water
- Clean with De-Con 90 (a phosphate free detergent), or equivalent
- Rinse again with tap water
- Rinse three times with de-ionised water
- Allow to dry

De-ionised and tap water will be available for washing equipment in the field, if required.

4.5 Quality Assurance and documentation

Any sample to be sent to a NATA-accredited laboratory will be subject to quality assurance protocols.

Quality assurance and control protocols during sampling and recording of physio-chemical (field) parameters will be undertaken monthly (each sampling event) in accordance with ANZECC/ARMCANZ (2000b) to ensure the integrity of the dataset.

As part of sampling the following will be undertaken:

- Rinsate blanks (one per sampling event only)
- Blind duplicates (at a rate not less than 20% of total samples)
- Split duplicates (at a rate not less than 20% of total samples).

Samples are to be transported to a NATA-accredited laboratory under documented chain-of custody protocols.

Field results will be checked for accuracy before leaving the site and errors or discrepancies will be cross-checked, and further investigation initiated if required.

Monitoring and calibration records will be maintained in accordance with the appropriate standard.

5 Compliance Management

5.1 Roles, responsibility, and training

The CPB Downer JV Project Team's organisational structure and overall roles and responsibilities are outlined in Section 3.3 of the CEMP. Specific responsibilities for the implementation of environmental controls are detailed in the SWMP.

All employees, contractors and utility staff working on site will undergo site induction and targeted training relating to surface water management issues, detailed in the SWMP.

Further details regarding staff induction and training are outlined in Section 3.5 of the CEMP.

All surface water quality monitoring required by this Monitoring Program will be undertaken by the project Environment Team.

5.2 Monitoring and inspection

This Program details the monitoring requirements for surface water. Additional soil and surface water inspection requirements (including weekly site inspections) are detailed in the SWMP Section 8.3.

In accordance with Section 3.3.1 of the CEMP, CPB Downer JV Environmental Manager will be responsible for ensuring monitoring activities are undertaken.

Additional requirements and responsibilities in relation to inspections are documented in Section 3.9.1 of the CEMP.

5.3 Data analysis and management response

Monthly monitoring results for surface water quality will be compared against SSTVs (

Table 3-6) and reported as per Section 5.5.

If a downstream parameter exceeds the corresponding upstream parameter for any single monitoring event by more than 20%, a review will be undertaken. The review will assess available surface water data, baseline data for the relevant waterway, relevant SSTV and ANZG (2018) guideline criteria, recent rainfall records, and recent activities or recorded erosion/sediment control incidents occurring in the catchment. If the exceedance is determined to be attributable to Project works, the event will be treated as an environmental incident and managed in accordance with the requirements of the CEMP. Corrective and preventative actions will be identified and implemented as part of that process.

5.4 Auditing

Audits (both internal and external) will be undertaken to assess the effectiveness of environmental controls, compliance with this Program, MCoA, and other relevant approvals, licenses and guidelines.

Audit requirements are detailed in Section 3.9.3 of the CEMP.

5.5 Reporting

During construction, surface water quality data will be collected, tabulated and assessed against baseline conditions and performance criteria.

Reporting requirements associated with the Program for the construction phase of the Project are presented in **Table 5-1**.

Table 5-1: Reporting Requirements

Schedule (during construction)	Requirements	Recipient (relevant authority)
Annual Construction Surface Water Quality Monitoring Report	In line with MCoA C21, prepare a data summary reports presenting tabulated surface water monitoring data collected during the reporting period. Surface water quality results will be presented, and performance criteria exceedances will be highlighted. Applicable management responses will be documented.	DPIE, DPIE Water, Sydney Water and EPA
EPL Monitoring Reports and Annual Returns	EPL monitoring reports will be prepared in accordance with the requirements of the EPL. An EPL Annual Return will be prepared in respect of each EPL reporting period (typically 12 months).	EPA

Monthly Environmental Report (every month)	Monitoring program performance will be documented in the Monthly Environmental Report. Any incidents and key environmental issues will be documented.	TfNSW

6 Review and improvement

6.1 Continuous improvement

Monitoring data will be reviewed throughout the construction period to inform the number of sampling locations and/or the analytical suites. The SSTVs will be reviewed for appropriateness following 12 months of construction monitoring.

Any alterations to the discharge limits (see Section 3.2.7), SSTVs, monitoring locations, analytical suites, or frequencies would be proposed in the annual Water Monitoring Reports following a review of the data collected as part of this Surface Water Quality Monitoring Program.

Continuous improvement of this Program will be achieved by the ongoing evaluation of environmental management performance against environmental policies, objectives and targets (detailed in Section 2.2).

The continuous improvement process will be designed to:

- Identify areas of opportunity for improvement of environmental management and performance
- Determine the cause or causes of non-conformances and deficiencies
- Develop and implement a plan of corrective and preventative action to address any nonconformances and deficiencies
- Verify the effectiveness of the corrective and preventative actions
- Document any changes in procedures resulting from process improvement
- Make comparisons with objectives and targets.

6.2 Program update and amendment

The processes described in Section 3.13.1 and Section 3.13.2 of the CEMP may result in the need to update or revise this Program. Additionally, this Program will be updated prior to the proposed Water Treatment Plants (WTPs) being commissioned.

Revisions of this Program will be in accordance with the process outlined in Section 3.13.1 of the CEMP.

A copy of the updated Program and changes will be distributed to all relevant stakeholders in accordance with the approved document control procedure – refer to Section 3.11.2 of the CEMP.

7 References

ANZECC/ARMCANZ (2000), *National Water Quality Management Strategy Australian and New Zealand Guidelines for Fresh and Marine Water Quality*. Australian and New Zealand Environment and Conservation Council, Agriculture and Resource Management Council of Australia and New Zealand.

ANZG (2018), *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*. Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT, Australia.

Jacobs (2020), *Western Harbour Tunnel and Warringah Freeway Upgrade. Technical working paper: Surface water quality and hydrogeology*

Roads and Traffic Authority (2003d), *Guideline for Construction Water Quality Monitoring, Roads and Traffic Authority of NSW: Sydney..*

Landcom, 2004. *Managing Urban Stormwater: Soils and Construction. Landcom, (4th Edition) March 2004 (reprinted 2006) (the "Blue Book"). Volume 1 and Volume 2.*

SEEC (2021). Construction Discharge Impact Assessment: Warringah Freeway Upgrade. October 2021. Strategic Environmental and Engineering Consulting, NSW.

Annexure A Baseline surface water monitoring results (from Jacobs, 2020)

Baseline Surface Water Monitoring 2b						
Parameter	**Units**	**Count**	**mean**	**min**	**max**	**80th percentile**
Physiochemical Parameters						
Dissolved oxygen	% sat	6	80.55	62.6	103.6	85
Electrical conductivity	µS/cm	6	307.833	198	443	399
pH	pH unit	6	8.015	7.59	8.67	8.4
Turbidity	NTU	6	8.793	3.5	14.8	13.8
TSS	mg/L	6	7.833	5	12	10
Metals (dissolved)						
Arsenic	mg/L	4	0.001	0.001	0.001	0.001
Cadmium	mg/L	4	0.0001	0.0001	0.0001	0.0001
Chromium	mg/L	4	0.008	0.001	0.03	0.013
Copper	mg/L	4	0.079	0.013	0.16	0.1480
Lead	mg/L	4	0.016	0.002	0.06	0.0258
Manganese	mg/L	4	0.0105	0.008	0.019	0.01
Nickel	mg/L	4	0.005	0.001	0.017	0.008
Zinc	mg/L	4	0.075	0.049	0.148	0.104
Iron	mg/L	4	0.0402	0.24	0.8	0.54
Mercury	mg/L	4	0.0001	0.0001	0.0001	0.0001
Nutrients						
Oxidised nitrogen	mg/L	6	2.338	0.87	5.04	3.18
Total Kjeldahl nitrogen	mg/L	6	0.716	0.4	1.5	1.00
Total nitrogen	mg/L	6	3.066	1.4	6.5	4.20
Total phosphorus	mg/L	6	0.148	0.1	0.27	0.140
Chlorophyll-a	mg/L	6	1	1	1	1

Baseline Surface Water Monitoring 4b						
Parameter	**Units**	**Count**	**mean**	**min**	**max**	**80th percentile**
Physiochemical Parameters						
Dissolved oxygen	% sat	6	83.925	74.6	92.7	89
Electrical conductivity	µS/cm	6	320.25	232	399	362
pH	pH unit	6	8.022	7.6	8.55	8.2
Turbidity	NTU	6	24.2	3.5	79.9	37.7
TSS	mg/L	6	35.5	8	113	51.8
Metals (dissolved)						
Arsenic	mg/L	6	0.001	0.001	0.001	0.001
Cadmium	mg/L	6	0.0001	0.0001	0.0001	0.0001
Chromium	mg/L	6	0.002	0.001	0.006	0.003
Copper	mg/L	6	0.011	0.003	0.026	0.0188
Lead	mg/L	6	0.002	0.001	0.006	0.0036
Manganese	mg/L	6	0.030	0.003	0.085	0.05
Nickel	mg/L	6	0.020	0.001	0.004	0.003
Zinc	mg/L	6	0.126	0.041	0.3	0.182
Iron	mg/L	6	0.747	0.11	1.94	1.24
Mercury	mg/L	6	0.0001	0.0001	0.0001	0.0001
Nutrients						
Oxidised nitrogen	mg/L	6	0.98	0.97	1	0.99
Total Kjeldahl nitrogen	mg/L	6	0.9	0.4	1.8	1.26
Total nitrogen	mg/L	6	1.287	0.35	1.9	1.66
Total phosphorus	mg/L	6	0.142	0.06	0.21	0.18
Chlorophyll-a	mg/L	6	1	1	1	1

Baseline Surface Water Monitoring 5a						
Parameter	**Units**	**Count**	**mean**	**min**	**max**	**80th percentile**
Physiochemical Parameters						
Dissolved oxygen	% sat	6	86.853	85.2	99.47	98
Electrical conductivity	µS/cm	6	343	163	397	397
pH	pH unit	6	8.451	7.31	9.37	9.0
Turbidity	NTU	6	7.055	2.71	18.97	7.3
TSS	mg/L	6	10.5	5.0	16	14.0
Metals (dissolved)						
Arsenic	mg/L	6	0.001	0.001	0.001	0.001
Cadmium	mg/L	6	0.0001	0.0001	0.0001	0.0001
Chromium	mg/L	6	0.002	0.001	0.008	0.001
Copper	mg/L	6	0.005	0.002	0.01	0.0070
Lead	mg/L	6	0.001	0.001	0.002	0.0020
Manganese	mg/L	6	0.024	0.012	0.049	0.04
Nickel	mg/L	6	0.001	0.001	0.003	0.002
Zinc	mg/L	6	0.042	0.01	0.08	0.074
Iron	mg/L	6	0.475	0.18	0.78	0.75
Mercury	mg/L	6	0.0001	0.0001	0.0001	0.00001
Nutrients						
Oxidised nitrogen	mg/L	6	3.813	1.05	9.75	5.62
Total Kjeldahl nitrogen	mg/L	6	1.966	0.6	2.6	2.60
Total nitrogen	mg/L	6	5.766	1.6	12.4	7.40
Total phosphorus	mg/L	6	0.143	0.03	0.6	0.070
Chlorophyll-a	mg/L	6	3.333	1	11	4.0

Baseline Surface Water Monitoring 5b						
Parameter	**Units**	**Count**	**mean**	**min**	**max**	**80th percentile**
Physiochemical Parameters						
Dissolved oxygen	% sat	6	68.733	24.3	85.3	85
Electrical conductivity	µS/cm	6	5012.5	348	27850	573
pH	pH unit	6	7.526	7.01	7.82	7.8
Turbidity	NTU	6	10.435	3.91	27.4	11.7
TSS	mg/L	6	9.166	5	18	11.0
Metals (dissolved)						
Arsenic	mg/L	6	0.001	0.001	0.001	0.001
Cadmium	mg/L	6	0.0001	0.0001	0.0001	0.0001
Chromium	mg/L	6	0.010	0.001	0.03	0.010
Copper	mg/L	6	0.042	0.004	0.15	0.08
Lead	mg/L	6	0.001	0.001	0.005	0.002
Manganese	mg/L	6	0.022	0.007	0.049	0.04
Nickel	mg/L	6	0.001	0.001	0.002	0.002
Zinc	mg/L	6	0.064	0.022	0.149	0.102
Iron	mg/L	6	0.703	0.49	1.11	0.77
Mercury	mg/L	6	0.0001	0.0001	0.0001	0.0001
Nutrients						
Oxidised nitrogen	mg/L	6	2.556	0.36	4.69	2.85
Total Kjeldahl nitrogen	mg/L	6	1.083	0.2	1.8	1.30
Total nitrogen	mg/L	6	4.166	3.4	5.8	4.20
Total phosphorus	mg/L	6	0.066	0.02	0.18	0.08
Chlorophyll-a	mg/L	6	1.833	1	5	2.0

Baseline Surface Water Monitoring 5c						
Parameter	**Units**	**Count**	**mean**	**min**	**max**	**80th percentile**
Physiochemical Parameters						
Dissolved oxygen	% sat	6	34.15	21.5	74.7	37
Electrical conductivity	µS/cm	6	13459.67	324	41330	27977
pH	pH unit	6	7.285	7.16	7.61	7.5
Turbidity	NTU	6	12.266	4.3	30.7	16.9
TSS	mg/L	6	10.833	5	20	16.0
Metals (dissolved)						
Arsenic	mg/L	6	0.001	0.001	0.001	0.001
Cadmium	mg/L	6	0.0001	0.0001	0.0001	0.0001
Chromium	mg/L	6	0.001	0.001	0.002	0.001
Copper	mg/L	6	0.009	0.005	0.02	0.017
Lead	mg/L	6	0.003	0.001	0.006	0.005
Manganese	mg/L	6	0.041	0.016	0.062	0.05
Nickel	mg/L	6	0.001	0.001	0.002	0.002
Zinc	mg/L	6	0.068	0.044	0.12	0.097
Iron	mg/L	6	0.653	0.39	0.9	0.76
Mercury	mg/L	6	0.0001	0.0001	0.0001	0.0001
Nutrients						
Oxidised nitrogen	mg/L	6	1.841	0.27	2.73	2.73
Total Kjeldahl nitrogen	mg/L	6	1.016	0.5	2	1.40
Total nitrogen	mg/L	6	2.783	1	4.1	3.60
Total phosphorus	mg/L	6	0.178	0.05	0.54	0.23
Chlorophyll-a	mg/L	6	1	1	1	1.0

Annexure B Baseline surface water monitoring results (from TfNSW, 2021)

Baseline Surface Water Monitoring 2b						
Parameter	**Units**	**Count**	**mean**	**min**	**max**	**80th percentile**
Physiochemical Parameters						
pH (Field)	pH units	8	8.703	7.98	10.57	9.586
Temperature (Field)	°C	8	17.15	11.3	22	21.76
Dissolved Oxygen (Field) (Filtered)	mg/L	8	6.584	0.32	14.27	11.174
Electrical Conductivity (Field)	uS/cm	8	302.982	0.252	458.1	446.82
Specific Electrical Conductivity (Field)	uS/cm	6	321.46	0.561	520	495.4
Redox Potential (Field)	mV	8	88.238	54.5	177	107.72
Turbidity (Field)*	NTU	7	185.783	0.3	704.3	497.84
TDS (Field) (Filtered)	mg/L	5	277.58	163.6	338.3	330.24
Biological Oxygen Demand (BOD)	mg/L	3	2.667	2	4	
Chemical Oxygen Demand (COD)	mg/L	5	16.8	11	23	21.8
TSS	mg/L	3	16	5	22	
Nutrients						
Nitrogen (Total)	mg/L	8	2.4	0.5	4.2	3.8
Kjeldahl Nitrogen Total	mg/L	8	0.613	0.3	0.9	0.82
Nitrite + Nitrate as N	mg/L	8	1.803	0.2	3.55	3.198
Total Phosphorus (as P)	mg/L	8	0.326	0.05	2	0.512
Total Phosphate (as P)	mg/L	0		0	0	
Chlorophyll a	mg/m³	0		0	0	
Metals (dissolved)						
Arsenic	µg/L	2	1.5	1	2	
Cadmium	µg/L	1	0.4	0.4	0.4	
Chromium	µg/L	3	1.333	1	2	
Copper	µg/L	8	8.875	4	18	17.2
Iron	µg/L	8	288.75	80	420	372
Lead	µg/l	5	5	1	11	10

Baseline Surface Water Monitoring 2b						
Manganese	µg/L	7	9.571	3	19	14.8
Mercury	µg/L	0		0	0	
Nickel	µg/L	3	1	1	1	
Zinc	µg/L	8	63.375	26	167	103.8

* statistical outliers in the turbidity data for all three sites were excluded from the analysis because they skewed the results and were not consistent with other sample data from those dates. Equipment malfunction is suspected but cannot be confirmed.

Baseline Surface Water Monitoring 5a						
Parameter	**Units**	**Count**	**mean**	**min**	**max**	**80th percentile**
Physiochemical Parameters						
pH (Field)	pH units	7	8.431	7.95	9.78	9.06
Temperature (Field)	°C	7	17.071	12.8	21.9	21.84
Dissolved Oxygen (Field) (Filtered)	mg/L	7	7.887	3.16	15.33	12.492
Electrical Conductivity (Field)	uS/cm	7	176.4	0.226	366.7	356.44
Specific Electrical Conductivity (Field)	uS/cm	4	402.52	0.48	716	716
Redox Potential (Field)	mV	7	57.379	-155.2	148.1	123.26
Turbidity (Field)*	NTU	6	54.982	1.3	190.9	163.54
TDS (Field) (Filtered)	mg/L	6	212.05	34	427	375
Biological Oxygen Demand (BOD)	mg/L	2	3	3	3	
Chemical Oxygen Demand (COD)	mg/L	6	14.667	10	20	18.4
TSS	mg/L	3	37	13	68	
Nutrients						
Nitrogen (Total)	mg/L	7	1.514	0.8	2.2	2.02
Kjeldahl Nitrogen Total	mg/L	7	0.571	0.3	0.8	0.8
Nitrite + Nitrate as N	mg/L	7	0.923	0.26	1.38	1.368
Total Phosphorus (as P)	mg/L	7	0.11	0.04	0.18	0.18
Total Phosphate (as P)	mg/L	0		0	0	
Chlorophyll a	mg/m³	1	2	2	2	
Metals (dissolved)						
Arsenic	µg/L	3	1	1	1	
Cadmium	µg/L	0		0	0	
Chromium	µg/L	3	2	1	3	
Copper	µg/L	7	8	3	15	13.8
Iron	µg/L	7	558.57	320	940	922
Lead	µg/l	3	6	2	10	
Manganese	µg/L	7	33	19	43	43

Baseline Surface Water Monitoring 5a						
Mercury	µg/L	0		0	0	
Nickel	µg/L	7	2	1	3	2.4
Zinc	µg/L	7	55.714	15	101	98

* statistical outliers in the turbidity data for all three sites were excluded from the analysis because they skewed the results and were not consistent with other sample data from those dates. Equipment malfunction is suspected but cannot be confirmed.

Baseline Surface Water Monitoring 5b						
Parameter	**Units**	**Count**	**mean**	**min**	**max**	**80th percentile**
Physiochemical Parameters						
pH (Field)	pH units	7	7.973	7.33	10.05	8.886
Temperature (Field)	°C	7	17.186	12.5	21.7	21.4
Dissolved Oxygen (Field) (Filtered)	mg/L	7	7.257	0.92	13.99	11.116
Electrical Conductivity (Field)	uS/cm	7	1544.869	0.38	6182	3618.2
Specific Electrical Conductivity (Field)	uS/cm	4	2799.195	1.78	7543	7543
Redox Potential (Field)	mV	7	92.771	33.1	194.7	148.08
Turbidity (Field)*	NTU	6	134.358	3.6	643.3	440.18
TDS (Field) (Filtered)	mg/L	6	1288.683	63	4899	3574.2
Biological Oxygen Demand (BOD)	mg/L	3	4.333	2	6	
Chemical Oxygen Demand (COD)	mg/L	6	23.833	14	37	35.4
TSS	mg/L	5	23.6	5	50	46.4
Nutrients						
Nitrogen (Total)	mg/L	7	3.957	1.8	5.8	5.62
Kjeldahl Nitrogen Total	mg/L	7	1.671	0.8	2.4	2.16
Nitrite + Nitrate as N	mg/L	7	2.293	0.33	4.12	3.85
Total Phosphorus (as P)	mg/L	7	0.129	0.05	0.35	0.266
Total Phosphate (as P)	mg/L	0		0	0	
Chlorophyll a	mg/m³	3	2.667	1	6	
Metals (dissolved)						
Arsenic	µg/L	2	1.5	1	2	
Cadmium	µg/L	0		0	0	
Chromium	µg/L	2	2	2	2	
Copper	µg/L	7	7.857	2	16	16
Iron	µg/L	7	881.429	570	1460	1214
Lead	µg/l	4	3.25	2	6	6
Manganese	µg/L	7	35.286	18	79	55

Baseline Surface Water Monitoring 5b						
Mercury	µg/L	0		0	0	
Nickel	µg/L	7	1.714	1	3	2.4
Zinc	µg/L	7	51.857	18	91	88.6

* statistical outliers in the turbidity data for all three sites were excluded from the analysis because they skewed the results and were not consistent with other sample data from those dates. Equipment malfunction is suspected but cannot be confirmed.

Appendix F – Record of Consultation

CoA A5 Consultation Report Soil and Surface Water Sub-Plan

Western Harbour Tunnel and Warringah Freeway Upgrade

Stage 2

Transport for New South Wales

NSW GOVERNMENT

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CoA A5 Consultation Summary Report – Soil and Surface Water Sub-Plan

Transport for NSW

Western Harbour Tunnel and Warringah Freeway Upgrade

Stage 2

January 2022

Rev 1

Contents

Tables

Document control

Title	Consultation Report – Soil and Surface Water Sub-Plan
Document No./Ref	WHTBLWFU-CPBD-NWW-HE-PLN-000006-1

Version control

Revision	Date	Description	Approval
A	5/11/21	Consultation undertaken on SWMP	
B	12/11/21	Updated based on ER review	
0	16/11/21	Endorsed by ER and submission to DPI&E	
1	28/01/22	Updated based on DPIE comments	
2	25/03/22	Updated based on additional DPIE water comments	

Glossary/Abbreviations

Abbreviation	Expanded text
CEMP	Construction Environmental Management Plan
CoA	NSW Minister for Planning Conditions of Approval
CSSI	Critical State Significant Infrastructure
DPIE	Department of Planning, Industry and Environment
EIS	Environmental Impact Statement
EPA	NSW Environment Protection Authority
EPL	Environment Protection Licence
Minister, the	NSW Minister for Planning, Industry and Environment
NML	Noise Management Level
Planning Approval	The Planning Approval includes the Conditions of Approval, the EIS and the Submissions and Preferred Infrastructure Report (SSI-8863)
Proponent, the	Transport for NSW
Project, the	Western Harbour Tunnel and Warringah Freeway Upgrade
RBL	Rating Background Level
REMM	Revised Environmental Mitigation and Management Measure
RtS	Response to Submissions Report
WHTBL	Western Harbour Tunnel and Beaches Link
WHTWFU	Western Harbour Tunnel and Warringah Freeway Upgrade
WFU	Warringah Freeway Upgrade Stage 2

1 Introduction

1.1 Background

The Western Harbour Tunnel and Warringah Freeway Upgrade (WHTWFU) (the project) forms a core component of the broader Western Harbour Tunnel and Beaches Link (WHTBL) program of works. The project comprises two main components:

- A new crossing of Sydney Harbour involving twin tolled motorway tunnels connecting the M4-M5 Link at Rozelle and the Warringah Freeway at North Sydney (the Western Harbour Tunnel)
- Upgrade and integration works along the existing Warringah Freeway, including infrastructure required for connections to the Beaches Link and Gore Hill Freeway Connection project. Reconfiguration works as part of the Warringah Freeway Upgrade would optimise the road corridor and improve the performance of the Sydney Harbour Tunnel, the Sydney Harbour Bridge and the Western Harbour Tunnel.

Due to its importance, the WHTWFU project was declared to be Critical State Significant Infrastructure (CSSI) by the Minister for Planning and Public Space on 9 November 2020.

On 21 January 2021, the Department of Planning, Industry and Environment (DPIE) approved the construction and operation of the WHTWFU project (SSI 8863).

A detailed description of the project is provided in Chapter 5 of the Western Harbour Tunnel and Warringah Freeway Upgrade Environmental Impact Statement (EIS).

The WHTWFU project will be delivered in numerous stages:

- Stage 1 - Early and enabling works:
  - Stage 1A - Critical utility installation, relocation and protection (CUT) (the subject of this Construction Environmental Management Plan (CEMP))
  - Stage 1B - Cammeray Golf Course adjustment works (CGC)
- Stage 2 - Warringah Freeway Upgrade project:
- Stage 3 - Western Harbour Tunnel project (WHT).

Further detail on each stage is provided in the WHTWFU project Staging Report.

The Soil and Surface Water Sub-Plan applies only to Stage 2 of the project. CPB Downer JV has been appointed by Transport for New South Wales (TfNSW) to deliver the Warringah Freeway Upgrade project.

1.2 Purpose of this Consultation Report

This Consultation Report has been prepared to meet the requirements of the CSSI approval, in particular Condition of Approval (CoA) A5. CoA A5 outlines the requirements for undertaking and documenting consultation undertaken during the preparation of approval documents or monitoring programs required under relevant the CoA for those documents. This Consultation Report has been prepared to consolidate the consultation undertaken during the preparation of the following documents:

- CoA C4(e): Soil and Surface Water Sub-plan
- CoA C11(c): Surface Water Monitoring Program

Consultation required during the development of these two documents is detailed in Table 1-1.

Table 1-1 Consultation Requirements

CoA ID	Document	Consultation requirement
C4(e)	Soil and Surface Water Sub-plan	DPIE Water, EESG, EPA, Sydney Water (if Sydney Water's assets are affected) and relevant Councils
C11(c)	Surface Water Monitoring Program	DPIE Water, Sydney Water (if Sydney Water's assets are affected) EPA

Note: *The Surface water Monitoring program is an Appendix to the Soil and Surface Water Sub-plan*

1.3 CoA Compliance

This section discusses the compliance of this Consultation Report with the relevant CoA as applicable to consultation required to be undertaken during the development of the SWMP.

Table 1-2 lists the applicable CoA, where and how they have been addressed in this Consultation Report.

Table 1-2 Compliance with applicable CoA

CoA ID	CoA Detail	Where Addressed	How Addressed
A5	Where the terms of this approval require a document or monitoring program to be prepared or a review to be undertaken in consultation with identified parties, evidence of the consultation undertaken must be submitted to the Planning Secretary with the document. The evidence must include:	Section 1.2 Appendix 1 to 6	This consultation report identifies each of the stakeholders and agencies consulted in the preparation of this plan (Section 1.2). Full correspondence and documentation exchanged during consultation is found the Appendix 1 to Appendix 6 inclusive.

A5	(a) documentation of the engagement with the party identified in the condition of approval that has occurred before submitting the document for approval;	Appendix 1 to 6	Full correspondence and documentation exchanged during consultation is found the Appendix 1 to Appendix 6 inclusive. Each appendix relates to a different stakeholder and agency, thereby ensuring all evidence for each is consolidated in a single appendix. All correspondence is provided in a chronological order.
A5	(b) a log of the dates of engagement or attempted engagement with the identified party;	Section 2 of this Report.	Section 2 includes, by stakeholder and agency, a log of all points of engagement completed or attempted. It also summarises the issues raised by each stakeholder.
A5	(c) documentation of the follow-up with the identified party where engagement has not occurred to confirm that they do not wish to engage or have not attempted to engage after repeated invitations;	Section 2 of this Report.	Section 2 includes, by stakeholder and agency, a log of all points of engagement completed or attempted.
A5	(d) outline of the issues raised by the identified party and how they have been addressed; and	Section 2 of this Report and Appendix 1 to Appendix 6 inclusive.	Section 2 identifies all the issues raised during consultation. It provides in tabular format: • Issue raised; • Date raised; • How it was addressed or justification as to why it wasn't addressed; Section 2 then provides cross- referencing to the relevant Appendix identifying where evidence of the above is documented in full within this Report. *Note: Section 2 is broken down into each Stakeholder consulted with, and each has their own table addressing the above.*

A5	(e) a description of the outstanding issues raised by the identified party and the reasons why they have not been addressed.	Section 2 of this Report and Appendix 1 to Appendix 6 inclusive.	Section 2 identifies all the issues raised during consultation. It provides in tabular format: • Issue raised; • Date raised; • How it was addressed or justification as to why it wasn't addressed. *Note: Section 2 is broken down into each Stakeholder consulted with, and each has their own table addressing the above.*
C4	The following CEMP Sub-plans must be prepared in consultation with the relevant government agencies identified for each CEMP Sub-plan. Details of all information requested by an agency during consultation must be provided to the Planning Secretary as part of any submission of the relevant CEMP Sub-plan, including copies of all correspondence from those agencies as required by Condition A5.	This Report	This Report has been prepared to address the consultation undertaken during the development of the NVMP.

1.4 Consultation Process

Consultation with stakeholders and agencies was undertaken using the following means:

- Formal correspondence (DPIE Portal notifications)
- Formal correspondence (standard email)
- Phone Calls.

2 Stakeholder and agency consultation

This Section of the Consultation Report provides detail of consultation undertaken with each stakeholder and agency in the preparation of the CEMP. In particular it contains:

A consultation log that identifies:

- Consultation dates (actual and attempted)
- Form of consultation
- Whether responses and / or comments were received
- Summary of the issues raised, including how they have been addressed

Documentary evidence of all the correspondence received and sent through the consultation phase is contained in the Appendices at the end of this Report. The Appendices and this Section are broken down by stakeholder and agency, not by issue.

2.1 DPIE Water

Consultation with DPIE Water commenced on 27 September 2021.

Table 2-1 below includes the details of engagement between CPB Downer JV and NSC regarding the SWMP. Table 2-2 includes a summary of the issues raised, how those were addressed and closed out. Full evidence of correspondence is in Appendix 1 of this report.

Table 2-1 Engagement log – SWMP – DPIE Water

#	Date	Correspondence		From	Recipient
		Form / Type	Purpose		
1	27/9/21	Email	To advise that the SWMP would be provided for review on 1/10/21 and that DPIE Water have 3 weeks to provide comment with comments due on Friday 22/10/21	Howard Chemney (CPB Downer JV)	Llyle Sawyer (DPIE Water)
2	1/10/21	Email	SWMP was sent to DPIE Water for consultation requesting comments back by 22/10/21 and offering a live review / page turn	Howard Chemney	Llyle Sawyer
3	1/10/21	Formal submission via DPIE Portal	SWMP was sent to DPIE Water for consultation requesting comments back by 29/10/21 (4 week consultation period)	Rob Owens (TfNSW)	Llyle Sawyer
4	7/10/21	Email	Email sent to NRAR (in their capacity to receive post approval requests on behalf of DPIE Water) reminding that plans were previous sent to DPIE Water on 1/10/21 and asking that they provide a response by 28/10/21.	Howard Chemney	Luke McIver (NRAR)
5	14/10/21	Email	Email sent to NRAR asking if NRAR had any issues and would like to take us up on our offer of a live review / page turn and reminding that comments are to be	Howard Chemney	Luke McIver (NRAR)

			received back by 28/10/21.		
6	26/10/21	Phone call	No response. Message left asking to call back and advising that comments are due back by 29/10/21. Asked for a call back if any issues.	Howard Chemney	Luke McIver
7	27/10/21	Email	Email received advising that the plan has yet to be reviewed but no time frame given.	Jessica Braden (NRAR)	Howard Chemney
8	27/10/21	Email	Email sent advising that any comments received after 29/10/21 would not be addressed in the current plans for approval but would be addressed in subsequent revisions	Howard Chemney	Jessica Braden
9	18/03/22	Letter	Letter received from DPE Water providing comments on the SWMP	Liz Rogers (DPE Water)	Mike Pereira (DPE)

Table 2-2 below summarises the consultation comments received from DPE Water on the SWMP.

Table 2-2 Summary of issues – SWMP – DPIE Water

Document Section, CoA or REMM	Comment Raised	Date Raised	How Addressed / Justification Why Not Addressed
Not identified	**Recommendation:** That the proponent update the SWMP upon receipt of the granted EPL with the associated authorised water quality discharge criteria **Explanation:** The EPL permit to discharge has yet to be received (or granted). The SWMP will require finalising upon receipt of granted EPL. Details on the authorised water quality discharge criteria included in the EPL will need to inform the SWMP.	18/03/22	Section 6.2.3 “Surface Water” (Surface Water Discharge) of the SWMP has been updated to include reference to EPL discharge criteria. Section 3.2.7 “Project Discharges” in the Surface Water Quality Monitoring Program (Appendix E) has also been updated to include reference to EPL discharge criteria.
Not identified	**Recommendation:** That the proponent update the SWMP to include as a minimum a tabulation of the authorised annual volumes of discharge per discharge location. **Explanation:** The EPL permit to discharge - has yet	18/03/22	The EPL does not provide annual volumes of discharge per discharge location and therefore we are unable to comply with this requirement. No change necessary

	to be received (or granted). The SWMP will require finalising upon receipt of granted EPL. Details of the licenced annual volumes of discharge per discharge location will need to be included in the SWMP.		
Not identified	**Recommendation:** That the proponent include in the SWMP a section outlining how the component of groundwater discharged will be determined. **Explanation:** Discharge water from the water treatment plant(s) will be a combination of all water entering into the Stage 2 - Warringah Freeway Upgrade, including take from any dewatering activities which may be required. In accordance to the conditions of approval groundwater needs to be accounted for separately from other water and reported. The SWMP needs to detail how the component of groundwater discharged will be determined and rectified to report the dewatering volumes.	18/03/22	The level of information / detail requested to be included in the SWMP is not available at this point in time noting Section 5.3 "Groundwater" already states the following: *"Construction works associated with the Warringah Freeway Upgrade are not expected to intercept the water table except where portal construction will be undertaken for both the Western Harbour Tunnel and the Beaches Link which is not anticipated to commence until mid-2023. This SWMP will be updated prior to these works being undertaken to describe the management, processes and mitigation measures necessary to manage groundwater as a result of these works".* No change necessary at this time. Information to be developed at a later date

2.2 Energy, Environment & Science Group (EESG)

Consultation with EESG commenced on 27 September 2021 and concluded 22 October 2021.

Table 2-3 below includes the details of engagement between CPB Downer JV and EESG regarding the SWMP. Table 2-4 includes a summary of the issues raised, how those were addressed and closed out. Full evidence of correspondence is in Appendix 2 of this report.

Table 2-3 Engagement log – SWMP – EESG

#	Date	Correspondence		From	Recipient
		Form / Type	Purpose		
1	27/9/21	Email	To advise that the SWMP would be provided for review on 1/10/21 and that DPIE Water have 3 weeks to provide comment with comments due on Friday 22/10/21	Howard Chemney (CPB Downer JV)	Jane Gross & Susan Harrington (EESG)

2	1/10/21	Email	SWMP was sent to EESG for consultation requesting comments back by 22/10/21 and offering a live review / page turn	Howard Chemney	Llyle Sawyer
3	1/10/21	Formal submission via DPIE Portal	SWMP was sent to EESG for consultation requesting comments back by 29/10/21 (4 week consultation period)	Rob Owens (TfNSW)	EESG
5	14/10/21	Email	Email sent to EESG asking if EESG had any issues and would like to take us up on our offer of a live review / page turn and reminding that comments are to be received back by 22/10/21.	Howard Chemney	Jane Gross & Susan Harrington
6	18/10/21	Phone call	No response. Message left for Jane Gross advising that comments are due back by 22/10/21. Asked for a call back if any issues. No number for Susan Harrison.	Howard Chemney	Jane Gross
7	22/10/21	Email	Response / comments provided on the SWMP from Janne Gross	Jane Gross	Jane Gross

Table 2-4 below summarises the consultation comments received from EESG on the SWMPand how addressed.

Table 2-4 Summary of issues – SWMP – EESG

Document Section, CoA or REMM	Comment Raised	Date Raised	How Addressed / Justification Why Not Addressed
Table 6-1 MMSW03	(MMSW03) states "weather conditions and forecasts (including rainfall prediction maps) will be monitored daily" and this is to be implemented at the construction stage. EESG recommends that MMSW03 also be implemented during and following the clearing of vegetation	22/10/21	MMSW03 updated to include requirement.
Table 6-1 MMSW31	MMSW31 states that the "stabilisation of waterways including their beds and banks will be commenced immediately after the completion of any works within these areas". EES assumes vegetation clearing precedes construction and recommends this measure	22/10/21	MMSW03 updated to include requirement.

	also be implemented during and following the clearing of vegetation.		
General comment	As advised in the EES submission on the draft Flora and Fauna Management Plan, the proponent should currently be propagating, and/or sourcing local native species so they are available for planting	22/10/21	Noted. This information will be included in the Place, Design and Landscape Plan required by CoA E177-E178.
Table 6-1 MMSW33	MMSW33 states that "Prior to forecast heavy rainfall events, the Environmental Manager (EM) or delegate will inspect the site and note any areas requiring additional management measures". This is to be implemented at the construction stage (page 61). EES assumes vegetation clearing precedes construction and therefore recommends this measure is also implemented prior to and following the clearing of vegetation.	22/10/21	MMSW33 updated to include additional wording noting implementation phase is already denoted as "construction".
Table 6-1 MMSW39	MMSW39 states "a procedure for management of tannins from vegetation mulch will be developed for the Project" and this is to be implemented prior to construction. In the first instance the procedure needs to outline the importance of reusing and salvaging native vegetation that is approved for removal for habitat enhancement and rehabilitation work rather than mulching it in accordance with Condition E48 of the approval for this SSI. In addition to being implemented 'prior to construction', it is recommended this measure is implemented prior to clearing of vegetation.	22/10/21	The requirement to prepare a procedure for tannin management has been removed given the scale of the works does not require / justify a standalone procedure. Note that the requirement of E48 is included in the Flora & Fauna Management Sub-plan.
Table 7.1 Section 7.6	Table 7.1 proposes to inspect erosion and sediment controls after heavy rainfall events. Section 7.6 of this plan indicates that weather	22/10/21	Now Table 8.1. Requirement for pre-rainfall inspection now included in Table 8.1 of the SWMP.

	conditions and forecasts (including rainfall prediction maps) will be monitored daily and the relevant information passed on to site personnel to allow for adequate planning for significant rain event. If heavy rainfall is forecast, it suggested the erosion and sediment controls are also inspected prior to such an event to ensure the controls are installed effectively.		
Appendix B Stockpile Management Procedure	Section 2.1 of the Stockpile Management Protocol for the Warringah Freeway Upgrade states “Stockpiles at the Project will be located according to the following criteria: 3. on land that does not require the removal of threatened species, Endangered Ecological Communities or roosting habitat for listed threatened fauna species or native vegetation clearing beyond what is already required for the Project. While Section 3.2 of the Protocol indicates erosion and sedimentation controls are to be erected between the stockpile and any drainage lines or down-slope areas, it is not clear if erosion and sedimentation controls are to be erected between stockpiles and native vegetation. The Protocol needs to be amended to clarify that erosion and sedimentation controls must be erected between stockpiles and native vegetation.	22/10/21	Noted. Bullet point amended to read the following: • erosion and sediment controls to be erected between the stockpile site and any drainage lines, down-slope areas and native vegetation.
Appendix B Stockpile Management Procedure	EES recommends the Protocol also states that stockpiles should be setback from threatened species, endangered ecological communities, or roosting habitat for listed threatened fauna species and native vegetation by an appropriate	22/10/21	Noted. Requirement now included in Section 3.2

	distance to avoid impacting these entities.		
Appendix B Stockpile Management Procedure	Section 3.2 of the Stockpile Management Protocol states "mitigation measures for each stockpile site will include as a minimum "avoid locating stockpile weed contaminated topsoil or other contaminated materials adjacent to areas of native vegetation". EES recommends an appropriate setback is provided between any native vegetation and stockpiles of weed contaminated topsoil or other contaminated materials	22/10/21	Noted. Requirement amended to include a minimum setback of 5 metres
Reference to Environmental Direction Management of Tannins from Vegetation Mulch – January 2012 located in Section 3.1.3 "Guidelines and Standards"	EES recommends the Environmental Direction for the Management of tannins is amended to outline that in the first instance rather than mulch native trees that are approved for removal they are salvaged and reused by either the project and/or by local community restoration/rehabilitation groups, Landcare groups, relevant public authorities etc in habitat enhancement and rehabilitation work in accordance with Condition E48 of the approval for this SSI.	22/10/21	Amendment not possible as this is a general RMS / TfNSW guideline which is not specific to the project. Note also that requirement to prepare a procedure for tannin management has been removed given the scale of the works does not require / justify a standalone procedure (refer to comment "Table 6-1 MMSW39". Note that the requirement of E48 is included in the Flora & Fauna Management Sub-plan.
Flood	The SWMP states that a flood emergency management plan will be prepared. It is unclear if this plan will be prepared separately, its timeframe and whether EES would have any further opportunity to comment. It appears that the 10% Annual Exceedance Probability (AEP) flood extents are to be kept clear of obstructions and hazards. The indicative site layouts could include the 10% AEP flood extents to confirm this, and to help ensure that future amendments keep relevant components clear.		MMSW50 states that flood emergency measures will be developed for the project and will be included in the Progressive Erosion and Sediment Control Plans which are required prior to works being undertaken. There is no requirement for EESG to review emergency planning for flood management. 10% AEP mapping is now included in Section 5.6. 10% AEP mapping will also be included on the Erosion and Sediment Control Plans and relevant site plans.

	Rather than refer to “the 5 year Average Recurrence Interval (ARI)” and design rainfall IFD data (Intensity-Frequency-Duration design rainfall data), the flood contingency documentation should include an actual rainfall depth in millimetres. Suitable wording may be like: if 50mm rain or more is predicted by BoM. Alternatively, if site specific alerts are to be received from a weather forecast services provider, this should be stated.		Alerts are sent out daily to site teams notifying of weather conditions and weather is discussed in daily pre-starts and is monitored throughout the day. This process provides adequate alert to the project to commence activities to manage flood events. No change necessary.
	Without providing specific detail, the SWMP implies significant effort may be required to prepare for each potentially flood-producing rain event in the flood event contingency planning process: all construction equipment and materials are to be removed from areas prone to flooding including stockpiles, stored chemicals, portaloos, ATF and concrete barriers. Further detailed work is recommended to ensure that effort is minimised, and the process has the greatest likelihood of success. This would be aided by adding the 10% AEP flood extent to the site layout plans.		10% AEP mapping is now included in Section 5.6
	Some aspects potentially requiring significant effort should be further detailed. For example, the plan for relocation of stockpiles should include nomination of locations to which the material can be relocated. No stockpile locations have been nominated on the layout plans.		Stockpile locations will be included on Erosion and Sediment Control plans. 10% AEP mapping will also be included on the Erosion and Sediment Control Plans and relevant site plans with no stockpiling in these areas.
	Given the unpredictability of rainfall, it should be anticipated that many ‘false alarms’ will occur. This should be acknowledged in the documentation to avoid warning fatigue, whereby workers may		Noted. False alarms re: weather predictions are not common and as a result alarms will be infrequent with warning fatigue unlikely to occur. No change required.

	cease to respond appropriately to warnings		

2.3 NSW EPA

Consultation with NSW EPA commenced on 27 September 2021 and concluded 3 November 2021.

Table 2-5 below includes the details of engagement between CPB Downer JV and NSW EPA NSW regarding the SWMP. Table 2-6 includes a summary of the issues raised, how those were addressed and closed out. Full evidence of correspondence is in Appendix 3 of this report.

Table 2-5 Engagement log – SWMP – NSW EPA

#	Date	Correspondence		From	Recipient
		Form / Type	Purpose		
1	27/9/21	Email	To advise that the SWMP would be provided for review on 1/10/21 and that NSW EPA have 3 weeks to provide comment with comments due on Friday 22/10/21	Howard Chemney (CPB Downer JV)	Aleksandra Young & Kurt Sorensen (NSW EPA)
2	1/10/21	Email	SWMP was sent to NSW EPA for consultation requesting comments back by 22/10/21 and offering a live review / page turn	Howard Chemney	Aleksandra Young & Kurt Sorensen
3	1/10/21	Email	Email received acknowledging provision of the SWMP and advising that a response will be provided by 22/10/21	Kurt Sorensen	Howard Chemney
5	3/11/21	Email	SWMP comments provided by NSW EPA (Aleksandra Young) via TfNSW	Rob Owens	Aleksandra Young

Table 2-6 below summarises the consultation comments received from NSW EPA on the SWMP.

Table 2-6 Summary of issues – SWMP – NSW EPA

Document Section, CoA or REMM	Comment Raised	Date Raised	How Addressed / Justification Why Not Addressed
Table 3.2 REMM WQ13	The EPA recommends that reference to Landcom (2004) be removed from Commitment WQ13.	3/11/21	We are unable to remove this requirement as WQ13 is a REMM and is included in the Submissions Report as a Management Mitigation Measure. No change
Table 3.2 REMM WM5	WM5 states: "Opportunities for wastewater reuse and recycling, including recirculating	3/11/21	Noted. Opportunities for wastewater reuse and recycling will be specifically

	water during tunnel excavation to use for dust suppression and offsite reuse, will be investigated and implemented where feasible and reasonable." The EPA advises the proponent to ensure that the wastewater is of a suitable quality for the end use and does not pose a risk to human health or the environment through assessment against all relevant standards and guidelines and adoption of appropriate management and mitigation measures.		addressed in the Water Reuse Strategy required by CoA E127. MMSW22 has also been revised to read the following: *"Wherever possible, water detained onsite will be re-used for dust control and other non-potable uses where of suitable quality. This includes water accumulating within excavations, traps, trenches or at low points on site".*
Appendix B1 Dewatering Procedure	The dewatering procedure includes discharge criteria for pH, oil and grease, and total suspended solids. However, condition E210 requires a water pollution impact assessment to inform licensing of any proposed construction stage stormwater discharge. Consistent with section 45 of the Protection of Environment Operations Act 1997 (POEO Act), any discharge related licence conditions would be informed by this assessment, including any potential discharge limits. The EPA recommends that discharge criteria be removed from the dewatering procedure and, if a discharge is required, appropriate criteria be negotiated with the EPA consistent with condition E210 and the relevant licensing considerations under s45 POEO Act.	3/11/21	Updated in Section 2.2.2 of Discharge Procedure as follows: Note: *The final discharge criteria will be determined by NSW EPA via review of a Discharge Impact Assessment and included in the EPL for the Project. References to discharge water quality criteria in this Dewatering Procedure will be subsequently amended as necessary*
Surface Water Quality Monitoring Program Analytes	It is unclear whether the planned monitoring suite includes all potential pollutants of concern (e.g. pollutants potentially present in runoff from contaminated areas and wastewater treatment plant discharges). To ensure appropriate detection and management of	3/11/21	The Program addresses monitoring of potential pollutants of concern during the initial phase of the project, prior to Water Treatment Plants (WTPs) coming on line. The Program will be updated prior to the WTPs being switched on to ensure that potential pollutants of concern

	potential water pollution risks, the EPA recommends that the monitoring suite/s include all pollutants that could potentially be discharged at non-trivial levels from the premises, including in relation to potential runoff from contaminated areas and wastewater treatment plant discharges. The range of pollutants monitored can potentially be refined following consideration of the monitoring results.		associated with the operation of the WTPs are included. This commitment has been added to Section 6.2.
Surface Water Quality Monitoring Program Monitoring sites	The proponent plans to monitor 5 waterway sites, 4 downstream and 1 upstream site. The downstream sites on Flat Rock Creek and Willoughby Creek appear to be located some distance from the project site. Sampling of sites closer to the project site would be more appropriate to detect water quality impacts. The EPA considers that the Surface Water Quality Monitoring Program would benefit from a review of the monitoring locations to ensure these are the most appropriate to detect water pollution impacts and trigger management actions, including sites closer to the project site.	3/11/21	A review of available locations was undertaken to see if closer sites were feasible. No closer sites are available. The sites adopted for monitoring represent the closest available downstream locations where samples can safely and efficiently be collected. Furthermore, the adopted sites are consistent with the baseline monitoring locations established during the EIS process and by TfNSW. If different sites were adopted now, meaningful comparisons would not be feasible with the baseline data from those sites. No change.
Surface Water Quality Monitoring Program Frequency	It appears that the program includes monthly dry weather and quarterly wet weather sampling of receiving waterway sites. More frequent wet weather sampling would be appropriate to inform timely management of potential water pollution risks. The EPA considers the frequency of wet weather monitoring should be increased to support timely detection and management of potential water pollution risks.		The proposed frequency of sampling is consistent with that adopted on other SSI projects such as WestConnex Rozelle Interchange and Paramatta Light Rail. CPBDJV intend to focus on proactive management of pollution risks (i.e. focus on prevention) rather than being reactive. Monitoring is considered to be an important "check" that the adopted proactive approach is working, but is undertaken as a feedback loop rather than as a primary control measure. No change.
Surface Water	Section 3.2.6 Performance Criteria states: “SSTV were		The SSTVs have been developed for pH, Turbidity and Electrical

Quality Monitoring Program Performance Criteria	developed for appropriate parameters using baseline monitoring data and ANZECC (2000a) guideline criteria for slightly to moderately disturbed ecosystems (generally protecting 90% of species) (Table 3-6). • The 80th percentile of baseline data is used as the SSTV for those parameters/locations that exceeded the relevant ANZECC (2000a) guideline criteria. It is noted that exceedances of the ANZECC (2000a) guideline criteria are not unexpected due to the highly disturbed nature of the urban catchment area, • The relevant ANZECC (2000a) guideline criteria is used as the SSTV for parameters where the 80th percentile of baseline data was below the relevant ANZECC (2000a) guideline criteria." These performance criteria appear inconsistent with the practices and principles for assessing water quality set out in the National Water Quality Guidelines (ANZG, 2018). For toxicants, in most cases the 95% species protection guideline values are recommended for assessing impacts on waterways, with the 99% species protection guideline value recommended for toxicants that bioaccumulate.		conductivity which are physical and chemical stressors (not toxicants). ANZG 2018 indicates that for highly disturbed ecosystems that the 90th percentile value would be appropriate. The adopted water quality data was collected monthly from October 2017 to February 2018 and additional monthly samples were collected by TfNSW from January 2021. Although this is not a consistent data set across two full calendar years, the data is quite varied highlighting the potential change in water quality in the receiving environment. Given that two years of reference water quality data is not currently available the more conservative 80th percentile value has been adopted. If the 90th (or higher) percentile values had been used from the baseline dataset, the SSTVs would be higher (i.e. worse). As additional water quality data is collected, the SSTVs could be updated to reflect the additional data if required. The report text has been updated to include this additional discussion.

	The proponent has incorrectly adopted the 90% species protection guideline values. It is also unclear whether the site-specific guideline values were derived consistent with ANZG (2018) (i.e. based on at least 2 years of monthly monitoring data from sites that represent the target condition [slightly modified]). In this context the performance criteria may not be appropriate to detect potential impacts from the project, particularly given that the proponent plans to only adopt the site specific guideline values where they are higher than the default guideline values. The EPA recommends that the performance criteria in the monitoring program be reviewed to ensure appropriate detection of potential water pollution risks to trigger management responses.		

2.4 Sydney Water

Consultation with Sydney Water commenced on 27 September 2021 and concluded 20 October 2021.

Table 2-7 below includes the details of engagement between CPB Downer JV and Sydney Water regarding the SWMP. Table 2-8 includes a summary of the issues raised, how those were addressed and closed out. Full evidence of correspondence is in Appendix 3 of this report.

Table 2-7 Engagement log – SWMP – Sydney Water

#	Date	Correspondence		From	Recipient
		Form / Type	Purpose		
1	27/9/21	Email	To advise that the SWMP would be provided for review on 1/10/21 and that Sydney Water have 3 weeks to provide comment with comments due on Friday 22/10/21	Howard Chemney (CPB Downer JV)	Willy Ramlie (Sydney Water)
2	1/10/21	Email	SWMP was sent to Sydney Water for consultation requesting comments back by 22/10/21 and offering a live review / page turn	Howard Chemney	Raniya Ranappil (Sydney Water)

3	14/10/21	Email	Email received confirming Sydney water will be providing feedback.	Raniya Ranappil	Howard Chemney
5	20/11/21	Email	Email received confirming that Sydney Water assets would not be impacted	Beng Lee (Sydney Water)	Howard Chemney

Table 2-8 below summarises the consultation comments received from Sydney Water on the SWMP.

Table 2-8 Summary of issues – SWMP – Sydney Water

Document Section, CoA or REMM	Comment Raised	Date Raised	How Addressed / Justification Why Not Addressed
Comment received from Beng Lee (Sydney Water) as follows: "In short we have no additional comments to add as none of our assets are impacted by the works. The report was quite comprehensive and the feedback from our SME is that as long the soil and water is managed as per this plan, then any impacts to our assets (if any) are likely to be minimal. Thank you".			

2.5 North Sydney Council

Consultation with North Sydney Council (NSC) commenced on 27 September 2021 and concluded 26 October 2021.

Table 2-9 below includes the details of engagement between CPB Downer JV and NSC regarding the SWMP. Table 2-10 includes a summary of the issues raised, how those were addressed and closed out. Full evidence of correspondence is in Appendix 3 of this report.

Table 2-9 Engagement log – SWMP – North Sydney Council

#	Date	Correspondence		From	Recipient
		Form / Type	Purpose		
1	27/9/21	Email	To advise that the SWMP would be provided for review on 1/10/21 and that NSC have 3 weeks to provide comment with comments due on Friday 22/10/21	Howard Chemney (CPB Downer JV)	Gavin McConnell (NSC)
2	5/10/21	Email	SWMP was sent to NSC for consultation requesting comments back by 26/10/21 and offering a live review / page turn	Howard Chemney	Gavin McConnell
3	14/10/21	Email	Email reminder sent advising comments were due back by 26/10/21 and that a live review page turn was available.	Howard Chemney	Gavin McConnell
4	25/10/21	Phone / Email	Phone / email reminder that comments were due the next day and asked to confirm would Council be providing comments.	Howard Chemney	Gavin McConnell

5	26/10/21	Email	Email received stating that NSC had no comments on the SWMP.	Gavin McConnell	Howard Chemney

Table 2-610 below summarises the consultation comments received from NSC on the SWMP.

Table 2-10 Summary of issues – SWMP – North Sydney Council

Document Section, CoA or REMM	Comment Raised	Date Raised	How Addressed / Justification Why Not Addressed
Email from Gavin McConnel (NSC) on 26/10/21 stating the following: "Soil and Water CEMP comments - NSC has no comments to make in respect of the Soil and Water CEMP".			

2.6 Willoughby Council

Consultation with Willoughby Council commenced on 5 October 2021 and concluded 27 October 2021.

Table 2-11 below includes the details of engagement between CPB Downer JV and Willoughby Council regarding the SWMP. Table 2-12 includes a summary of the issues raised, how those were addressed and closed out. Full evidence of correspondence is in Appendix 3 of this report.

Table 2-11 Engagement log – SWMP – Willoughby Council

#	Date	Correspondence		From	Recipient
		Form / Type	Purpose		
1	5/10/21	Email	SWMP was sent to Willoughby Council for consultation requesting comments back by 26/10/21 and offering a live review / page turn	Howard Chemney	Chris Binns, Andrew Gillies, Gordon Farelly (Willoughby Council)
2	14/10/21	Email	Email reminder sent advising comments are due back by 26/10/21 and that a live review page turn was available.	Howard Chemney	Binns, Andrew Gillies, Gordon Farelly
3	25/10/21	Phone / Email	Email reminder that comments were due the next day and asked to confirm would Council be providing comments.	Howard Chemney	Andrew Gillies, Gordon Farelly
4	27/10/21	Email / Letter	Email containing letter received from Willoughby Council providing comments on the SWMP.	Ian Arnott (Willoughby Council)	Howard Chemney

Table 2-12 below summarises the consultation comments received from Willoughby Council on the SWMP.

Table 2-12 Summary of issues – SWMP – Willoughby Council

Document Section, CoA or REMM	Comment Raised	Date Raised	How Addressed / Justification Why Not Addressed
	The MCoA refer to a Section A1 or A2 Site Audit Statement accompanied by an Environmental Management Plan (EMP). No mention is made in regard to consultation with the EPA or councils on the suitability of the EMP if there are ongoing maintenance requirements in terms of encapsulated/remaining contaminated material or monitoring/pretreatment prior to discharge of groundwater back into the aquifer. Whilst the Site Auditor will be responsible for ensuring the suitability of any EMP, bodies responsible for the management of the land or the receiving waters impacted by the EMP should be consulted with to ensure the plan is practicable and reasonable, plus there could be ongoing costs. Whilst the MCoA cannot be modified, a written undertaking could be made by the certified Contaminated Land Consultant to conduct consultation with the land owners/managers and relevant councils regarding the suitability of any proposed EMP before it is submitted to the Site Auditor for assessment and a Site Audit Statement is issued.	27/10/21	Comment is noted however this is an issue for the Contaminated land Consultant and TfNSW. Your request will be passed on for their consideration. No change required.

Appendix 1 DPIE Water consultation records

Department of Planning and Environment

Our ref: OUT22/1510

Mike Pereira

Department of Planning and Environment

Email: mike.pereira@dpie.nsw.gov.au

18 March 2022

Subject: **Western Harbour Tunnel - Stage 2 - Soil and Water Management Sub Plan**

Dear Mr Pereira

I refer to your email of 14 February 2022 to the Department of Planning and Environment (DPE) Water about the above matter.

The Department of Planning and Environment- Water recommends the Soil and Water Management plan be updated to include several additional items.

Please refer to **Attachment A** for recommendations and details.

Should you have any further queries in relation to this submission please do not hesitate to contact DPE Water Assessments at water.assessments@dpie.nsw.gov.au

Yours sincerely,

Liz Rogers

Manager, Assessments, Knowledge Division

Water Group

Attachment A

Detailed advice regarding the Western Harbour Tunnel - Stage 2 - Soil and Water Management Sub Plan

1.0 Discharge Water Quality

1.1 Recommendation

That the proponent:

- update the SWMP upon receipt of the granted EPL with the associated authorised water quality discharge criteria.

1.2 Explanation

The EPL permit to discharge has yet to be received (or granted). The SWMP will require finalising upon receipt of granted EPL. Details on the authorised water quality discharge criteria included in the EPL will need to inform the SWMP.

2.0 Licenced volumes of discharge

2.1 Recommendation

That the proponent:

- update the SWMP to include as a minimum a tabulation of the authorised annual volumes of discharge per discharge location.

2.2 Explanation

The EPL- permit to discharge - has yet to be received (or granted). The SWMP will require finalising upon receipt of granted EPL. Details of the licenced annual volumes of discharge per discharge location will need to be included in the SWMP.

3.0 Volume of Groundwater in discharge

3.1 Recommendation

That the proponent:

- include in the SWMP a section outlining how the component of groundwater discharged will be determined.

3.2 Explanation

Discharge water from the water treatment plant(s) will be a combination of all water entering into the Stage 2 - Warringah Freeway Upgrade, including take from any dewatering activities which may be required. In accordance to the conditions of approval groundwater needs to be accounted for separately from other water and reported. The SWMP needs to detail how the component of groundwater discharged will be determined and rectified to report the dewatering volumes.

End Attachment A

Appendix 2 EESG consultation Records

Our ref: DOC21/871196
Senders ref: SSI-8863

Mr Howard Chemney
CPB Contractors

Dear Mr Chemney

Subject: EES comments on draft Soil and Water Management Plan for the Warringah Freeway Upgrade from the northern end of the Sydney Harbour Bridge to Willoughby Road – SSI-8863

Thank you for your email of 1 October 2021 requesting advice on the draft Soil and Water Management Plan (SWMP) for this critical State significant infrastructure project.

The Environment, Energy and Science Group (EES) has reviewed the draft SWMP and provides its recommendations and comments at Attachment A.

If you have any queries regarding this matter, please do not hesitate to contact Janne Grose, Senior Conservation Planning Officer on 02 8837 6017 or at janne.grose@environment.nsw.gov.au

Yours sincerely

S. Harrison

22/10/21

Susan Harrison
Senior Team Leader Planning
Greater Sydney Branch
Environment, Energy and Science

CC: Carl Dumpleton - DPIE

Attachment A

Subject: **EES comments on draft Soil and Water Management Plan for the Warringah Freeway Upgrade from the northern end of the Sydney Harbour Bridge to Willoughby Road**

The Environment, Energy and Science Group (EES) notes this Soil and Water Management Sub Plan (SWMP) forms part of the Construction Environmental Management Plan (CEMP) for the Warringah Freeway Upgrade (the Project) and has been prepared in accordance with the Minister's Conditions of Approval (MCoA) for the Western Harbour Tunnel and Warringah Freeway Upgrade project – SSI-8863.

EES has reviewed the draft SWMP - October 2021 and provides the following comments and recommended amendments.

Table 6.1 - Soil and Water management and mitigation measures

Management Measure (MMSW03)
Management measure (MMSW03) in Table 6.1 states "weather conditions and forecasts (including rainfall prediction maps) will be monitored daily" and this is to be implemented at the construction stage. (page 54). EES assumes vegetation clearing precedes construction and recommends this measure also be implemented during and following the clearing of vegetation. This is to ensure that when any heavy rainfall events are forecast, the sediment erosion controls can be inspected prior to the rainfall event and that they are installed effectively in areas where vegetation clearing is occurring or has been undertaken.

Management Measure (MMSW31)
Management measure (MMSW31) states that the "stabilisation of waterways including their beds and banks will be commenced immediately after the completion of any works within these areas". EES recommends that if planting is proposed to stabilise the stream banks, the long term planting (as opposed to temporary cover crops) should use local native provenance plant species from the relevant native vegetation community that occurs or once occurred along the watercourse.

As advised in the EES submission on the draft Flora and Fauna Management Plan, the proponent should currently be propagating, and/or sourcing local native species so they are available for planting.

Management Measure (MMSW33)
Management measure (MMSW33) states that "Prior to forecast heavy rainfall events, the Environmental Manager (EM) or delegate will inspect the site and note any areas requiring additional management measures". This is to be implemented at the construction stage (page 61). EES assumes vegetation clearing precedes construction and therefore recommends this measure is also implemented prior to and following the clearing of vegetation.

Management Measure (MMSW39)
Management measure (MMSW39) states "a procedure for management of tannins from vegetation mulch will be developed for the Project" and this is to be implemented prior to construction. In the first instance the procedure needs to outline the importance of reusing and salvaging native vegetation that is approved for removal for habitat enhancement and rehabilitation work rather than mulching it in accordance with Condition E48 of the approval for this SSI.

In addition to being implemented 'prior to construction', it is recommended this measure is implemented prior to clearing of vegetation.

Table 7.1 - Monitoring and inspection requirements
Table 7.1 proposes to inspect erosion and sediment controls after heavy rainfall events (page 73). Section 7.6 of this plan indicates that weather conditions and forecasts (including rainfall prediction maps) will be monitored daily and the relevant information passed on to site personnel to allow for

adequate planning for significant rain event. If heavy rainfall is forecast, it suggested the erosion and sediment controls are also inspected prior to such an event to ensure the controls are installed effectively.

Appendix B – Environmental Procedures

B2 Stockpile Management Procedure
Section 2.1 of the Stockpile Management Protocol for the Warringah Freeway Upgrade states "Stockpiles at the Project will be located according to the following criteria:

3. on land that does not require the removal of threatened species, Endangered Ecological Communities or roosting habitat for listed threatened fauna species or native vegetation clearing beyond what is already required for the Project.

While Section 3.2 of the Protocol indicates erosion and sedimentation controls are to be erected between the stockpile and any drainage lines or down-slope areas, it is not clear if erosion and sedimentation controls are to be erected between stockpiles and native vegetation. The Protocol needs to be amended to clarify that erosion and sedimentation controls must be erected between stockpiles and native vegetation.

EES recommends the Protocol also states that stockpiles should be setback from threatened species, endangered ecological communities, or roosting habitat for listed threatened fauna species and native vegetation by an appropriate distance to avoid impacting these entities.

Section 3.2 of the Stockpile Management Protocol states "mitigation measures for each stockpile site will include as a minimum "avoid locating stockpile weed contaminated topsoil or other contaminated materials adjacent to areas of native vegetation". EES recommends an appropriate setback is provided between any native vegetation and stockpiles of weed contaminated topsoil or other contaminated materials.

Environmental Direction Management of Tannins from Vegetation Mulch – January 2012
EES recommends the Environmental Direction for the Management of tannins is amended to outline that in the first instance rather than mulch native trees that are approved for removal they are salvaged and reused by either the project and/or by local community restoration/rehabilitation groups, Landcare groups, relevant public authorities etc in habitat enhancement and rehabilitation work in accordance with Condition E48 of the approval for this SSI.

Flood

The SWMP states that a flood emergency management plan will be prepared. It is unclear if this plan will be prepared separately, its timeframe and whether EES would have any further opportunity to comment.

It appears that the 10% Annual Exceedance Probability (AEP) flood extents are to be kept clear of obstructions and hazards. The indicative site layouts could include the 10% AEP flood extents to confirm this, and to help ensure that future amendments keep relevant components clear.

Rather than refer to "the 5 year Average Recurrence Interval (ARI)" and design rainfall IFD data (Intensity-Frequency-Duration design rainfall data), the flood contingency documentation should include an actual rainfall depth in millimetres. Suitable wording may be like: if 50mm rain or more is predicted by BoM. Alternatively, if site specific alerts are to be received from a weather forecast services provider, this should be stated.

Without providing specific detail, the SWMP implies significant effort may be required to prepare for each potentially flood-producing rain event in the flood event contingency planning process: all construction equipment and materials are to be removed from areas prone to flooding including stockpiles, stored chemicals, portaloos, ATF and concrete barriers. Further detailed work is

recommended to ensure that effort is minimised, and the process has the greatest likelihood of success. This would be aided by adding the 10% AEP flood extent to the site layout plans.

Some aspects potentially requiring significant effort should be further detailed. For example, the plan for relocation of stockpiles should include nomination of locations to which the material can be relocated. No stockpile locations have been nominated on the layout plans.

Given the unpredictability of rainfall, it should be anticipated that many ‘false alarms’ will occur. This should be acknowledged in the documentation to avoid warning fatigue, whereby workers may cease to respond appropriately to warnings.

End of Submission

Chemney, Howard

From: Janne Grose <Janne.Grose@environment.nsw.gov.au>
Sent: Monday, 18 October 2021 11:26 AM
To: Chemney, Howard
Cc: Susan Harrison
Subject: RE: HPE CM: RE: Warringah Freeway Upgrade - Ancillary Site Establishment Management Plan consultation - Environment, Energy & Science Group

Hi Howard
Thank you for your email below regarding the draft management plans and your phone message this morning.

Just to confirm EES is currently reviewing the draft management plans. Should EES have any queries during its review EES will contact you.

kind regards from
Janne
18/10/21

Janne Grose
Senior Conservation Planning Officer
Greater Sydney
Biodiversity & Conservation|Environment, Energy and Science
Department of Planning, Industry and Environment
T 02 8837 6017 | **E** janne.grose@environment.nsw.gov.au
Level 6, 12 Darcy Street, 4 Parramatta Square, Parramatta NSW 2150 | Locked Bag 5022
www.dpie.nsw.gov.au

The Department of Planning, Industry and Environment acknowledges that it stands on Aboriginal land. We acknowledge the traditional custodians of the land and we show our respect for elders past, present and emerging through thoughtful and collaborative approaches to our work, seeking to demonstrate our ongoing commitment to providing places in which Aboriginal people are included socially, culturally and economically.

From: Chemney, Howard <Howard.Chemney@pcplr.com.au>
Sent: Thursday, 14 October 2021 1:39 PM
To: Janne Grose <Janne.Grose@environment.nsw.gov.au>; Susan Harrison <Susan.Harrison@environment.nsw.gov.au>
Cc: Rob Owens <Rob.Owens@transport.nsw.gov.au>; Jacqueline McKenzie <jacqueline.mckenzie@dswjv.com.au>
Subject: HPE CM: RE: Warringah Freeway Upgrade - Ancillary Site Establishment Management Plan consultation - Environment, Energy & Science Group

Hi Janne and Susan,

Just following up on the below.

Please let me know if you / EESG have any queries during this review stage or require a live review / page turn on any of the documents submitted.

This is also a reminder that all comments must be received back by Friday 22nd October.

Thanks

Howard
0410 542 009

From: Chemney, Howard
Sent: Friday, 1 October 2021 11:47 AM
To: 'janne.grose@environment.nsw.gov.au' <janne.grose@environment.nsw.gov.au>; 'Susan.harrison@environment.nsw.gov.au' <Susan.harrison@environment.nsw.gov.au>
Cc: 'Rob Owens' <Rob.Owens@transport.nsw.gov.au>; 'Jacqueline McKenzie' <jacqueline.mckenzie@dswjv.com.au>
Subject: RE: Warringah Freeway Upgrade - Ancillary Site Establishment Management Plan consultation - Environment, Energy & Science Group

Hi Janne and Susan,

Further to the below correspondence, please find attached the following plans for your consultation:

- Ancillary Site Establishment Management Plan
- Flora & Fauna Management Sub-plan
- Soil and Surface Water Management Sub-plan

The consultation period is for 3 weeks and therefore we request all comments must be received back by Friday 22nd October.

Please give me a call if you need any clarification.

Thanks

Howard

0410 542 009

From: Chemney, Howard
Sent: Tuesday, 28 September 2021 4:32 PM
To: janne.grose@environment.nsw.gov.au; Susan.harrison@environment.nsw.gov.au
Cc: Rob Owens <Rob.Owens@transport.nsw.gov.au>; Jacqueline McKenzie <jacqueline.mckenzie@dswjv.com.au>
Subject: Warringah Freeway Upgrade - Ancillary Site Establishment Management Plan consultation - Environment, Energy & Science Group

Hi Janne and Susan,

Further to the below – it is also a requirement of Condition A17 of the Infrastructure Approval SSI 8863 that we consult with EESG on the Ancillary Site Establishment Management Plan (ASEMP). This plan outlines the environmental management practices and procedures to be implemented for the establishment of the construction ancillary facilities / construction support sites. A snippet of this condition is reproduced below:

SITE ESTABLISHMENT WORK

Ancillary Site Establishment Management Plan

A17 Before establishment of any construction ancillary facility (excluding minor construction ancillary facilities determined by the **ER** to have minimal environmental impact and those established under **Condition A19**), the Proponent must prepare an **Ancillary Site Establishment Management Plan** which outlines the environmental management practices and procedures to be implemented for the establishment of the construction ancillary facilities. The **Ancillary Site Establishment Management Plan** must be prepared in consultation with the relevant council and government agencies. The Plan must be submitted to the Planning Secretary for approval one month before the establishment of any construction ancillary facilities. The **Ancillary Site Establishment Management Plan** must detail the management of the construction ancillary facilities and include:

(a) a description of activities to be undertaken during establishment of the construction ancillary facility (including scheduling and duration of work to be undertaken at the site);
(b) figures illustrating the proposed operational site layout and the location of the closest sensitive land user(s);
(c) a program for ongoing analysis of the key environmental risks arising from the site establishment activities described in subsection (a) of this condition, including an initial risk assessment undertaken prior to the commencement of site establishment work;
(d) details of how the site establishment activities described in subsection (a) of this condition will be carried out to:
  (i) meet the performance outcomes stated in the documents listed in **Condition A1**, and
  (ii) manage the risks identified in the risk analysis undertaken in subsection (c) of this condition; and
(e) a program for monitoring the performance outcomes, including a program for construction noise monitoring.

Nothing in this condition prevents the Proponent from preparing individual **Ancillary Site Establishment Management Plans** for each construction ancillary facility.

We will be sending over the ASEMP for consultation with EESG this Friday 1st October.

As with the CEMP sub-plans, the consultation period is for 3 weeks and therefore all comments must be received back by Friday 22nd October. Comments received after this date may not be addressed in time and will be considered during future revisions. We are also happy to assist you in your review of the document by undertaking a live review / page turn to discuss issues directly. Please contact me should you wish to take up this offer.

Please note that TfNSW will also be issuing this plan formally for consultation via the DPIE Portal.

Thanks

Howard Chemney

Environment & Sustainability Manager
Warringah Freeway Upgrade
M 0410 542 009
E Howard.Chemney@cpbcon.com.au

From: Chemney, Howard
Sent: Monday, 27 September 2021 6:33 PM
To: janne.grose@environment.nsw.gov.au; Susan.harrison@environment.nsw.gov.au
Cc: Rob Owens <Rob.Owens@transport.nsw.gov.au>; Jacqueline McKenzie <jacqueline.mckenzie@dswjv.com.au>
Subject: Warringah Freeway Upgrade - Construction Environmental Management Plan consultation - Environment, Energy & Science Group

Hi Janne and Susan,

This email is to advise you that CPB Downer JV will be sending over a number of sub-plans to the Warringah Freeway Upgrade Construction Environmental Management Plan (CEMP) for consultation with Council this Friday 1st October.

Our requirement to consult with EESG on these plans is contained in Condition C4 of the Infrastructure Approval SSI 8863 as snipped below and included in the attachment.

C4 The following **CEMP Sub-plans** must be prepared in consultation with the relevant government agencies identified for each **CEMP Sub-plan**. Details of all information requested by an agency during consultation must be provided to the Planning Secretary as part of any submission of the relevant **CEMP Sub-plan**, including copies of all correspondence from those agencies as required by **Condition A5**.

	Required CEMP Sub-plan	Relevant government agencies to be consulted for each CEMP Sub-plan
(a)	Traffic, transport and access	Relevant council(s)
(b)	Noise and vibration	NSW Health, relevant council(s)
(c)	Flora and Fauna	DPI Fisheries, DPIE Water, EESG, and relevant council(s)
(d)	Air quality and odour	NSW Health, and relevant council(s)
(e)	Soil and surface water	DPIE Water, EESG, EPA, Sydney Water (if Sydney Water's assets are affected) and relevant council(s)
(f)	Groundwater	DPIE Water, EESG, EPA, Sydney Water (where it is proposed to discharge groundwater into Sydney Water's assets) and relevant council(s)
(g)	Maritime Heritage	Heritage NSW and relevant council(s)
(h)	Non-Aboriginal Heritage	Heritage NSW and relevant council(s)
(i)	Aboriginal Cultural Heritage	Heritage NSW
(j)	Dredging and Disposal Management Plan	EPA, DPI Fisheries, Port Authority of NSW (including Harbour Master)

Specifically we are required to consult with EESG on the following project relevant sub-plans:

- Flora & Fauna Management Sub-plan
- Soil and Surface Water Management Sub-plan

The consultation period is for 3 weeks and therefore all comments must be received back by Friday 22nd October. Comments received after this date may not be addressed in time and will be considered during future revisions.

To assist you in your review of the documents we are happy to undertake a live review / page turn to discuss issues directly. Please contact me should you wish to take up this offer.

Please note that TfNSW will also be issuing these plans formally for consultation via the DPIE Portal.

Thanks

Howard Chemney

Environment & Sustainability Manager
Warringah Freeway Upgrade
M 0410 542 009
E Howard.Chemney@cpbcon.com.au

Appendix 3 NSW EPA consultation records

DOC21/930662 3 November 2021

Mr Howard Chemney
Environment and Sustainability Manager
CPB Downer Joint Venture
(for Transport for NSW)

(via Major Projects Planning Portal)

Dear Mr Chemney

Western Harbour Tunnel and Warringah Freeway Upgrade (SSI 8863)
EPA Comment on Post Approval Document: Soil and Water Management Sub Plan – Warringah Freeway Upgrade (Conditions C4(e) and C11(c))

I am writing to you in reply to your request to the Environment Protection Authority (EPA) to comment on the draft document *Appendix B4: Soil and Water Management Plan*, Rev B, dated 1 October 2021, (SWMP) that has been prepared for the Warringah Freeway Upgrade package of construction works for the above project.

In accordance with condition C4(e) of the SSI 8863 approval the proponent must prepare the Soil & Surface Water CEMP sub-plan in consultation with the EPA and in accordance with condition C11(c), the EPA must be consulted for the Surface Water Monitoring Program. The monitoring program has been included as Appendix C of the SWMP.

As an outcomes-based regulator, the EPA does not typically comment on management plans or prescribes specific mitigation measures. It is ultimately the proponent's responsibility to implement sufficient actions and mitigations to comply with the conditions of the Environment Protection Licence (EPL). It is recommended the proponent regularly reviews the SWMP to ensure it is consistent with the relevant conditions of approval and EPL conditions. Following are the EPA comments regarding the SWMP and monitoring program.

Section 3.3 – Environmental Management Measures

Commitment WQ13 states: "If sediment basins are required a discharge impact assessment, commensurate with the potential risk and consistent with the National Water Quality Guidelines (ANZG (2018)) and *Managing Urban Stormwater – Soils and Construction, Volume 1* (Landcom, 2004), will be prepared to inform the discharge criteria". However, Landcom (2004) does not provide guidance on assessment of water pollution impacts. Further to this, condition E210 – regarding requirements for a water pollution impact assessment if construction stage discharges are proposed – does not refer to Landcom (2004). Condition E210 states that "any such assessment must be prepared in consultation with the EPA and be consistent with the National Water Quality Guidelines."

The EPA recommends that reference to Landcom (2004) be removed from Commitment WQ13.

Phone 131 555 **TTY** 133 677 Locked Bag 5022 4 Parramatta Square **info@epa.nsw.gov.au**
Phone +61 2 9995 5555 **ABN** 43 692 285 758 Parramatta 12 Darcy St, Parramatta **www.epa.nsw.gov.au**
(from outside NSW) NSW 2124 Australia NSW 2150 Australia

Commitment WM5 states: “Opportunities for wastewater reuse and recycling, including recirculating water during tunnel excavation to use for dust suppression and offsite reuse, will be investigated and implemented where feasible and reasonable.”

The EPA advises the proponent to ensure that the wastewater is of a suitable quality for the end use and does not pose a risk to human health or the environment through assessment against all relevant standards and guidelines and adoption of appropriate management and mitigation measures.

Appendix B1 – Dewatering Procedure

The dewatering procedure includes discharge criteria for pH, oil and grease, and total suspended solids. However, condition E210 requires a water pollution impact assessment to inform licensing of any proposed construction stage stormwater discharge. Consistent with section 45 of the *Protection of Environment Operations Act 1997* (POEO Act), any discharge related licence conditions would be informed by this assessment, including any potential discharge limits.

The EPA recommends that discharge criteria be removed from the dewatering procedure and, if a discharge is required, appropriate criteria be negotiated with the EPA consistent with condition E210 and the relevant licensing considerations under s45 POEO Act.

Appendix C/B3[1] Surface Water Quality Monitoring Program

Analytes
It is unclear whether the planned monitoring suite includes all potential pollutants of concern (e.g. pollutants potentially present in runoff from contaminated areas and wastewater treatment plant discharges).

To ensure appropriate detection and management of potential water pollution risks, the EPA recommends that the monitoring suite/s include all pollutants that could potentially be discharged at non-trivial levels from the premises, including in relation to potential runoff from contaminated areas and wastewater treatment plant discharges. The range of pollutants monitored can potentially be refined following consideration of the monitoring results.

Monitoring sites
The proponent plans to monitor 5 waterway sites, 4 downstream and 1 upstream site. The downstream sites on Flat Rock Creek and Willoughby Creek appear to be located some distance from the project site. Sampling of sites closer to the project site would be more appropriate to detect water quality impacts.

The EPA considers that the Surface Water Quality Monitoring Program would benefit from a review of the monitoring locations to ensure these are the most appropriate to detect water pollution impacts and trigger management actions, including sites closer to the project site.

Frequency
It appears that the program includes monthly dry weather and quarterly wet weather sampling of receiving waterway sites. More frequent wet weather sampling would be appropriate to inform timely management of potential water pollution risks.

The EPA considers the frequency of wet weather monitoring should be increased to support timely detection and management of potential water pollution risks.

[1] Note: the *Surface Water Quality Monitoring Program* is also identified as Appendix B3 in the heading page (p. 127 of the SWMP) – as well as Appendix C (p. 126) of Appendix B4 *Soil and Water Management Sub-Plan*. It is uncertain whether the monitoring program is an appendix of the Soil & Water Management Sub-Plan or the main Construction Environmental Management Plan.

Performance Criteria

Section 3.2.6 Performance Criteria states: "SSTV were developed for appropriate parameters using baseline monitoring data and ANZECC (2000a) guideline criteria for slightly to moderately disturbed ecosystems (generally protecting 90% of species) (Table 3-6).

- The 80th percentile of baseline data is used as the SSTV for those parameters/locations that exceeded the relevant ANZECC (2000a) guideline criteria. It is noted that exceedances of the ANZECC (2000a) guideline criteria are not unexpected due to the highly disturbed nature of the urban catchment area,
- The relevant ANZECC (2000a) guideline criteria is used as the SSTV for parameters where the 80th percentile of baseline data was below the relevant ANZECC (2000a) guideline criteria."

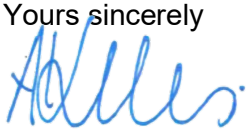
These performance criteria appear inconsistent with the practices and principles for assessing water quality set out in the *National Water Quality Guidelines* (ANZG, 2018). For toxicants, in most cases the 95% species protection guideline values are recommended for assessing impacts on waterways, with the 99% species protection guideline value recommended for toxicants that bioaccumulate.

The proponent has incorrectly adopted the 90% species protection guideline values. It is also unclear whether the site-specific guideline values were derived consistent with ANZG (2018) (i.e. based on at least 2 years of monthly monitoring data from sites that represent the target condition [slightly modified]). In this context the performance criteria may not be appropriate to detect potential impacts from the project, particularly given that the proponent plans to only adopt the site specific guideline values where they are higher than the default guideline values.

The EPA recommends that the performance criteria in the monitoring program be reviewed to ensure appropriate detection of potential water pollution risks to trigger management responses.

Should you require clarification of any of the above please contact Anna Timbrell on 9274 6345 or email anna.timbrell@epa.nsw.gov.au

Yours sincerely



ALEKSANDRA YOUNG
Unit Head
Regulatory Operations Metro South

Chemney, Howard

From: Aleksandra Young <Aleksandra.Young@epa.nsw.gov.au>
Sent: Wednesday, 20 October 2021 1:15 PM
To: Chemney, Howard
Cc: Rob Owens; Jacqueline McKenzie; Kurt Sorensen; Joshua Pisani; Sean Allison
Subject: RE: Warringah Freeway Upgrade - Construction Environmental Management Plan / Monitoring Program consultation - NSW EPA

Hi Howard

As just discussed, the EPA will aim to provide comments on Noise & Vibration Management Plan for Warringah Freeway Upgrade, including Noise Monitoring by 29/10/21, which will align with comments on soil/water and air quality monitoring programs/management plans.

Rob, please could you amend the date on the major planning portal, please.

Thank you
Ola

Aleksandra (Ola) Kielkiewicz-Young
Unit Head
Regulatory Operations Metro South
NSW Environment Protection Authority
D 02 9995 6083 | **M** 0455 567 907

www.epa.nsw.gov.au @NSW_EPA

The EPA acknowledges the traditional custodians of the land and waters where we work. As part of the world's oldest surviving culture, we pay our respect to Aboriginal elders past, present and emerging.

Report pollution and environmental incidents 131 555 or +61 2 9995 5555

From: Chemney, Howard <Howard.Chemney@pcplr.com.au>
Sent: Friday, 1 October 2021 11:19 AM
To: Aleksandra Young <Aleksandra.Young@epa.nsw.gov.au>; Kurt Sorensen <Kurt.Sorensen@epa.nsw.gov.au>
Cc: Rob Owens <Rob.Owens@transport.nsw.gov.au>; Jacqueline McKenzie <jacqueline.mckenzie@dswjv.com.au>
Subject: RE: Warringah Freeway Upgrade - Construction Environmental Management Plan / Monitoring Program consultation - NSW EPA

Hi Aleksandra and Kurt,

Further to the below correspondence, please find attached the following plans for your consultation:

- Ancillary Site Establishment Management Plan
- Soil & Water Management Plan
- Noise & Vibration Management Plan
- Air Quality Management Plan

The consultation period is for 3 weeks and therefore we request all comments must be received back by Friday 22nd October.

Please give me a call if you need any clarification.

Thanks

Howard

0410 542 009

From: Chemney, Howard
Sent: Tuesday, 28 September 2021 5:55 AM
To: 'Aleksandra Young' <Aleksandra.Young@epa.nsw.gov.au>; 'Kurt Sorensen' <Kurt.Sorensen@epa.nsw.gov.au>
Cc: 'Rob Owens' <Rob.Owens@transport.nsw.gov.au>; 'Jacqueline McKenzie' <jacqueline.mckenzie@dswjv.com.au>
Subject: RE: Warringah Freeway Upgrade - Construction Environmental Management Plan / Monitoring Program consultation - NSW EPA

Hi Aleksandra and Kurt,

Further to the below – it is also a requirement of Condition A17 of the Infrastructure Approval SSI 8863 that we consult with NSW EPA on the Ancillary Site Establishment Management Plan (ASEMP). This plan outlines the environmental management practices and procedures to be implemented for the establishment of the construction ancillary facilities / construction support sites. A snippet of this condition is reproduced below:

SITE ESTABLISHMENT WORK

Ancillary Site Establishment Management Plan

A17 Before establishment of any construction ancillary facility (excluding minor construction ancillary facilities determined by the **ER** to have minimal environmental impact and those established under **Condition A19**), the Proponent must prepare an **Ancillary Site Establishment Management Plan** which outlines the environmental management practices and procedures to be implemented for the establishment of the construction ancillary facilities. The **Ancillary Site Establishment Management Plan** must be prepared in consultation with the relevant council and government agencies. The Plan must be submitted to the Planning Secretary for approval one month before the establishment of any construction ancillary facilities. The **Ancillary Site Establishment Management Plan** must detail the management of the construction ancillary facilities and include:

(a) a description of activities to be undertaken during establishment of the construction ancillary facility (including scheduling and duration of work to be undertaken at the site);
(b) figures illustrating the proposed operational site layout and the location of the closest sensitive land user(s);
(c) a program for ongoing analysis of the key environmental risks arising from the site establishment activities described in subsection (a) of this condition, including an initial risk assessment undertaken prior to the commencement of site establishment work;
(d) details of how the site establishment activities described in subsection (a) of this condition will be carried out to:
    (i) meet the performance outcomes stated in the documents listed in **Condition A1**, and
    (ii) manage the risks identified in the risk analysis undertaken in subsection (c) of this condition; and
(e) a program for monitoring the performance outcomes, including a program for construction noise monitoring.

Nothing in this condition prevents the Proponent from preparing individual **Ancillary Site Establishment Management Plans** for each construction ancillary facility.

We will be sending over the ASEMP for consultation this Friday 1st October.

As with the CEMP sub-plans, the consultation period is for 3 weeks and therefore all comments must be received back by Friday 22nd October. Comments received after this date may not be addressed in time and will be considered during future revisions. We are also happy to assist you in your review of the

document by undertaking a live review / page turn to discuss issues directly. Please contact me should you wish to take up this offer.

Please note that TfNSW will also be issuing this plan formally for consultation via the DPIE Portal.

Thanks

Howard Chemney

Environment & Sustainability Manager
Warringah Freeway Upgrade
M 0410 542 009
E Howard.Chemney@cpbcon.com.au

From: Chemney, Howard
Sent: Monday, 27 September 2021 6:46 PM
To: Aleksandra Young <Aleksandra.Young@epa.nsw.gov.au>; Kurt Sorensen <Kurt.Sorensen@epa.nsw.gov.au>
Cc: Rob Owens <Rob.Owens@transport.nsw.gov.au>; Jacqueline McKenzie <jacqueline.mckenzie@dswjv.com.au>
Subject: Warringah Freeway Upgrade - Construction Environmental Management Plan / Monitoring Program consultation - NSW EPA

Hi Aleksandra and Kurt,

This email is to advise you that CPB Downer JV will be sending over a number of sub-plans to the Warringah Freeway Upgrade Construction Environmental Management Plan (CEMP) for consultation with Council this Friday 1st October. We will also be sending a number of monitoring programs.

Our requirement to consult with NSW EPA on these plans / programs is contained in Condition C4 & C6 of the Infrastructure Approval SSI 8863 as snipped below and included in the attachment.

C4 The following **CEMP Sub-plans** must be prepared in consultation with the relevant government agencies identified for each **CEMP Sub-plan**. Details of all information requested by an agency during consultation must be provided to the Planning Secretary as part of any submission of the relevant **CEMP Sub-plan**, including copies of all correspondence from those agencies as required by **Condition A5**.

	Required CEMP Sub-plan	Relevant government agencies to be consulted for each CEMP Sub-plan
(a)	Traffic, transport and access	Relevant council(s)
(b)	Noise and vibration	NSW Health, relevant council(s)
(c)	Flora and Fauna	DPI Fisheries, DPIE Water, EESG, and relevant council(s)
(d)	Air quality and odour	NSW Health, and relevant council(s)
(e)	Soil and surface water	DPIE Water, EESG, EPA, Sydney Water (if Sydney Water's assets are affected) and relevant council(s)
(f)	Groundwater	DPIE Water, EESG, EPA, Sydney Water (where it is proposed to discharge groundwater into Sydney Water's assets) and relevant council(s)
(g)	Maritime Heritage	Heritage NSW and relevant council(s)
(h)	Non-Aboriginal Heritage	Heritage NSW and relevant council(s)
(i)	Aboriginal Cultural Heritage	Heritage NSW
(j)	Dredging and Disposal Management Plan	EPA, DPI Fisheries, Port Authority of NSW (including Harbour Master)

CONSTRUCTION MONITORING PROGRAMS

C11 The following **Construction Monitoring Programs** must be prepared in consultation with the relevant government agencies identified for each to compare actual performance of construction of the CSSI against the performance predicted in the documents listed in **Condition A1** or in the **CEMP**:

	Required Construction Monitoring Programs	Relevant government agencies to be consulted for each Construction Monitoring Program
(a)	Noise and Vibration Monitoring Program	EPA
(b)	Air Quality (including Odour) Monitoring	EPA
(c)	Surface Water Monitoring Program	DPIE Water, (Sydney Water if any Sydney Water assets are impacted), EPA
(d)	Groundwater Monitoring Program	DPIE Water, EPA
(e)	Marine Monitoring Program	DPI Fisheries, EPA
(f)	Dredging Monitoring Program	DPI Fisheries, EPA

Specifically we are required to consult with NSW EPA on the following project relevant sub-plans / monitoring programs:

- Soil and Surface Water Management Sub-plan (including Surface Water Monitoring Program and Groundwater Management Procedure)
- Noise and Vibration Monitoring Program
- Air Quality (including odour) Monitoring Program

The consultation period is for 3 weeks and therefore all comments must be received back by Friday 22nd October. Comments received after this date may not be addressed in time and will be considered during future revisions.

To assist you in your review of the documents we are happy to undertake a live review / page turn to discuss issues directly. Please contact me should you wish to take up this offer.

Please note that TfNSW will also be issuing these plans formally for consultation via the DPIE Portal.

Thanks

Howard Chemney

Environment & Sustainability Manager
Warringah Freeway Upgrade
M 0410 542 009
E Howard.Chemney@cpbcon.com.au

Appendix 4 NSW Sydney Water consultation records

Chemney, Howard

From: LEE, BENG <BENG.LEE@sydneywater.com.au>
Sent: Wednesday, 20 October 2021 4:14 PM
To: Chemney, Howard
Cc: Rob Owens; Jacqueline McKenzie; SIMMONS, CRAIG; PARAPPIL, RANIYA; BALDOCK David
Subject: RE: Warringah Freeway Upgrade - Construction Environmental Management Plan consultation - Sydney Water

Hi Howard,
I have received comments from SW SME's with regards to the above CEMP and have also consulted David Baldock from TfNSW who is the Utilities Coordinator for the WHTBL project to double check that our assets are not impacted.

Our SME's input mainly centred around SW assets affected by the works and so far after confirming with David, no SW assets are in close proximity of the works and the only reference was that the NSOOS should not impacted and if it did, it will have major operational consequences that goes beyond what is stipulated here in the CEMP.

In short we have no additional comments to add as none of our assets are impacted by the works. The report was quite comprehensive and the feedback from our SME is that as long the soil and water is managed as per this plan, then any impacts to our assets (if any) are likely to be minimal. Thank you.

Regards,

Beng Lee
Senior Development Consultant
Infrastructure Development
Business Development

Mobile 0419 945 730
beng.lee@sydneywater.com.au

Level 13, 1 Smith Street
Parramatta NSW 2150

From: PARAPPIL, RANIYA <RANIYA.PARAPPIL@sydneywater.com.au>
Sent: Thursday, 14 October 2021 3:45 PM
To: Chemney, Howard <Howard.Chemney@pcplr.com.au>; LEE, BENG <BENG.LEE@sydneywater.com.au>
Cc: Rob Owens <Rob.Owens@transport.nsw.gov.au>; Jacqueline McKenzie <jacqueline.mckenzie@dswjv.com.au>; SIMMONS, CRAIG <Craig.Simmons@sydneywater.com.au>
Subject: RE: Warringah Freeway Upgrade - Construction Environmental Management Plan consultation - Sydney Water

Afternoon Howard,

Confirming is this being reviewed by our internal stakeholders, once the review is complete @LEE, BENG will be reaching out with feedback.

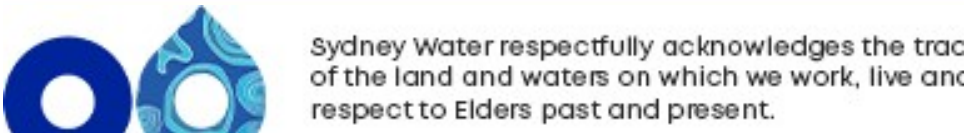
Kind Regards,

Raniya Parappil
Infrastructure Account Manager
City Growth & Development | Business Development

Mobile 0477 995 254
raniya.parappil@sydneywater.com.au

Level 13, 1 Smith Street
Parramatta NSW 2150

Sydney WATER



From: Chemney, Howard <Howard.Chemney@pcplr.com.au>
Sent: Thursday, 14 October 2021 2:23 PM
To: PARAPPIL, RANIYA <RANIYA.PARAPPIL@sydneywater.com.au>
Cc: Rob Owens <Rob.Owens@transport.nsw.gov.au>; Jacqueline McKenzie <jacqueline.mckenzie@dswjv.com.au>; RAMLIE, WILLY <WILLY.RAMLIE@sydneywater.com.au>
Subject: RE: Warringah Freeway Upgrade - Construction Environmental Management Plan consultation - Sydney Water

Hi Raniya,

Just following up on the below.

Please let me know if you / Sydney Water have any queries during this review stage or require a live review / page turn on the soil and water plan submitted for review.

This is also a reminder that all comments must be received back by Friday 22nd October.

Thanks

Howard
0410 542 009

From: Chemney, Howard
Sent: Friday, 1 October 2021 11:37 AM
To: PARAPPIL, RANIYA <RANIYA.PARAPPIL@sydneywater.com.au>
Cc: Rob Owens <Rob.Owens@transport.nsw.gov.au>; Jacqueline McKenzie <jacqueline.mckenzie@dswjv.com.au>; RAMLIE, WILLY <WILLY.RAMLIE@sydneywater.com.au>
Subject: RE: Warringah Freeway Upgrade - Construction Environmental Management Plan consultation - Sydney Water

Hi Raniya,

Further to the below correspondence, please find attached the following plan for your consultation:

- Soil and Surface Water Management Sub-plan (including Groundwater Management Procedure).

The consultation period is for 3 weeks and therefore we request all comments must be received back by Friday 22nd October.

Please give me a call if you need any clarification.

Thanks

Howard

0410 542 009

From: Chemney, Howard
Sent: Tuesday, 28 September 2021 12:41 PM
To: RAMLIE, WILLY <WILLY.RAMLIE@sydneywater.com.au>
Cc: Rob Owens <Rob.Owens@transport.nsw.gov.au>; Jacqueline McKenzie <jacqueline.mckenzie@dswjv.com.au>; PARAPPIL, RANIYA <RANIYA.PARAPPIL@sydneywater.com.au>
Subject: RE: [External] Warringah Freeway Upgrade - Construction Environmental Management Plan consultation - Sydney Water

Hi Willy,

Many thanks for the update. We will ensure that the plans get sent to Raniya going forward.

Thanks

Howard

From: RAMLIE, WILLY <WILLY.RAMLIE@sydneywater.com.au>
Sent: Tuesday, 28 September 2021 9:50 AM
To: Chemney, Howard <Howard.Chemney@pcplr.com.au>
Cc: Rob Owens <Rob.Owens@transport.nsw.gov.au>; Jacqueline McKenzie <jacqueline.mckenzie@dswjv.com.au>; PARAPPIL, RANIYA <RANIYA.PARAPPIL@sydneywater.com.au>

Subject: RE: [External] Warringah Freeway Upgrade - Construction Environmental Management Plan consultation - Sydney Water

CAUTION: This email originated from outside of the Organisation.

Howard,

Thank you for your email.

I have informed TfNSW about this but Raniya Parappil is the new Account Manager for motorways and will be the point of contact moving forward.

The email below (and its attachment) has been forwarded to Raniya and her team for action.

Thank you.

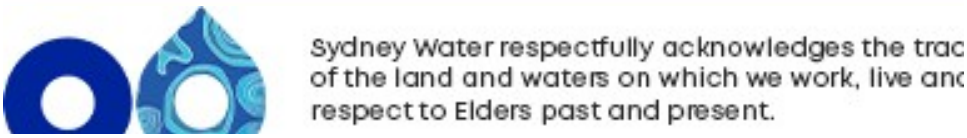
Kind Regards,

Willy Ramlie
Account Manager, Infrastructure Development
Business Development

Mobile 0418 697 873
Willy.Ramlie@sydneywater.com.au

Level 13, 1 Smith Street
Parramatta NSW 2150

Sydney WATER



From: Chemney, Howard <Howard.Chemney@pcplr.com.au>
Sent: Monday, 27 September 2021 6:57 PM
To: RAMLIE, WILLY <WILLY.RAMLIE@sydneywater.com.au>
Cc: Rob Owens <Rob.Owens@transport.nsw.gov.au>; Jacqueline McKenzie <jacqueline.mckenzie@dswjv.com.au>
Subject: [External] Warringah Freeway Upgrade - Construction Environmental Management Plan consultation - Sydney Water

CAUTION: This email originated from outside the organisation. Do not click links or open attachments unless you recognise the sender and know the content is safe.

Hi Willy,

This email is to advise you that CPB Downer JV will be sending over a number of sub-plans to the Warringah Freeway Upgrade Construction Environmental Management Plan (CEMP) for consultation with Sydney Water this Friday 1st October.

Our requirement to consult with Sydney Water on these plans is contained in Condition C4 of the Infrastructure Approval SSI 8863 as snipped below and included in the attachment.

C4 The following **CEMP Sub-plans** must be prepared in consultation with the relevant government agencies identified for each **CEMP Sub-plan**. Details of all information requested by an agency during consultation must be provided to the Planning Secretary as part of any submission of the relevant **CEMP Sub-plan**, including copies of all correspondence from those agencies as required by **Condition A5**.

	Required CEMP Sub-plan	**Relevant government agencies to be consulted for each CEMP Sub-plan**
(a)	Traffic, transport and access	Relevant council(s)
(b)	Noise and vibration	NSW Health, relevant council(s)
(c)	Flora and Fauna	DPI Fisheries, DPIE Water, EESG, and relevant council(s)
(d)	Air quality and odour	NSW Health, and relevant council(s)
(e)	Soil and surface water	DPIE Water, EESG, EPA, Sydney Water (if Sydney Water's assets are affected) and relevant council(s)
(f)	Groundwater	DPIE Water, EESG, EPA, Sydney Water (where it is proposed to discharge groundwater into Sydney Water's assets) and relevant council(s)
(g)	Maritime Heritage	Heritage NSW and relevant council(s)
(h)	Non-Aboriginal Heritage	Heritage NSW and relevant council(s)
(i)	Aboriginal Cultural Heritage	Heritage NSW
(j)	Dredging and Disposal Management Plan	EPA, DPI Fisheries, Port Authority of NSW (including Harbour Master)

Specifically we are required to consult with Sydney Water on the following project relevant sub-plans:

- Soil and Surface Water Management Sub-plan (including Groundwater Management Procedure).

The consultation period is for 3 weeks and therefore all comments must be received back by Friday 22nd October. Comments received after this date may not be addressed in time and will be considered during future revisions.

To assist you in your review of the documents we are happy to undertake a live review / page turn to discuss issues directly. Please contact me should you wish to take up this offer.

Please note that TfNSW will also be issuing these plans formally for consultation via the DPIE Portal.

Thanks

Howard Chemney

Environment & Sustainability Manager
Warringah Freeway Upgrade
M 0410 542 009
E Howard.Chemney@cpbcon.com.au

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Appendix 5 North Sydney Council consultation records

Chemney, Howard

From: Gavin McConnell <Gavin.McConnell@northsydney.nsw.gov.au>
Sent: Tuesday, 26 October 2021 11:43 AM
To: Chemney, Howard
Subject: Re: WFU - CEMP/ Traffic and Transport

Howard,

Soil and Water CEMP comments - NSC has no comments to make in respect of the Soil and Water CEMP.

Flora and Fauna CEMP - I am chasing up comments today.

Other than Traffic, that is all of them.

Gavin

From: Chemney, Howard <Howard.Chemney@pcplr.com.au>
Sent: Tuesday, 26 October 2021 11:31 AM
To: Gavin McConnell <Gavin.McConnell@northsydney.nsw.gov.au>
Subject: RE: WFU - CEMP/ Traffic and Transport

Hi Gavin,

OK – can you confirm that we will be receiving all other plan comments today ?

Thanks

Howard

From: Gavin McConnell <Gavin.McConnell@northsydney.nsw.gov.au>
Sent: Tuesday, 26 October 2021 11:30 AM
To: Chemney, Howard <Howard.Chemney@pcplr.com.au>
Subject: Re: WFU - CEMP/ Traffic and Transport

Howard,
Hi,
Unfortunately due to extensive demands on the time of our Traffic Engineering Team, they/ we cannot guarantee a response by COB Thursday. They will get a response as soon as reasonably practical.

Regards,

Gavin

From: Chemney, Howard <Howard.Chemney@pcplr.com.au>
Sent: Monday, 25 October 2021 1:31 PM
To: Gavin McConnell <Gavin.McConnell@northsydney.nsw.gov.au>
Subject: RE: WFU - CEMP/ Traffic and Transport

CAUTION : **Do not click links or open attachments unless you recognise the sender and know the content is safe.**
Hi Gavin,

For the Traffic Management Plan - can you please push to have these comments with me by COB Thursday this week at the very latest in order that we can achieve our program / submission deadlines.

Thanks

Howard

From: Gavin McConnell <Gavin.McConnell@northsydney.nsw.gov.au>
Sent: Monday, 25 October 2021 12:45 PM
To: Chemney, Howard <Howard.Chemney@pcplr.com.au>
Subject: WFU - CEMP/ Traffic and Transport

CAUTION: This email originated from outside of the Organisation.

Hi Howard,
Ive spoken with our Traffic Engineer Manager and she will need another week to properly respond.
As we agreed, this is the most relevant of the CEMPs.
Will get comments to you next Monday.

Regards,

Gavin

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****

Chemney, Howard

From: Chemney, Howard
Sent: Monday, 25 October 2021 8:38 AM
To: Gavin McConnell
Cc: Rob Owens; Jacqueline McKenzie
Subject: RE: Warringah Freeway Upgrade - Ancillary Site Establishment Management Plan consultation

Hi Gavin,

I called and left you a message on Friday enquiring if you needed any assistance and reminding you that comments on all the plans are due back tomorrow (Tuesday 26th October).

Can you please confirm whether Council will be providing any comments on the plans and if so, that we will receive all comments back by tomorrow.

Many thanks

Howard

0410 0542 009

From: Chemney, Howard <Howard.Chemney@cpbcon.com.au>
Sent: Thursday, 14 October 2021 1:28 PM
To: Gavin McConnell <Gavin.McConnell@northsydney.nsw.gov.au>
Cc: Rob Owens <Rob.Owens@transport.nsw.gov.au>; Jacqueline McKenzie <jacqueline.mckenzie@dswjv.com.au>
Subject: RE: Warringah Freeway Upgrade - Ancillary Site Establishment Management Plan consultation

Hi Gavin,

Just following up on the below.

Please let me know if Council have any queries during this review stage or require a live review / page turn on any of the documents submitted.

This is also a reminder that all comments must be received back by Tuesday 26th October.

Thanks

Howard
0410 542 009

From: Chemney, Howard
Sent: Tuesday, 5 October 2021 5:04 PM
To: Gavin McConnell <Gavin.McConnell@northsydney.nsw.gov.au>
Cc: Rob Owens <Rob.Owens@transport.nsw.gov.au>; Jacqueline McKenzie <jacqueline.mckenzie@dswjv.com.au>
Subject: RE: Warringah Freeway Upgrade - Ancillary Site Establishment Management Plan consultation

Hi Gavin,

Further to the below emails and apologies for not sending these last Friday as indicated - please find attached both the CEMP (Construction Environmental Management Plan) and the ASEMP (Ancillary Site Establishment Management Plan) for the Warringah Freeway Upgrade for Councils review.

In addition, please note the CEMP has a number of sub-plans relevant to this stage of the works identified as follows:

- Traffic, Transport & Access Management Sub-plan
- Noise & Vibration Management Sub-plan
- Flora & Fauna Management Sub-plan
- Air Quality and Odour Management Sub-plan
- Soil and Surface Water Management Sub-plan
- Heritage Management Sub-plan (which includes both indigenous and non-indigenous heritage)

I will send these on in separate emails / via drop box given size limitations.

As indicated below, the consultation period for all these plans is for 3 weeks and therefore all comments must now be received back by Tuesday 26th October. Comments received after this date may not be addressed in time and will be considered during future revisions. We are also happy to assist you in your review of the document by undertaking a live review / page turn to discuss issues directly. Please contact me should you wish to take up this offer.

Many thanks

Howard

From: Chemney, Howard
Sent: Tuesday, 28 September 2021 5:53 AM
To: Gavin McConnell <Gavin.McConnell@northsydney.nsw.gov.au>
Cc: Rob Owens <Rob.Owens@transport.nsw.gov.au>; Jacqueline McKenzie <jacqueline.mckenzie@dswjv.com.au>
Subject: Warringah Freeway Upgrade - Ancillary Site Establishment Management Plan consultation

Hi Gavin,

Further to the below – it is also a requirement of Condition A17 of the Infrastructure Approval SSI 8863 that we consult with Council on the Ancillary Site Establishment Management Plan (ASEMP). This plan outlines the environmental management practices and procedures to be implemented for the establishment of the construction ancillary facilities / construction support sites. A snippet of this condition is reproduced below:

SITE ESTABLISHMENT WORK

Ancillary Site Establishment Management Plan

A17 Before establishment of any construction ancillary facility (excluding minor construction ancillary facilities determined by the **ER** to have minimal environmental impact and those established under **Condition A19**), the Proponent must prepare an **Ancillary Site Establishment Management Plan** which outlines the environmental management practices and procedures to be implemented for the establishment of the construction ancillary facilities. The **Ancillary Site Establishment Management Plan** must be prepared in consultation with the relevant council and government agencies. The Plan must be submitted to the Planning Secretary for approval one month before the establishment of any construction ancillary facilities. The **Ancillary Site Establishment Management Plan** must detail the management of the construction ancillary facilities and include:

(a) a description of activities to be undertaken during establishment of the construction ancillary facility (including scheduling and duration of work to be undertaken at the site);
(b) figures illustrating the proposed operational site layout and the location of the closest sensitive land user(s);
(c) a program for ongoing analysis of the key environmental risks arising from the site establishment activities described in subsection (a) of this condition, including an initial risk assessment undertaken prior to the commencement of site establishment work;
(d) details of how the site establishment activities described in subsection (a) of this condition will be carried out to:
  (i) meet the performance outcomes stated in the documents listed in **Condition A1**, and
  (ii) manage the risks identified in the risk analysis undertaken in subsection (c) of this condition; and
(e) a program for monitoring the performance outcomes, including a program for construction noise monitoring.

Nothing in this condition prevents the Proponent from preparing individual **Ancillary Site Establishment Management Plans** for each construction ancillary facility.

We will be sending over the ASEMP for consultation with Council this Friday 1st October.

As with the CEMP sub-plans, the consultation period is for 3 weeks and therefore all comments must be received back by Friday 22nd October. Comments received after this date may not be addressed in time and will be considered during future revisions. We are also happy to assist you in your review of the document by undertaking a live review / page turn to discuss issues directly. Please contact me should you wish to take up this offer.

Please note that TfNSW will also be issuing this plan formally for consultation via the DPIE Portal.

Thanks

Howard Chemney

Environment & Sustainability Manager
Warringah Freeway Upgrade
M 0410 542 009
E Howard.Chemney@cpbcon.com.au

From: Chemney, Howard
Sent: Monday, 27 September 2021 6:20 PM
To: Gavin McConnell <Gavin.McConnell@northsydney.nsw.gov.au>
Cc: Rob Owens <Rob.Owens@transport.nsw.gov.au>; Jacqueline McKenzie <jacqueline.mckenzie@dswjv.com.au>
Subject: Warringah Freeway Upgrade - Construction Environmental Management Plan consultation

Hi Gavin,

This email is to advise you that CPB Downer JV will be sending over a number of sub-plans to the Warringah Freeway Upgrade Construction Environmental Management Plan (CEMP) for consultation with Council this Friday 1st October.

Our requirement to consult with Council on these plans is contained in Condition C4 of the Infrastructure Approval SSI 8863 as snipped below and included in the attachment.

C4 The following **CEMP Sub-plans** must be prepared in consultation with the relevant government agencies identified for each **CEMP Sub-plan**. Details of all information requested by an agency during consultation must be provided to the Planning Secretary as part of any submission of the relevant **CEMP Sub-plan**, including copies of all correspondence from those agencies as required by **Condition A5**.

	Required CEMP Sub-plan	Relevant government agencies to be consulted for each CEMP Sub-plan
(a)	Traffic, transport and access	Relevant council(s)
(b)	Noise and vibration	NSW Health, relevant council(s)
(c)	Flora and Fauna	DPI Fisheries, DPIE Water, EESG, and relevant council(s)
(d)	Air quality and odour	NSW Health, and relevant council(s)
(e)	Soil and surface water	DPIE Water, EESG, EPA, Sydney Water (if Sydney Water's assets are affected) and relevant council(s)
(f)	Groundwater	DPIE Water, EESG, EPA, Sydney Water (where it is proposed to discharge groundwater into Sydney Water's assets) and relevant council(s)
(g)	Maritime Heritage	Heritage NSW and relevant council(s)
(h)	Non-Aboriginal Heritage	Heritage NSW and relevant council(s)
(i)	Aboriginal Cultural Heritage	Heritage NSW
(j)	Dredging and Disposal Management Plan	EPA, DPI Fisheries, Port Authority of NSW (including Harbour Master)

Specifically we are required to consult with Council on the following project relevant sub-plans:

- Traffic, Transport & Access Management Sub-plan
- Noise & Vibration Management Sub-plan
- Flora & Fauna Management Sub-plan
- Air Quality and Odour Management Sub-plan
- Soil and Surface Water Management Sub-plan
- Heritage Management Sub-plan (which includes both indigenous and non-indigenous heritage)

The consultation period is for 3 weeks and therefore all comments must be received back by Friday 22nd October. Comments received after this date may not be addressed in time and will be considered during future revisions.

To assist you in your review of the documents we are happy to undertake a live review / page turn to discuss issues directly. Please contact me should you wish to take up this offer.

Please note that TfNSW will also be issuing these plans formally for consultation via the DPIE Portal.

Thanks

Howard Chemney

Environment & Sustainability Manager
Warringah Freeway Upgrade
M 0410 542 009
E Howard.Chemney@cpbcon.com.au

Appendix 6 Willoughby Council consultation records

27 October 2021

Howard Chemney
CPB Downer Joint Venture
Howard.Chemney@cpbcon.com.au
Warringah Freeway Upgrade project

Dear Sir,

RE: WARRINGAH FREEWAY UPGRADE – ANCILLARY SITE ESTABLISHMENT PLAN (ASEMP) AND CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN (CEMP) SUB-PLANS – COMMENTS FROM WILLOUGHBY CITY COUNCIL

Infrastructure Approval (Application no. SSI 8863) for the Western Harbour Tunnel (WHT) and Warringah Freeway Upgrade (WFU) project was granted by the Minister for Planning and Public Spaces on 21 January 2021. The WHT/WFU project is being constructed in three stages:

Stage 1 – Early and Enabling Works:

- **Stage 1A** – Critical utility installation, relocation and protection
- **Stage 1B** – Cammeray Golf Course adjustment works

Stage 2 – Warringah Freeway Upgrade project

- **Stage 2A** – Warringah Freeway Upgrade early works
- **Stage 2B** – Warringah Freeway Upgrade main works

Stage 3 – Western Harbour Tunnel project

Council understands that the CPB Downer Joint Venture has been selected by the NSW Government to deliver Stage 2 – the WFU project.

As part of the conditions of the Infrastructure Approval, the CPB Downer Joint Venture is required to consult with Council on a range of plans related to the WFU project. Accordingly, draft versions of the following documents were sent to Willoughby City Council (Council) via email on 5 October 2021 requesting comment:

1. **Ancillary Site Establishment Plan (ASEMP)**
2. **Construction Environmental Management Plan (CEMP) Sub-Plans:**
    1. Traffic, Transport & Access Management Sub-Plan
    2. Noise & Vibration Management Sub-Plan
    3. Flora & Fauna Management Sub-Plan
    4. Air Quality and Odour Management Sub-Plan
    5. Soil and Surface Water Management Sub-Plan
    6. Heritage Management Sub-Plan

Given the WFU project footprint and proposed construction works are located almost completely within the North Sydney Council local government area (LGA), the impacts on Willoughby City Council are likely to be minimal. However, Council has reviewed most of the Plans and provides the following comments to ensure that environmental, traffic and transport and other impacts are satisfactorily managed.

1. Ancillary Site Establishment Management Plan (ASEMP):

Reference no. ***WHTBLWFU-CPBD-NWW-EV-PLN-000001-B***
Dated 1 October 2021

Given the size of the ASEMP and relatively short time in which to provide a response, Council staff have not had the opportunity to review this Plan in detail. However, following a recent meeting with the CPB Downer Joint Venture project team where the ASEMP was discussed, Council is able to provide the following general comments.

The ASEMP relates to the Warringah Freeway Upgrade (WFU) project and has been prepared in accordance with the Minister's Conditions of Approval (MCoA) for the Western Harbour Tunnel and Warringah Freeway Upgrade project.

The ASEMP has been prepared to address the requirements of MCoA, the Western Harbour Tunnel and Warringah Freeway Upgrade Environmental Impact Statement (dated January 2020) (the EIS), the Western Harbour Tunnel and Warringah Freeway Upgrade Response to Submissions Report (dated September 2020) (the RtS) and applicable guidance and legislation.

This ASEMP applies to the WFU component of the project, the key features of which include the following:

- Upgrade and reconfiguration of the Warringah Freeway from immediately north of the Sydney Harbour Bridge through to Willoughby Road at Naremburn.
- Upgrades to interchanges at Falcon Street in Cammeray and High Street in North Sydney.
- New and upgraded pedestrian and cyclist infrastructure.
- New, modified and relocated road and shared user bridges across the Warringah Freeway
- Connection of the Warringah Freeway to the portals for the Western Harbour Tunnel mainline tunnels and the Beaches Link tunnels, which will consist of a combination of trough and cut and cover structures.
- Upgrades to existing roads around the Warringah Freeway to integrate the Project with the surrounding road network.
- Upgrades and modifications to bus infrastructure, including relocation of the existing bus layover along the Warringah Freeway, and improvements to the geometry and connectivity of the existing southbound bus lane.

- Other operational infrastructure, including surface drainage and utility infrastructure, signage, tolling, lighting, CCTV and other traffic management systems.

The ASEMP outlines the environmental management practices and procedures to be implemented for the establishment of construction ancillary facilities and must be submitted to the Planning Secretary for approval one month before the installation of any ancillary facilities (excluding minor construction ancillary facilities).

As per Figure 1-2 (Overview of the construction support sites) on page 16 of the ASEMP, none of the construction support sites for the WFU project are located within the Willoughby LGA. There is proposed to be a site WHT11 Waltham Street in Artarmon however it is presumed that this will only be used as part of the later Stage 3 WHT works.

Given these facts, Council has no comments on the ASEMP at this stage. It seems comprehensive and thorough in its detail and proposed environmental management measures. Council requests that the project team consult with Council in future as required and as detailed in Section 7.6 (Community Engagement) on page 77 of the ASEMP.

2. Construction Environmental Management (CEMP) Sub-Plans:

2.1 Traffic, Transport & Access Management Sub-Plan (TTAMP)

Reference no. **WHTBLWFU-CPBD-NWW-TF-PLN-000003-B**
Dated 1 October 2021

Given the size of the TTAMP and relatively short time in which to provide a response, Council staff have not had the opportunity to review this Plan in detail. However, following a recent meeting with the CPB Downer Joint Venture (CCPBJV) project team on 13 October 2021, where the TTAMP was discussed, Council is able to provide the following general comments.

At this meeting, the CPBDJV project team outlined the broad scope of the TTAMP and its road network and road network management approach. The minutes for this meeting previously provided to Council by CPBDJV reflect the discussion, selected areas of concern for Council and operational arrangements for liaison with Council. It is noted that the TTAMP appears to provide mechanisms for these concerns to be managed.

It is understood that the main area of works for the WFU project will be located south of Brook St i.e. within North Sydney LGA. Minimal or no construction activity is planned beyond Brook St, outside of any advanced warning signs and incidence response measures.

Nevertheless, construction works are likely to have impacts in terms of flow-on construction traffic effects and delays to existing traffic flows within the vicinity of the project. As such, Council wants to ensure that such impacts are minimised and adequately managed.

Council would like the TTAMP to provide assurance that it addresses and minimises the impacts from the construction of the WFU project in relation to the Willoughby LGA in at least the following key areas of concern:

- Safety for all road users, access to the Willoughby LGA, congestion minimisation, no or minimal movement of construction traffic in Willoughby LGA and no construction worker parking.
- The flexibility for Council to raise issues and for these to be resolved in an acceptable manner, which may include, and not limited to, changes to the TTAMP, site specific management plans, infrastructure, technology, operational and communication measures
- To seek and receive accurate and timely advice in response to community concerns.

In addition, the following advice is provided on specific matters related to the TTAMP:

Road network management and operation in Willoughby City Council

- Please note that road network management and operation in Willoughby City Council is managed through a broad and comprehensive permit system including: Road Opening permits, Crane/Heavy Plant and Road Occupancy permits and Work Zone permits. The provision of permits is mandatory when work is to be undertaken on Council's road network. There is a fee and conditions applicable for all permits. Council requests that the CPBDJV project team contact the Traffic and Transport Team should any such permits be required.

Heavy vehicle movements

- The surge in heavy vehicle movements associated with the construction of the WFU project increases the risks of delays, queues, congestion, noise, and air pollution, particularly during weekday morning and afternoon peak periods and potential for incidents on Willoughby Council's local road network. It is critical that the current operation, use and performance of the routes used for all sites are effectively investigated and all safety hazards identified so that the hazards are mitigated to always maximise safety for all road users.
- Haulage Routes (North) on page 66 of the TTAMP does not indicate the route taken in Miller Street as it approaches the Warringah Freeway. It is Council's preference that all heavy vehicles turn right and use the Warringah Freeway to head southerly and not use Strathallen Avenue. Strathallen Avenue is a narrow State Road with both significant horizontal and vertical alignment changes that would lead to safety and amenity (noise) issues for residents if heavy vehicles use this route.

Bicyclist and pedestrian safety and amenity

- The need to maximise the safety and amenity of bicyclist and pedestrians during construction is recognised in the TTAMP. The approach adopted is outlined in Section 4.6 and Section 5.7. The information provided does not address the impact when traffic changes impact on bicycle

routes such as the proposed arrangements at the bicycle link connecting Warringah Freeway with Amherst Street.

- There is significant concern with the management of bicyclists (and pedestrians) along the Warringah Freeway, west of the Brook Street on-ramp; and at the Brook Street on-ramp. The plans provided in the TTAMP i.e. WFU-JAJ-DRG-TW-00-(1106, 1107, 1206, 1216, 1306, 1316, 1406, 1506, 2006 and 2106) indicate the retention of the two-way bicycle link along the Freeway and crossing of the Brook Street on-ramp to/from Amherst St and Warringah Freeway under multiple traffic changes.
- The safety of bicyclists under this arrangement is of significant concern. These vulnerable road users will need to negotiate a road environment with construction infrastructure, changing road and traffic management environments and high speed traffic movements. Council is requesting that the CPBDJV project team review the management approach and designs to maximise safety for bicyclists at this location including considering options such as provision of infrastructure to grade separate motor vehicle and bicyclists; and the temporary closure and rerouting to eliminate this conflict point.

Future consultation on traffic and transport matters

- As per Section 6.2.1 of the TTAMP, it is understood that a Traffic and Transport Liaison Group (TTLG) will be created by the project team and is proposed to meet monthly to discuss construction staging, community concerns associated with traffic changes, impacts on road, path and public transport users and operators. Furthermore, a Traffic Control Group (TCG) is also described in Section 6.2.2 however these will be weekly meetings.
- Council has previously confirmed that a representative from Council's Traffic and Transport Team will be able to attend the more infrequent TTLG meetings as required. Council requests that the CPBDJV project team contact the Traffic and Transport Team to confirm attendance and agendas for these future meetings.

2.2 Noise & Vibration Management Sub-Plan:

Reference no. **WHTBLWFU-CPBD-NWW-NV-PLN-000005-B**
Dated 1 October 2021

Council has reviewed the Noise and Vibration Management Sub-Plan and the Noise and Vibration Monitoring Program and finds them satisfactory. The following additional comments are provided.

It is highly likely that Council will receive complaints from the community in regards to construction noise. The MCoA are quite extensive and cover community consultation, out of hours work and monitoring. Complaints should be directed to the Community Complaints Mediator and the Environmental Protection Authority (EPA).

2.3 Flora & Fauna Management Sub-Plan:

Reference no. **WHTBLWFU-CPBD-NWW-EO-PLN-000004**
Dated 1 October 2021

Council has not reviewed this Sub-Plan in detail. Given the works will take place within the North Sydney LGA, there would seem to be negligible impacts on flora and fauna within the Willoughby LGA. However, it is noted that Willoughby Creek and Flat Rock Creek have been mentioned in the Sub-Plan. Although these creeks are located some distance from the existing Freeway and proposed project footprint, the project team should contact Council to discuss any requirements and appropriate environmental management measures, should direct or indirect impacts be identified in future that have not already been identified and addressed in this Sub-Plan.

2.4 Air Quality and Odour Management Sub-Plan:

Reference no. ***WHTBLWFU-CPBD-NWW-AH-PLN-000008-B***
Dated 1 October 2021

Council has reviewed this Sub-Plan and finds it satisfactory. Air quality impacts are a particular area of concern for both Council and the community, both from the works themselves and construction traffic to, from and within the project footprint. Given the works will take place within the North Sydney LGA, there would seem to be only minor, peripheral impacts in terms of air quality and odour within the Willoughby LGA. Council strongly encourages the project team to ensure that air quality monitoring procedures are thorough and transparent to assuage community concerns both within Willoughby and North Sydney LGAs.

2.5 Soil and Surface Water Management Sub-Plan:

Reference no. ***WHTBLWFU-CPBD-NWW-WA-PLN-000006***
Dated 1 October 2021

Council has reviewed the Soil and Surface Water Management Sub-Plan and makes the following comments.

The MCoA refer to a Section A1 or A2 Site Audit Statement accompanied by an Environmental Management Plan (EMP). No mention is made in regard to consultation with the EPA or councils on the suitability of the EMP if there are ongoing maintenance requirements in terms of encapsulated/remaining contaminated material or monitoring/pretreatment prior to discharge of groundwater back into the aquifer. Whilst the Site Auditor will be responsible for ensuring the suitability of any EMP, bodies responsible for the management of the land or the receiving waters impacted by the EMP should be consulted with to ensure the plan is practicable and reasonable, plus there could be ongoing costs. Whilst the MCoA cannot be modified, a written undertaking could be made by the certified Contaminated Land Consultant to conduct consultation with the land

owners/managers and relevant councils regarding the suitability of any proposed EMP before it is submitted to the Site Auditor for assessment and a Site Audit Statement is issued.

2.6 Heritage Management Sub-Plan:

Reference no. ***WHTBLWFU-CPBD-NWW-HE-PLN-000007***
Dated 1 October 2021

Council has reviewed the Heritage Management Sub-Plan and makes the following comments.

From a review of Willoughby Local Environmental Plan 2012 (LEP) heritage mapping and:

- Figure 5-1 (AHIMS site in the vicinity of the project area)
- Figure 5-2 (Location of non-Aboriginal heritage items and potential heritage items within the project area Map 1 of 2)
- Figure 5-3 (Location of non-Aboriginal heritage items and potential heritage items within the project area Map 2 of)

of the Heritage Sub-Plan, it is noted that the southwest border of the Naremburn Central Township heritage conservation area is located next to the existing Warringah Freeway. Several local heritage items are also located in the vicinity of Willoughby Rd and its intersection with the Freeway.

According to section 5.2 of the Heritage Sub-Plan (pg. 20):

> *Of those heritage items identified within the study area, 134 items would either have no impact or a negligible impact from the Project due to either the low impact activities proposed or the distances between these items and the project construction works. Impacts on these 134 items would be limited to temporary noise, vibration and/or visual impacts during construction, and managed through the implementation of minimum working distances for vibration intensive construction activities and other standard construction management measures.*

It is unclear why the two heritage conservation areas in the North Sydney Council LGA (Cammeray Conservation Area and Holterman Estate A Conservation Area, Crows Nest) have been listed in Table 5-1 (Non-Aboriginal heritage items within the project area) of the Heritage Sub-Plan, but the aforementioned Naremburn Central Township heritage conservation area has not.

It is also unclear from the various documents what exactly is planned in the vicinity of this area, but presumably it would be various roadworks that create noise and vibration. As such, Council believes there may be indirect impacts on the Naremburn Central Township heritage conservation area, similar to those listed for the two North Sydney heritage conservation areas, namely:

- *Temporary and permanent visual impacts due to the removal of heritage fabric and the construction of permanent operational infrastructure within and adjacent to the heritage boundary.*
- *Temporary vibration impacts due to construction activities within and adjacent to the heritage boundary.*

As such, Council requests further clarification on what, if any, measures are proposed to safeguard properties located within the Naremburn Central Township heritage conservation area, as well as the several local heritage items located in the vicinity of Willoughby Rd and the Freeway.

In this regard, Council notes the requirements of Conditions E79, E80 and E81 of the Infrastructure Approval and the proposed environmental mitigation and management measures as detailed in section 7.7 (Vibration monitoring and acoustic treatment of heritage items) of the Heritage Sub-Plan.

There are no Aboriginal (AHIMS) heritage items located within vicinity of the project area and thus Council would agree that there would be no impacts on the AHIMS items mapped in the Willoughby LGA for this stage of the broader WHT and WFU project. Such impacts would be related to the future Beaches Link and Gore Hill Freeway Connection project.

Conclusion:

Thank you for your giving Council the opportunity to provide comment on these Plans. Please contact Andrew Gillies, Strategic Transport Planner on **9777 7655** or **Andrew.Gillies@Willoughby.nsw.gov.au** if you wish to discuss these matters further.

Yours sincerely,

Ian Arnott
PLANNING MANAGER

Chemney, Howard

From: Gillies, Andrew <Andrew.Gillies@Willoughby.nsw.gov.au>
Sent: Thursday, 7 October 2021 1:44 PM
To: Chemney, Howard; Rob Owens
Cc: Farrelly, Gordon; Binns, Chris
Subject: RE: Warringah Freeway Upgrade - Ancillary Site Establishment Management Plan (ASEMP) / Traffic, Transport and Access Management Sub-plan review

Hi Howard / Rob,

Thanks for your reply. Yes, understood. Once we have reviewed the Plans we will advise if we do need such sessions but you are right that most direct impacts in our area are likely to be limited.

Gordon / Chris – FYI.

Andrew

From: Chemney, Howard <Howard.Chemney@pcplr.com.au>
Sent: Thursday, 7 October 2021 1:42 PM
To: Gillies, Andrew <Andrew.Gillies@Willoughby.nsw.gov.au>; Rob Owens <Rob.Owens@transport.nsw.gov.au>
Subject: RE: Warringah Freeway Upgrade - Ancillary Site Establishment Management Plan (ASEMP) / Traffic, Transport and Access Management Sub-plan review

Hi Andrew,

Please note that we have sent the plans to Willoughby Council as a courtesy noting that despite there not being any general construction works for the Warringah Freeway Upgrade being undertaken within the Willoughby Council boundary, there may be some residual impacts across boundary – principally in relation to noise and traffic impacts. Whilst Councils efforts may be better focussed on these specific areas we are of course happy to undertake a page turn / review in relation to all submitted documents.

Thanks

Howard

From: Gillies, Andrew <Andrew.Gillies@Willoughby.nsw.gov.au>
Sent: Thursday, 7 October 2021 1:28 PM
To: Rob Owens <Rob.Owens@transport.nsw.gov.au>
Cc: Chemney, Howard <Howard.Chemney@pcplr.com.au>
Subject: RE: Warringah Freeway Upgrade - Ancillary Site Establishment Management Plan (ASEMP) / Traffic, Transport and Access Management Sub-plan review

Thank you Rob / Howard,

Can I also ask whether your offer to do the review / page turn is for all of the Sub-Plans, not just ASEMP and TTAM Sub-Plan? We will need some time to distribute to other Council officers and thus may need to have a separate session for each plan, with different officers in each.

Thank you,

Andrew

From: Rob Owens <Rob.Owens@transport.nsw.gov.au>
Sent: Thursday, 7 October 2021 11:17 AM
To: Gillies, Andrew <Andrew.Gillies@Willoughby.nsw.gov.au>; Council's Email <email@willoughby.nsw.gov.au>
Cc: Chemney, Howard <Howard.Chemney@pcplr.com.au>
Subject: RE: Warringah Freeway Upgrade - Ancillary Site Establishment Management Plan (ASEMP) / Traffic, Transport and Access Management Sub-plan review

Hi Andrew,

In regards to the DPIE Portal and to answer your questions, an email notification is sent to the Council representative/inbox that is registered in the portal. This will contain a link prompting the user to download and review the documents that have been issued. There should be a link to the login page where a response can be populated and an opportunity to upload any documents should you chose.

I have provided the link to FAQ on how to use the DPIE Portal.
https://www.planningportal.nsw.gov.au/major-projects/help

Alternatively, Council can provide a response to Howard's email and this can be uploaded by us manually when the time comes to close out the consultation period and when we formally submit the plans to DPIE.

I hope this information helps.

Kind regards,

Rob

Rob Owens
Environment and Sustainability Manager
Warringah Freeway Upgrade
Central River & Eastern Harbour City | Safety Environment & Regulation
Transport for NSW

M 0435 578 294
101 Miller Street, North Sydney NSW 2060

From: Chemney, Howard [mailto:Howard.Chemney@pcplr.com.au]
Sent: Thursday, 7 October 2021 9:39 AM
To: Rob Owens <Rob.Owens@transport.nsw.gov.au>
Subject: FW: Warringah Freeway Upgrade - Ancillary Site Establishment Management Plan (ASEMP) / Traffic, Transport and Access Management Sub-plan review

Rob,

Can you respond to Andrew re: DPIE portal

H

From: Gillies, Andrew <Andrew.Gillies@Willoughby.nsw.gov.au>
Sent: Wednesday, 6 October 2021 2:25 PM
To: Farrelly, Gordon <Gordon.Farrelly@Willoughby.nsw.gov.au>; Chemney, Howard <Howard.Chemney@pcplr.com.au>
Cc: Rob Owens <Rob.Owens@transport.nsw.gov.au>; Jacqueline McKenzie <jacqueline.mckenzie@dswjv.com.au>; Binns, Chris <Chris.Binns@Willoughby.nsw.gov.au>; Barragan, German <German.Barragan@Willoughby.nsw.gov.au>; Wood, Darren <Darren.Wood@Willoughby.nsw.gov.au>
Subject: RE: Warringah Freeway Upgrade - Ancillary Site Establishment Management Plan (ASEMP) / Traffic, Transport and Access Management Sub-plan review

Hi all,

Howard, thank you for sending through. As Gordon said, in future please send any documents like this to Council's generic email address so they are registered by our Information Management team.

There are a lot of documents to review and this will require co-ordination with various officers within Council, so please give us some time to respond.

Regarding this formal notification through DPIE's Planning Portal, can you explain how this will actually be done? Is this an email that will come through from the Portal? If so, what email address will it send to? I am not familiar with notification under the Portal and how it works.

Gordon, I downloaded the Traffic, Transport and Access Management Sub-Plan (174MB PDF document) from DropBox earlier today. I have put it in ECM. It has the Doc Set ID: **6388115**.

Andrew

Andrew Gillies - *Strategic Transport Planner*
WILLOUGHBY CITY COUNCIL
PO Box 57 Chatswood NSW 2057
P +61 2 9777 7655 | M
E Andrew.Gillies@Willoughby.nsw.gov.au
willoughby.nsw.gov.au | visitchatswood.com.au | theconcourse.com.au

From: Farrelly, Gordon <Gordon.Farrelly@Willoughby.nsw.gov.au>
Sent: Wednesday, 6 October 2021 10:38 AM
To: Chemney, Howard <Howard.Chemney@pcplr.com.au>
Cc: Rob Owens <Rob.Owens@transport.nsw.gov.au>; Jacqueline McKenzie <jacqueline.mckenzie@dswjv.com.au>; Binns, Chris <Chris.Binns@Willoughby.nsw.gov.au>; Gillies, Andrew <Andrew.Gillies@Willoughby.nsw.gov.au>; Barragan, German <German.Barragan@Willoughby.nsw.gov.au>; Wood, Darren

<Darren.Wood@Willoughby.nsw.gov.au>
Subject: Warringah Freeway Upgrade - Ancillary Site Establishment Management Plan (ASEMP) / Traffic, Transport and Access Management Sub-plan review

Hi Howard

Thanks, I am having problems opening the T&T sub-plan downloaded from Dropbox. I am working with our Information Management Team to resolve this issue, if it cannot be resolved I will come back to you.

I gratefully accept your offer of a live review / page turn outline the structure and content of this sub-plan and to discuss issues directly, please invite myself and German Barragan to this session. We will confirm with internal partners if others wish to attend this session.

Please send all future correspondence to Council's email address as well via email@Willoughby.nsw.gov.au

Thanks

Gordon

Gordon Farrelly - *Traffic & Transport Team Leader*
WILLOUGHBY CITY COUNCIL
PO Box 57 Chatswood NSW 2057
P +61 2 9777 7705 | M +61409907678
E Gordon.Farrelly@Willoughby.nsw.gov.au
willoughby.nsw.gov.au | visitchatswood.com.au | theconcourse.com.au

From: Chemney, Howard [mailto:Howard.Chemney@pcplr.com.au]
Sent: Tuesday, 5 October 2021 5:51 PM
To: Binns, Chris <Chris.Binns@Willoughby.nsw.gov.au>; Gillies, Andrew <Andrew.Gillies@Willoughby.nsw.gov.au>; Farrelly, Gordon <Gordon.Farrelly@Willoughby.nsw.gov.au>
Cc: Rob Owens <Rob.Owens@transport.nsw.gov.au>; Jacqueline McKenzie <jacqueline.mckenzie@dswjv.com.au>
Subject: (DWS Doc No 211006904) RE: Warringah Freeway Upgrade - Ancillary Site Establishment Management Plan (ASEMP) / Construction Environmental Management Plan sub-plans

Hi Chris, Andrew and Gordon,

Please find attached a link to the Traffic, Transport and Access Management Sub-plan for your review.

https://www.dropbox.com/s/z21dlw2f6vrafsl/WHTBLWFU-CPBD-NWW-TF-PLN-000003-B_TTAMP.pdf?dl=0

Thanks

Howard Chemney

Environment & Sustainability Manager
Warringah Freeway Upgrade
M 0410 542 009
E Howard.Chemney@cpbcon.com.au

From: Chemney, Howard
Sent: Tuesday, 5 October 2021 5:47 PM
To: Chris Binns <Chris.Binns@Willoughby.nsw.gov.au>; Andrew Gillies <Andrew.Gillies@Willoughby.nsw.gov.au>; Gordon.Farrelly@Willoughby.nsw.gov.au
Cc: Rob Owens <Rob.Owens@transport.nsw.gov.au>; Jacqueline McKenzie <jacqueline.mckenzie@dswjv.com.au>
Subject: RE: Warringah Freeway Upgrade - Ancillary Site Establishment Management Plan (ASEMP) / Construction Environmental Management Plan sub-plans

Hi Chris, Andrew and Gordon,

As indicated in the email below, lease find attached the following sub-plans for your review:

- Noise & Vibration Management Sub-plan
- Flora & Fauna Management Sub-plan
- Air Quality and Odour Management Sub-plan
- Soil and Surface Water Management Sub-plan
- Heritage Management Sub-plan (which includes both indigenous and non-indigenous heritage)

The Traffic, Transport and Access Management Sub-plan will be sent via dropbox due to its size.

Thanks

Howard Chemney

Environment & Sustainability Manager
Warringah Freeway Upgrade
M 0410 542 009
E Howard.Chemney@cpbcon.com.au

From: Chemney, Howard <Howard.Chemney@cpbcon.com.au>
Sent: Tuesday, 5 October 2021 5:44 PM
To: 'Chris Binns' <Chris.Binns@Willoughby.nsw.gov.au>; 'Andrew Gillies' <Andrew.Gillies@Willoughby.nsw.gov.au>; 'Gordon.Farrelly@Willoughby.nsw.gov.au' <Gordon.Farrelly@Willoughby.nsw.gov.au>
Cc: 'Rob Owens' <Rob.Owens@transport.nsw.gov.au>; 'Jacqueline McKenzie' <jacqueline.mckenzie@dswjv.com.au>
Subject: Warringah Freeway Upgrade - Ancillary Site Establishment Management Plan (ASEMP) / Construction Environmental Management Plan sub-plans

Hi Chris, Andrew and Gordon,

This email is to advise you that CPB Downer JV are required to consult with Willoughby Council on the Ancillary Site Establishment Management Plan (ASEMP) and Construction Environmental Management Plan (CEMP) sub-plans as detailed in conditions A17 and C4 of the Infrastructure Approval SSI 8863 for the Warringah Freeway Upgrade (see attachment).

With regards to the CEMP sub-plans we are required to consult with Council on the following sub-plans:

- Traffic, Transport & Access Management Sub-plan
- Noise & Vibration Management Sub-plan
- Flora & Fauna Management Sub-plan
- Air Quality and Odour Management Sub-plan
- Soil and Surface Water Management Sub-plan
- Heritage Management Sub-plan (which includes both indigenous and non-indigenous heritage)

Please find attached the Ancillary Site Establishment Management Plan (ASEMP) for your review with the other sub-plans to follow in a separate email. The Traffic, Transport and Access Management Sub-plan will be sent via dropbox due to its size.

Please note the consultation period for all plans is for 3 weeks and therefore all comments must be received back by Tuesday 26th October. Comments received after this date may not be addressed in time and will be considered during future revisions.

To assist you in your review of the documents we are happy to undertake a live review / page turn to discuss issues directly. Please contact me should you wish to take up this offer.

Please note that TfNSW will also be issuing these plans formally for consultation via the DPIE Portal.

Thanks

Howard Chemney

Environment & Sustainability Manager
Warringah Freeway Upgrade
M 0410 542 009
E Howard.Chemney@cpbcon.com.au

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