

Pollution Incident Response Management Plan

Western Harbour Tunnel and Warringah Freeway Upgrade
SSI-8863
Stage 2 – Warringah Freeway Upgrade

August 2022

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Version Control

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A	10 September 2021	First Draft	
B	11 April 2022	Final draft	
0	14 April 2022	Final	
1	28 August 2022	Updated following PIRMP testing	

WFU Environmental Contacts

Title	Name	Phone number
CPB Downer JV Representatives		
Environment and Sustainability Manager	[REDACTED]	[REDACTED]
Project Director	[REDACTED]	[REDACTED]
Community Relations Manager	[REDACTED]	[REDACTED]
Transport Representatives		
Environment Manager	[REDACTED]	[REDACTED]
External contacts		
Fire and Rescue NSW		000 (emergency) 02 9908 1258 (Neutral Bay Fire Station) 02 9493 1036 (Crows Nest Fire Station)
EPA		131 555 (Environment Hotline) 02 9995 5000 (general switchboard)
Ministry of Health Northern Sydney Public Health Unit		02 9391 9000 (Ministry of Health switchboard) 02 9462 9955 (Northern Sydney PHU switchboard)
SafeWork NSW		131 050
North Sydney Council		02 9936 8100

Glossary/ Abbreviations

Acronym / Term	Definition
ASS	Acid Sulphate Soils
CEMP	Construction Environmental Management Plan
CoA	The Planning Minister's Conditions of Approval of the Infrastructure Approval
CSSI	The Critical State Significant Infrastructure as described in Schedule 1 of the Western Harbour Tunnel and Warringah Freeway Upgrade 1 Infrastructure Approval (Application No. SSI 8863)
CPB Downer JV	CPB Contractors Downer Joint Venture
ECMs	Environmental Control Maps
EMS	Environmental Management System
EPA	NSW Environment Protection Authority
EPL	Environment Protection License under the POEO Act
ER	The Environmental Representative for the CSSI: Must be a suitably qualified and experienced person(s) who is independent from the design and construction personnel for the CSSI and those involved in the delivery of it.
Material harm	Is harm that: a) Involves actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial, or b) Results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding \$10,000 (such loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment).
OEH	Office of Environment and Heritage
PIRMP	Pollution Incident Response Management Plan
POEO Act	Protection of the Environment Operations Act 1997 (NSW)
Pollution Incident	Has the meaning as defined in the Dictionary to the POEO Act: An incident or set of circumstances during or as a consequence of which there is or is likely to be a leak, spill or other escape or deposit of a substance, as a result of which pollution has occurred, is occurring or is likely to occur. It includes an incident or set of circumstances in which a substance has been placed or disposed of on premises, but it does not include an incident or set of circumstances involving only the emission of any noise.
Premises	Areas as shown on the EPL Premise Area Maps (https://www.cpbcon.com.au/en/our-projects/2021/warringah-freeway-upgrade).
TfNSW	Transport for NSW
WFU	Warringah Freeway Upgrade

1 Overview and Scope

1.1 Objectives

The Pollution Incident Response Management Plan (PIRMP) details the requirements for responding to a pollution incident as required by the *Protection of the Environment Operations Act 1997* (POEO Act). The CPB Downer Joint Venture (CPB Downer JV) has prepared this PIRMP in accordance with the legal requirements and with reference to the NSW Environment Protection Authority's (EPA) *Environmental guidelines: Preparation of pollution incident response management plans* (2012).

The objectives of the PIRMP are to:

- ensure comprehensive and timely communication about a pollution incident to staff at the Premises, the EPA, other relevant authorities specified in the POEO Act, and people in the vicinity of the premises who may be impacted by the pollution incident. The premises are the areas shown on the EPL Premise Area Maps (refer **Appendix A-1** and project website, <https://www.cpbcon.com.au/en/our-projects/2021/warringah-freeway-upgrade>).
- minimise and control the risk of a pollution incident at the premises by requiring identification of risks and the development of planned actions to minimise and manage those risks.
- ensure that the PIRMP is properly implemented by trained staff, identifying persons responsible for implementing it, and ensuring that the PIRMP is regularly tested for accuracy, currency and suitability.

1.2 Scope

This PIRMP applies to the Warringah Freeway Upgrade. These works are being undertaken by the CPB Downer JV. This PIRMP applies to all activities undertaken by these parties at the premises and all personnel undertaking such activities.

This PIRMP is interrelated with other CPB Downer JV Plans:

- Construction Environmental Management Plan and sub-plans
- Ancillary Site Establishment Management Plan
- Incident Management Plan
 - Incident and Crisis Communications Plan
 - Traffic Management and Safety Plan

1.3 Roles and responsibilities

All project personnel are responsible for protecting the environment and preventing incidents. The roles and responsibilities relevant to this PIRMP are identified in Table 1-1. If the relevant person is not available, the role will be performed by the next most senior representative in the same discipline.

Table 1-1 Roles and responsibilities

Title	Roles and responsibilities relevant to the PIRMP
Project Director	<ul style="list-style-type: none">• Oversee the preparation and implementation of this PIRMP.• Notify TfNSW if this plan is activated.• Report to CPB and Downer corporate personnel as appropriate if this plan is activated.

Title	Roles and responsibilities relevant to the PIRMP
	<ul style="list-style-type: none"> • Ensure specific resources are identified, provided, and maintained for the duration of the project to implement this PIRMP, including incident response measures and clean-up activities.
Environment & Sustainability Manager	<ul style="list-style-type: none"> • Ensure this PIRMP satisfies the legal requirements of the POEO Act. • Assess any pollution incident to determine if there is a risk of material harm to the environment and notify the Project Director if activation of this plan is required. • Notify relevant authorities in accordance with this plan if required to do so. • Point of contact with EPA and other environmental authorities in the event of an environmental incident. • Ensure this plan is regularly reviewed and tested to ensure information included in the plan is accurate and up to date.
Communications Manager	<ul style="list-style-type: none"> • Assist the Environment and Sustainability Manager to identify stakeholders who require notification of the pollution incident. • Notify TfNSW communications and media teams of the pollution incident. • Coordinate community / stakeholder notification in the event of an incident, with agreed TfNSW approvals. • Notify community / stakeholders of clean-up activities where appropriate.
Construction Director	<ul style="list-style-type: none"> • Ensure specific resources (including personnel, plant, equipment and materials) are identified, provided and maintained for the duration of the project to implement this PIRMP, including incident response measures and clean-up activities. • Ensure the provisions of this PIRMP are implemented, e.g. training requirements, resource allocations, desktop and mock rehearsals.
Construction Manager	<ul style="list-style-type: none"> • In consultation with the Environment and Sustainability Manager, determine if this PIRMP is to be activated. • Assist the Construction Director to ensure specific resources are identified, provided and maintained for the duration of the project to implement this PIRMP, including incident response measures and clean-up activities. • Assist the Construction Director to ensure that the provisions of this PIRMP are implemented, e.g. training requirements, resource allocations, desktop and mock rehearsals. • Notify environmental personnel immediately in the event of an environmental incident
Site Superintendent / Supervisor	<ul style="list-style-type: none"> • Assist the Construction Director to ensure that the provisions of this PIRMP are implemented, e.g. desktop and mock rehearsals. • Notify environmental personnel immediately in the event of an environmental incident • The most senior Project Superintendent / Site Supervisor for an area or shift on site during an incident also serves the role of the Emergency response Team Leader as defined in the Incident Response Plan
WHS Manager	<ul style="list-style-type: none"> • Implement notification protocol for relevant agencies. • Point of contact with Emergency Services and SafeWork NSW in the

Title	Roles and responsibilities relevant to the PIRMP
	event of an incident. <ul style="list-style-type: none"> • The WHS Manager is a member of the Emergency Response Team as defined in the Incident Response Plan.
All project personnel	<ul style="list-style-type: none"> • Understand environmental management and notification requirements. • Notify supervisor immediately in the event of an environmental incident. • Implement pollution controls when necessary / as directed by supervisor or environmental staff.
Transport for NSW Representative	<ul style="list-style-type: none"> • Notified in the event of an environmental incident. • Notify DPIE in the event of an environmental incident.
Environmental Representative	Notified in the event of an environmental incident.

2 Implementation

2.1 Immediate response

Personnel encountering an actual or potential pollution incident are to immediately notify their supervisor. In accordance with the Incident Response Plan, the Site Superintendent / Supervisor will call emergency services if required and will notify the Construction Director and/or Environment and Sustainability Manager, who in turn will notify the key project personnel as listed in Table 2-2.

The immediate response to all incidents is to stop work and undertake actions to:

- Protect persons or environment from immediate harm;
- Save lives, relieve suffering or treat injured persons; and
- Prevent further property or environmental damage.

If safe to do so, efforts will be made to contain, reduce or suppress the cause of the incident. In the event of an environmental incident, the Site Superintendent / Supervisor in consultation with the Environment and Sustainability Manager, will undertake (or direct) the management of the incident. Resources (e.g. labour, excavators, vacuum trucks, etc.) may be required to assist in the management of the incident.

Where possible, the immediate incident scene (approximately 4m surrounding the incident) may need to be closed to all personnel except emergency services and/or police. Preserving the scene maximises opportunities for collecting accurate evidence and data on the incident with minimal contamination.

2.2 Notification

A pollution incident is required to be notified to relevant agencies and authorities if, in the course of any activity at the Premises, there is a risk of 'material harm to the environment'. This is defined in section 147 of the POEO Act as follows:

(a) harm to the environment is material if:

(i) it involves actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial, or

(ii) it results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding \$10,000 (or such other amount as is prescribed by the regulations), and

(b) loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment.

This PIRMP must be implemented immediately if a pollution incident occurs resulting in actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial.

If there is a risk of material harm to the environment, the procedure in Table 2-1 must be implemented and notifications made in accordance with Table 2-2, Table 2-3 and Table 2-4. Incidents that do not constitute material harm to the environment do not trigger implementation of this plan. Under such circumstances, the requirements of the relevant incident management procedure shall apply.

The EPA may also direct that an incident is notified to others, either in writing or otherwise, and may specify the manner or form of such a notification.

Table 2-1: Action to be taken in response to a notifiable pollution incident

Step	Action	Responsibility	Reference
Step 1	Immediately advise key project contacts that pollution has occurred or is occurring. Direct verbal contact must be made; sending an SMS/text/email and/or leaving a voicemail message does not constitute contact. Where a person is not able to be contacted, the worker is to attempt to contact the next listed person until contact is made.	All workers	Table 2-2
Step 2	Immediately notify key CPB Downer JV / TfNSW contacts that pollution has occurred or is occurring.	CPB Downer JV Environment and Sustainability Manager or Environment Advisors	Table 2-2
Step 3	Immediately notify Agencies of the pollution incident.	CPB Downer JV Environment and Sustainability Manager in consultation with TfNSW	Table 2-3
Step 4	Implement actions to minimise and control any pollution and ensure the safety of site personnel, neighbours and the community.	CPB Downer JV Environment Team and Safety personnel with Site Superintendent / Supervisor	Section 4
Step 5	Implement action to clean up pollution and dispose of waste appropriately.	Environment /Safety personnel with Site Superintendent/ Supervisors (including subcontractor's personnel)	Section 4
Step 6	Determine if neighbours or the community are affected and method of community notification.	CPB Downer JV Communications Manager and TfNSW Community Engagement Manager	Section 2.4 Community Communication Strategy

Step	Action	Responsibility	Reference
Step 7	Notify neighbours and the community of the pollution incident (if required).	TfNSW Community Engagement Manager CPB Downer JV Communications Manager	Section 2.4
Step 8	Notify other parties where requested to do so by the EPA.	CPB Downer JV Environment and Sustainability Manager in consultation with TfNSW	Section 2.2

Table 2-2: Project personnel notifications (to be notified of all notifiable pollution incidents)

Position	Mobile
Environment and Sustainability Manager, [REDACTED]	[REDACTED]
Project Director, [REDACTED]	[REDACTED]
Construction Director, [REDACTED]	[REDACTED]
Superintendent (North), [REDACTED]	[REDACTED]
Superintendent (South), [REDACTED]	[REDACTED]
Communications and Engagement Manager, [REDACTED]	[REDACTED]
TfNSW Environment and Planning Manager, [REDACTED]	[REDACTED]
Environmental Representative, [REDACTED]	[REDACTED]

Table 2-3: Agency notifications (must be notified)

Relevant Authority	Name / Location/Purpose	Contact No.
Emergency Services (Ambulance / Police / Fire and Rescue)	*Only ring 000 if the incident presents an immediate threat to human health or property and response by an emergency services agency is warranted. If the incident does not require an initial combat agency, or once the 000 call has been made, notify as listed below.	000*
Fire and Rescue NSW	Crows Nest Fire Station Neutral Bay Fire Station	02 9493 1036 02 9908 1258
EPA Pollution Line	Environment Line	131 555
NSW Ministry of Health	General switchboard	02 9391 9000
SafeWork NSW	Incident notification (including After Hours),	131 050

	information, advice and assistance	
Local Council	North Sydney Council	02 9936 8100
	Willoughby City Council	02 9777 1000
	Notify relevant council for location of incident (may need to notify more than one)	
Department of Planning and Environment	TfNSW to notify of all incidents*	Major Projects website

* The Planning Secretary must be notified via the Major Projects Website immediately after the Proponent becomes aware of an incident. The notification must identify the CSSI (including the application number and the name of the CSSI if it has one) and set out the location and nature of the incident.

Table 2-4: Other agencies that may be notified as relevant

Relevant Authority	Name / Location/Purpose	Contact No.
NSW Ambulance	North Sydney	02 9317 8600
Police Service	North Sydney	02 9956 3199
Sydney Water		132 090
Jemena (Gas)		131 909
Electricity – Endeavour Energy		131 003

2.3 Incident Reporting Protocol

In consultation with the TfNSW JV Senior Manager, Planning and Environment and the Environmental Representative, the CPB Downer JV Environment and Sustainability Manager shall immediately notify the relevant Regulatory Authority and Other Authorities (Table 3-1).

Table 2-5: Authority Notification Protocol

Relevant Information required to be given to the Relevant Authorities when making a notification (Section 150 of the POEO Act) as follows:

- (a) the time, date, nature, duration and location of the incident;*
- (b) the location of the place where pollution is occurring or is likely to occur;*
- (c) the nature, the estimated quantity or volume and the concentration of any pollutants involved, if known;*
- (d) the circumstances in which the incident occurred (including the cause of the incident if known);*
- (e) the action taken or proposed to be taken to deal with the incident and any resulting pollution or threatened pollution, if known; and*
- (f) other information prescribed by the regulations.*

The CPB Downer JV Environment and Sustainability Manager is required to report the information as known at the time of the notification. If the information required by (c), (d) or (e) above is not known at the time of initial notification but becomes known afterwards it must be reported to each authority immediately after it becomes known.

2.4 Community Notification Protocol

The Communications Manager, in consultation with TfNSW Senior Community Liaison Officer, coordinates all community and stakeholder communications and interactions for the Warringah Freeway Upgrade works. The process for notification of stakeholders of an emergency or incident relates directly to the nature of the hazard. Community stakeholder notification of an environmental incident will be required for events that:

- Will result in unacceptable health risk to community and stakeholders immediately and at the time of the pollution incident, where community stakeholders are present (e.g. residing in their houses or using adjacent recreational facilities at the time of the incident); or
- Will result in an unacceptable health risk to the community for instances where pollution of an area that is to be used by community members in the days and weeks following the incident (until such time when the pollution hazard is removed). These community stakeholders may not be present during the incident but might be present following the incident.

An unacceptable impact is defined as one which has the potential to adversely affect the health of a member of the community. This takes into consideration immediate health impacts (that occur during the incident) and health risks in the period following the incident.

The Communications Manager, in consultation with the relevant Construction Manager, the Environment and Sustainability Manager and TfNSW, will determine if community notification is recommended and the mechanisms by which the notification is made, the extent of the notification and the need for any ongoing updates. If appropriate, notification will include specific information to

minimise the risk of harm, e.g. instructions to close windows and doors, or avoid contact with creeks/waterways.

The Communications Manager will consult with TfNSW on the agreed notification strategy and will coordinate the approvals and notification of surrounding premises and residents. Communication methods will vary depending on the audience (e.g. drivers, nearby park users, etc.) and may include:

- Door knock of residents, businesses and others (e.g. schools) potentially impacted by the incident.
- Phone contact/messages/email/social media networks.
- Distribution of advice to residents, businesses and vehicle owners, pedestrians, commuters and schools as required.
- Publication of information on the TfNSW/project website.
- Dissemination of information to local and metropolitan media via TfNSW.
- Liaison with local council and other government stakeholders.
- Liaison with utilities providers.
- Installation of temporary directional signage.
- Provide protective fencing and barricading to prevent community stakeholders from entering into an affected area
- Use of technology such as variable message signs and other signage and radio communications.

Notification to any residents, businesses or other premises that may be affected by the pollution incident will include the following information:

- Details of the pollution incident and extent of impact (as known at the time).
- Safety warnings and recommendations to prevent/minimise impacts, if required.
- Potential impacts on the operation of local businesses, if required.

The area which may be affected by a pollution incident is dependent on the transport vector (water, air or land), pollutant (type, concentration and concentration) and meteorological conditions. The Environment and Sustainability Manager, in consultation with the Communications Manager, will determine an appropriate geographical extent of the public notification and details to be provided in the notification.

In accordance with the Project Community Communications Strategy, the following steps will be undertaken to notify the community of an emergency or incident.

Table 2-6: Community Notification Requirements in Event of Emergency or Incident

Step	Action
Step 1	The Communication Manager will be notified of the incident by the Environment and Sustainability Manager.
Step 2	The Communication Manager and the Environment and Sustainability Manager will determine if the community is at risk from the emergency or incident.
Step 3	If it is determined that the emergency or incident does not impact the community no further action is required.
Step 4	If it is determined that members of the community will be impacted, the Communications Manager will prepare an appropriate notification to the community (dependent upon the circumstances) in consultation with the Environment and Sustainability Manager, the Construction Manager and TfNSW.
Step 5	Should a media response be required, it is the responsibility of CPB Downer JV to provide the appropriate information with technical input from the Construction Manager / Project Director.
Step 6	No staff member has authority to speak with the media.
Step 7	If the emergency or incident is unable to be contained or managed in a safe manner using site resources and intervention by an Emergency Service is required, the relevant emergency service will direct and control the response to the incident including any evacuation or rescue of any community stakeholders.
Step 8	Any further follow up required after the incident will be undertaken by the Communication Manager.

3 Potential Impacts

3.1 Pollution Incident Planning

3.1.1 Risk Matrix

The risk matrix outlined in **Appendix A-2** provides a tool for the assessment of hazards on the project and the potential risks to the environment if an incident were to occur. It also provides a process for the identification of any areas where the management controls are not sufficient to address the identified risk. The risk assessment takes into account:

- The location of the hazard and its proximity to sensitive receivers,
- The volume of the hazard (if applicable) at that location,
- The type of hazard, and
- Its potential consequence on the receiving environment.

The risk assessment assessed the hazards on the project in regard to their consequence and likelihood. Of the risks assessed they could be divided into a number of different types, relating to safety or environment. The consequence categories for the risks in relation to environment are:

- **Insignificant:** No appreciable change to environment or highly localised event.
- **Minor:** Change from normal conditions but within environmental regulatory limits. Environmental effects are within site boundaries.
- **Moderate:** Short lived environmental effect. Effects to environment but experienced mostly within boundary. Minor remedial actions probably required. Breach of environmental law or regulation.
- **Major:** Impacting external ecosystem. Considerable remediation required. Serious breach of environmental law or regulation with investigation or report to authority with prosecution and/or moderate fine possible.
- **Critical:** Long-term environmental impairment felt in neighbouring or valued ecosystem functions. Long term remediation required. Major breach of environmental law or regulation with likely major litigation.
- **Catastrophic:** Irreversible large-scale environmental impact. Loss of valued ecosystem. Violation of environmental law or regulation such that very serious litigation, fines and prosecution may result.

3.1.2 Environmental Risk Register

Project activities are assessed using the CPB Downer JV 'Environmental Risk Register' (refer to **Appendix A-3**) which outlines minimum environmental operational controls to be implemented for each environmental aspect. For each environmental aspect, within the 'Environmental Risk Register' there is a stated:

- Environmental impact,
- Risk analysis (inherent risk) - the likelihood and consequence of an environmental hazard/impact occurring in the absence of any control measures,
- Objective and targets to be achieved,

- Control measures including environmental monitoring where required - to be implemented to meet management objectives,
- Level of residual risk - the likelihood and consequence of an environmental hazard occurring following the implementation of control measures.

For any subcontracted works, the nominated Subcontractor is expected to implement the stated environmental controls and undertake monitoring in accordance with contract requirements.

3.1.3 Sensitive Receivers

The Environmental Risk Register has taken into account the sensitive receivers located along the Warringah Freeway Upgrade alignment. The CPB Downer JV Geographic Information System (GIS) tool incorporates key features of the alignment and relevant environmental constraints. The features include waterways, heritage, biodiversity, contamination and sensitive receivers amongst other site relevant features. The GIS forms the basis of Environmental Control Maps (ECMs).

- Additional controls are in place for works around sensitive receivers and this includes:
- Stockpiles in sensitive areas to be stabilised with polymer or covered.
- Erosion and Sediment Control Plans to be submitted to ER/TfNSW prior to sensitive area works.

3.2 Pre-emptive Action

Pre-emptive measures focus on the carrying out of construction activities in a controlled manner. This includes detailed construction planning and the CPB Downer JV environmental management system (EMS), which provides a framework to define how CPB Downer JV will minimise impacts to the environment and to prevent pollution incidents from occurring on the project. It comprises a combination of governance documentation, the construction environmental management plan (CEMP) and issue-specific sub-plans, procedures and tools. Pre-emptive actions, identified as issue-specific management measures, are included in the CEMP sub-plans.

Environmental risks and appropriate controls are captured within the Construction Area Plans and associated Activity Method Statements. EWMS will be prepared for works in or near environmental sensitive areas and will be included in the appropriate Activity Method Statements, which contain relevant information for site engineers and foremen to manage and construct the works in a safe and environmentally responsible manner.

Compliance with the CPB Downer JV CEMP and conditions of the project approvals is assessed and reviewed through routine monitoring, inspection, reporting, review and audit as identified in the CEMP.

3.3 Incident / Emergency Response Procedures

3.3.1 Potential Incidents/Emergencies and Response Procedures

Reflecting the Environmental Risk Register, significant environmental incidents and emergencies have been identified and detailed in Table 4-3 together with appropriate response actions.

Workers are responsible for responding to environmental incidents under the direction of the Environment and Sustainability Manager.

In the event of an environmental emergency, the incident response shall be directed by the CPB Downer JV Project Director or nominated delegate in accordance with the CPB Downer JV Emergency Response Plan.

Where an environmental incident or other event results on the need for emergency construction works, the Environment and Sustainability Manager must notify the TfNSW Environment and Planning Manager and the ER of the need for those activities or works (SMS or email). The Communications Manager must also use best endeavours to notify all affected sensitive receivers of the likely impact and duration of those works as outlined in section 3.

Table 3-1: Notifiable Events

Type	Description	Response Procedures
Land/ Water	<ul style="list-style-type: none"> Leak, spill or escape of any substance in a manner that harms or is likely to harm the environment. Examples include: <ul style="list-style-type: none"> Watermain strike (loss of sediment and water to stormwater) Generator leak Fuel spill Spill of NDD material during transfer 	<ul style="list-style-type: none"> Contact 000 to mobilise the NSW Fire Brigade or HAZMAT where the incident cannot be controlled with onsite resources. Contact Sydney Water in the event of a watermain strike and follow instructions. Notify in accordance with Table 2-1. Establish and/or strengthen controls around stormwater drains including drain wardens and sandbags around the drain perimeter. Mobilise a vacuum truck to remove excess water/liquid from the site and dispose to an appropriately licensed facility. Deploy spill kit materials to contain and absorb the spill. Remove used spill kit materials from the site and dispose to an appropriately licensed facility. Ensure spill kits are restocked following the event.
Noise	<p>Excessive or intrusive noise emissions arising from:</p> <ul style="list-style-type: none"> Inadequate controls poorly maintained plant/equipment failure to comply with Out of Hours Works Permit 	<ul style="list-style-type: none"> Cease noise generating activity if an approved Out of Hours Works Permit is not in place. Notify in accordance with Table 2-1. Review controls and revise as necessary. Ensure noise barriers are installed and there are no gaps between barriers. Switch off any equipment that is not in use for extended periods (e.g. heavy vehicles). Avoid unnecessary noise (e.g. swearing, shouting, loud stereos/radios, dropping of materials from height, throwing of metal items and slamming of doors). Avoid simultaneous use of high noise impact equipment. Conduct noise monitoring to determine if noise levels are in accordance with predicted levels. Ensure equipment is adequately maintained.
Air	<p>Gas main strike resulting in loss of gas</p>	<ul style="list-style-type: none"> Evacuate the worksite and move to a well-ventilated area. Notify in accordance with Table 2-1. Contact the gas main operator and if required contact the Fire Brigade Service (000); follow instructions of the asset owner.

Air	Excessive and intrusive dust emissions	<ul style="list-style-type: none"> • Ensure no naked flames or smoking. • Do not touch or operate electrical equipment. • Ensure no mobile phones are used in the vicinity of the leak. <hr/> <ul style="list-style-type: none"> • Cease dust generating activity. • Notify in accordance with Table 2-1. • Apply dust suppression (water cart, hose, etc). • Review the adequacy of controls (e.g. dust suppression, site barriers). • Recommence works following implementation of controls; monitor effectiveness. • In the event of high winds, reschedule works if dust cannot be controlled to reasonable levels.
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4 Mitigation

The CEMP and associated sub-plans detail the management measures, controls and responsibilities required to carry out the environmental objectives of the Warringah Freeway Upgrade works, prevent pollution incidents and to minimise impacts to the environment. The CEMP and associated sub-plans apply to all parties working on Warringah Freeway Upgrade works.

4.1 Inventory of Potentially Hazardous materials

A Materials Register is maintained by the Warringah Freeway Upgrade Project works, which includes potential pollutants held on site. The Materials Register is a live document, which is revised regularly as materials are used or brought to the works site. Appendix A-4 provides a list of potential pollutants on site.

4.2 Minimising Harm to Persons on the Premises

Any mitigation, clean up, corrective or preventative actions are to be undertaken in accordance with the TfNSW Chemical Storage and Spill Response Guidelines, the CEMP (and associated sub-plans) and relevant safety related emergency management plans and procedures. The Safety Manager/Advisor determines and coordinates the response actions to be taken to prevent or minimise any safety or health impacts to site personnel, neighbours or the community.

4.3 Management Plans and Procedures

Specific environmental and incident management plans detailing mitigation measures are outlined below:

- TfNSW Chemical Storage and Spill Response Guidelines
- CEMP and associated sub-plans
- Sensitive Area Plans (SAPs, Appendix A-1).

4.3.1 Safety Equipment

The following equipment is provided to prevent or control and assist with pollution incidents. The locations of these equipment are spread across the worksite and main site compounds and indicated in the SAPs, where applicable:

- Spill Kits – in key locations across the Project.
- Safety Data Sheets - in designated chemical storage containers/main site compounds.
- Sediment control equipment including sand bags, gravel, geofabric and sediment fences.

Other plant and equipment present at the site or sourced externally may be used in the management of any pollution incident, including for example excavators, sucker trucks etc. The equipment required to be utilised in response to a pollution incident would be determined by the Site Superintendent in consultation with the Environment Advisor / Manager and Safety Manager/ Advisor.

Emergency Response Plans and maps are displayed in strategic locations within the Site Compound Offices/ notice boards, identifying safety equipment locations on-site (e.g. fire extinguishers, hose reels), assembly and evacuation points. Safety Data Sheets (SDSs) of materials are maintained in the CPB Downer JV's Materials (including Hazardous Substance) Register and in chemical/material containers on-site.

4.3.2 Maps

A number of maps are available that illustrate the location of the Warringah Freeway Upgrade works, the potential receivers and impacts, as well as the management measures and equipment in place, these include:

- EPL Premises Maps (refer project website <https://www.cpbcon.com.au/en/our-projects/2021/warringah-freeway-upgrade>); and
- Sensitive Area Plans, SAPs (refer Appendix A-1).

Premise maps will be updated on an ongoing basis as the project work area changes. An indicative premises area is shown in the SAPs in Appendix A-1, however the project website should be referred to for the most up to date set of maps.

4.4 Staff Training

The Environment and Sustainability Manager will establish an annual environmental training and awareness program to support implementation of the CEMP and sub-plans and maintain a high level of awareness among all workers, including subcontractors. All relevant CPB Downer JV personnel, subcontractors and visitors will receive emergency response training to ensure that they are fully aware of their roles and responsibilities in the event of an emergency arising, and to ensure the environmental impacts associated with an emergency are minimised. This training will generally be provided through:

- Warringah Freeway Upgrade Project Induction (including environmental induction):
 - Provided to all workers & subcontractors before commencement of works.
 - Content includes basic emergency procedures, incident reporting and environmental requirements.
 - Provided with information about the arrangements that will apply if a site emergency occurs, and an evacuation is necessary.
 - Short-term visitors to site will be required to attend a visitor's induction and be accompanied by inducted personnel at all times.
 - Temporary visitors to site for purposes such as deliveries will be required to be accompanied by inducted personnel at all times.

- Toolbox Talks:

Toolbox talks will inform environmental risks and controls to workers. Relevant issues addressed in toolbox talks include:

- Erosion and sedimentation controls.
- Hours of work, out of hours work permits and restrictions on high noise intensive works.

- Emergency and spill response and incident reporting.
 - Management of emissions from plant and vehicles.
 - Dust control and stop work procedure.
 - Wet weather shutdown procedure and responsibilities.
 - Community awareness.
 - Recent incidents, near misses, and potential issues relating to upcoming works.
- Daily Pre-Start Meeting:
 - Outline environmental issues that could potentially impact activities during the day.

Records of inductions and training will be maintained by the CPB Downer JV Safety and Environment Teams including the topic of the training carried out, dates, names and trainer details. Inductees will be required to sign-off that they have been informed of the environmental issues and that they understand their responsibilities. The Environment and Sustainability Manager will review training requirements and monitor program implementation on an ongoing basis.

5 PIRMP

5.1 Continual Improvement

5.1.1 Testing and review of this Plan

Testing of the PIRMP may be integrated into other emergency and incident testing and training programs and may include a desktop simulation, practical exercise or drill. The Environment team shall determine the method and date of testing, and shall coordinate the test, including advising all relevant personnel as required prior to the test. As a minimum the PIRMP shall be tested at least once every 12 months or whenever there is a significant change to site activities. Additional testing may be required at the discretion of the Environment and Sustainability Manager and in response to notifiable pollution incidents.

The testing will be carried out in such a manner as to ensure the information included in the plan is accurate and up to date and that each plan is capable of being implemented in a workable and effective manner. The testing will be undertaken:

- On an annual basis as part of a mock exercise.
- Within 1 month following an incident that results in activation of the PIRMP (may be desktop-based review).

This is to ensure lessons are captured and any improvements implemented to ensure the plan is being implemented in an effective manner.

The mock exercise will involve personnel responsible for the implementation of the PIRMP. This will include (but not be limited to) the following persons:

- Project Manager
- Project Superintendent
- Project Environment and Sustainability Manager
- Project Area Manager

A report detailing a record of the testing of the PIRMP will be prepared by the CPB Downer JV Environment team after each test of the PIRMP is undertaken. The report shall recommend amendments to the PIRMP, if required, to ensure that the PIRMP is workable and effective in achieving the stated objectives. The PIRMP Test Report may also recommend amendment to other plans and procedures associated with the test. The dates on which the plan has been tested and the name of the person who carried out the test will be included in future updates to this Plan.

5.1.2 Updating the PIRMP

The PIRMP will be updated by the CPB Downer JV Environment and Sustainability Manager in response to the following:

- Any recommendation made in the PIRMP test report.
- Any changes in law that necessitate amendment to the PIRMP.
- Whenever this plan has been used to conduct an exercise or drill, details shall be recorded and retained on file. Identified improvements will be included in future revisions of this plan.

5.2 Availability of the PIRMP

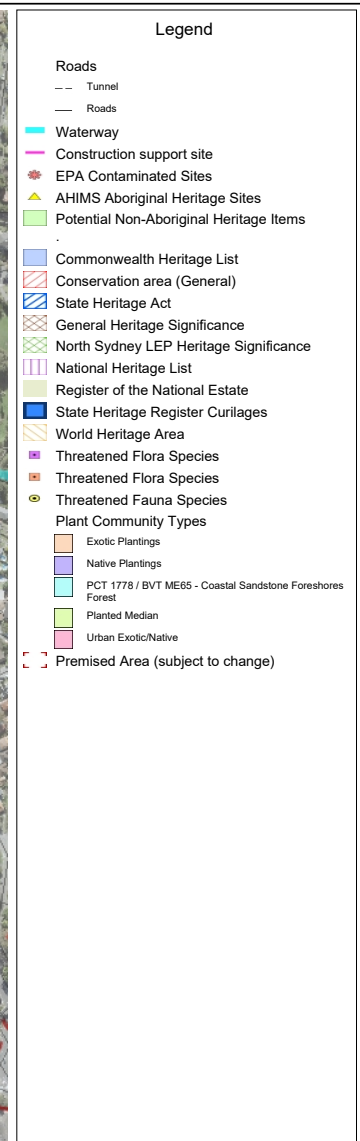
Electronic and hard copies of the PIRMP shall be maintained at the following locations so that it is readily available to those responsible for its implementation:

- On the Premises at locations as determined by the CPB Downer JV Environment and Sustainability Manager.
- At the Head Office in North Sydney as determined by the CPB Downer JV Environment and Sustainability Manager.
- The PIRMP must be made available to an authorised officer (of the EPA) at their request.

The PIRMP will also be made publicly available in accordance with the Protection of the Environment Operation (General) Regulation 2009.

Appendix A-1 Sensitive Area Plans

NB. Current premise maps are located at <https://www.cpbcon.com.au/en/our-projects/2021/warringah-freeway-upgrade>



Warringah Freeway Upgrade

Ref. No.	Completion rec.	Work package	Description	Designed	Verified	Approved
CPB	DRG	DWG	LOT No.	DRG No.	REV	
5/11/2021	5/11/2021	5/11/2021	not provided			

Scale 1: 3,500

0 94 188 Meters

Coordinate System: GDA 1994 MGA Zone 56 - Height Datum: AHD

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Warringah Freeway Upgrade Sensitive Area Plan

FILE No: n/a

SHEET No: 1

STATUS: verified

DRG No: DRG No.

EDMS No: n/a



Legend

Roads

- Tunnel
- Roads

Waterway

- Waterway

Construction support site

- Construction support site

EPA Contaminated Sites

- EPA Contaminated Sites

AHIMS Aboriginal Heritage Sites

- AHIMS Aboriginal Heritage Sites

Potential Non-Aboriginal Heritage Items

- Potential Non-Aboriginal Heritage Items

Commonwealth Heritage List

- Commonwealth Heritage List

Conservation area (General)

- Conservation area (General)

State Heritage Act

- State Heritage Act

General Heritage Significance

- General Heritage Significance

North Sydney LEP Heritage Significance

- North Sydney LEP Heritage Significance

National Heritage List

- National Heritage List

Register of the National Estate

- Register of the National Estate

State Heritage Register Curilages

- State Heritage Register Curilages

World Heritage Area

- World Heritage Area

Threatened Flora Species

- Threatened Flora Species

Threatened Flora Species

- Threatened Flora Species

Threatened Fauna Species

- Threatened Fauna Species

Plant Community Types

- Exotic Plantings
- Native Plantings
- PCT 1778 / BVT ME65 - Coastal Sandstone Foreshores Forest
- Planted Median
- Urban Exotic/Native

Premised Area (subject to change)

- Premised Area (subject to change)

Warringah Freeway Upgrade CPB DRG DWG LOT No. DRG No. REV

Ref. No.	Completion rec.	Work package	Description	Designed	Verified	Approved
1			not provided	5/11/2021	5/11/2021	5/11/2021

Scale 1: 3,500

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Warringah Freeway Upgrade Sensitive Area Plan

FILE No:	n/a
SHEET No:	2
STATUS:	verified
DRG No:	DRG No.
EDMS No:	n/a



Legend

- Roads**
 - Tunnel
 - Roads
- Waterway**
- Construction support site**
- EPA Contaminated Sites**
- AHIMS Aboriginal Heritage Sites**
- Potential Non-Aboriginal Heritage Items**
- Commonwealth Heritage List**
- Conservation area (General)**
- State Heritage Act**
- General Heritage Significance**
- North Sydney LEP Heritage Significance**
- National Heritage List**
- Register of the National Estate**
- State Heritage Register Curilages**
- World Heritage Area**
- Threatened Flora Species**
- Threatened Flora Species**
- Threatened Fauna Species**
- Plant Community Types**
 - Exotic Plantings
 - Native Plantings
 - PCT 1778 / BVT ME65 - Coastal Sandstone Foreshores Forest
 - Planted Median
 - Urban Exotic/Native
- Premised Area (subject to change)**

Northern Hub Construction Support Site (NH1)

Rosalind Street Construction Support Site (WFU9)

Warringah Freeway Upgrade

CPB DRG DWG LOT No. DRG No. REV

Ref. No.	Completion rec.	Work package	Description	Designed	Verified	Approved
1	Comp. rec.	Package	not provided	5/11/2021	5/11/2021	5/11/2021

Scale 1: 3,500

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Des check by: not provided

Approved by: not provided

Warringah Freeway Upgrade Sensitive Area Plan

FILE No: n/a

SHEET No: 3

STATUS: verified

DRG No: DRG No.

EDMS No: n/a



Legend

Roads	--- Tunnel
	— Roads
	Waterway
	Construction support site
	EPA Contaminated Sites
	AHIMS Aboriginal Heritage Sites
	Potential Non-Aboriginal Heritage Items
	Commonwealth Heritage List
	Conservation area (General)
	State Heritage Act
	General Heritage Significance
	North Sydney LEP Heritage Significance
	National Heritage List
	Register of the National Estate
	State Heritage Register Curilages
	World Heritage Area
	Threatened Flora Species
	Threatened Flora Species
	Threatened Fauna Species
Plant Community Types	
	Exotic Plantings
	Native Plantings
	PCT 1778 / BVT ME65 - Coastal Sandstone Foreshores Forest
	Planted Median
	Urban Exotic/Native
	Premised Area (subject to change)

Warringah CPB DRG DWG LOT No. DRG No. REV

Ref	Completion rec.	Work package	Description	Designed	Verified	Approved
ah	Freeway Upgrade	Package	not provided	5/11/2021	5/11/2021	5/11/2021

Scale 1:3,500

Coordinate System: GDA 1994 MGA Zone 56 - Height Datum: AHD

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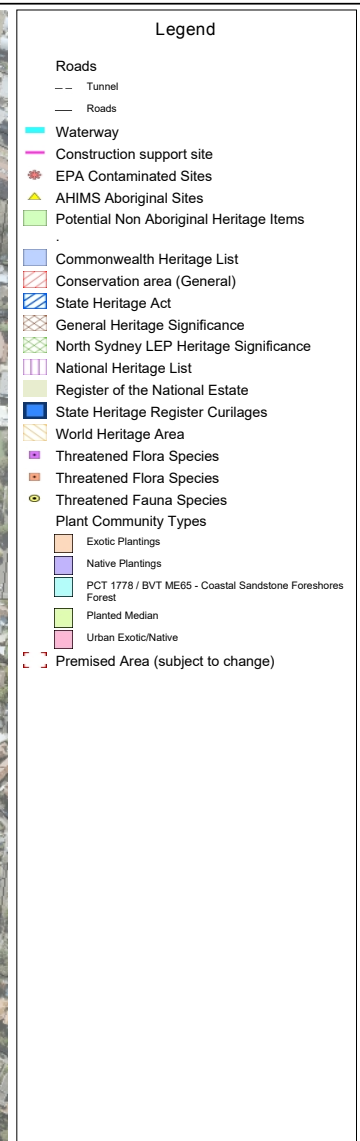
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Approved by:	not provided

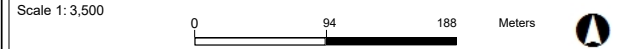
Warringah Freeway Upgrade Sensitive Area Plan

FILE No:	n/a
SHEET No:	4
STATUS:	verified
DRG No:	DRG No.
EDMS No:	n/a



Warringah CPB DRG DWG LOT No. DRG No. REV

Ref. No.	Completion rec.	Work package	Description	Designed	Verified	Approved
Freeway Upgrade			not provided	5/11/2021	5/11/2021	5/11/2021



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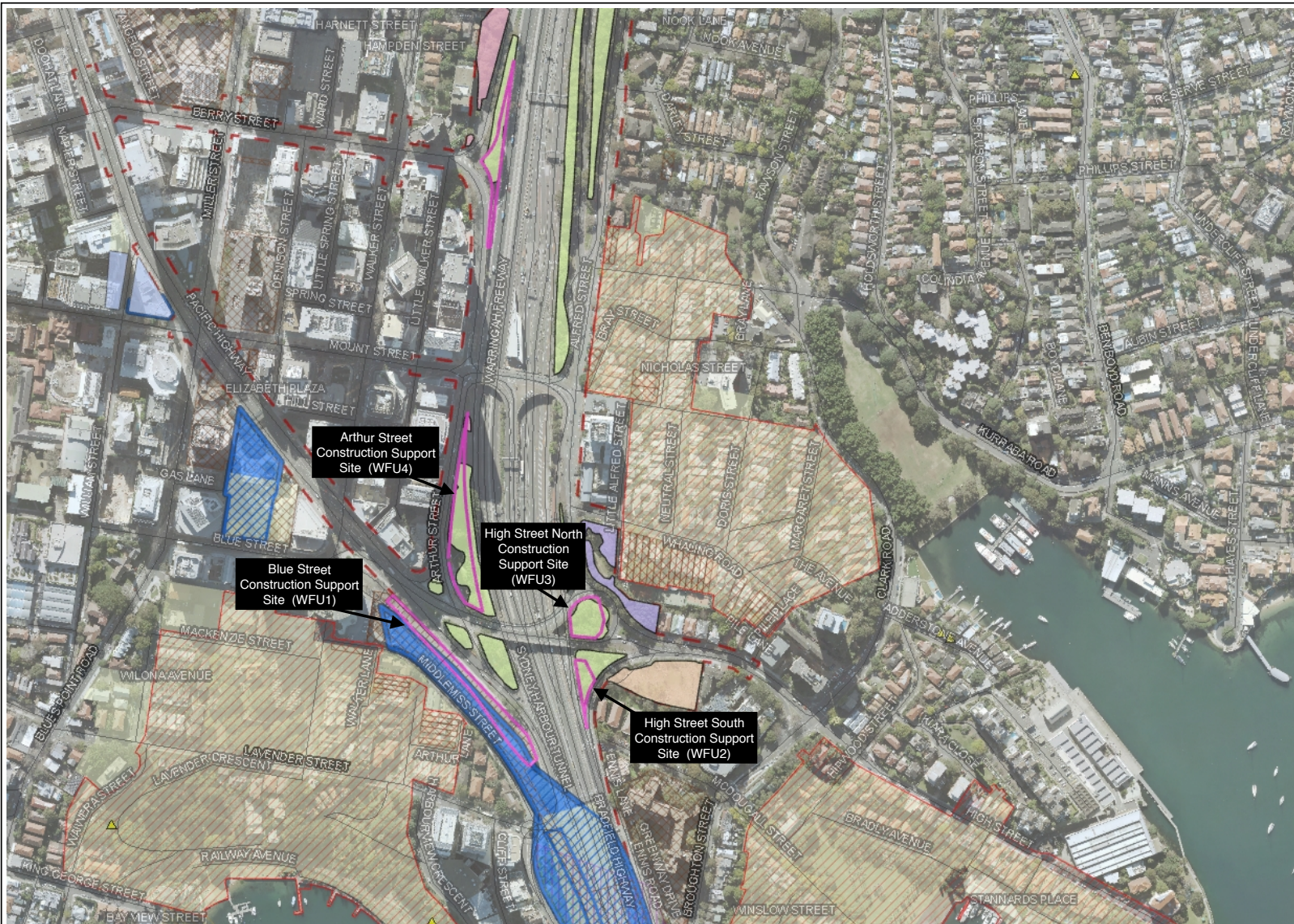
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Approved by:	not provided

Warringah Freeway Upgrade
 Sensitive Area Plan

FILE No:	n/a
SHEET No:	5
STATUS:	verified
DRG No:	DRG No.
EDMS No:	n/a



Legend

Roads
 - - Tunnel
 — Roads

Waterway
 [Blue line symbol]

Construction support site
 [Pink outline symbol]

EPA Contaminated Sites
 [Red star symbol]

AHIMS Aboriginal Heritage Sites
 [Yellow triangle symbol]

Potential Non-Aboriginal Heritage Items
 [Green outline symbol]

Commonwealth Heritage List
 [Blue square symbol]

Conservation area (General)
 [Red outline symbol]

State Heritage Act
 [Blue hatched symbol]

General Heritage Significance
 [Orange hatched symbol]

North Sydney LEP Heritage Significance
 [Green hatched symbol]

National Heritage List
 [Purple hatched symbol]

Register of the National Estate
 [Light green hatched symbol]

State Heritage Register Curilages
 [Dark blue hatched symbol]

World Heritage Area
 [Yellow hatched symbol]

Threatened Flora Species
 [Purple square symbol]

Threatened Flora Species
 [Orange square symbol]

Threatened Fauna Species
 [Yellow circle symbol]

Plant Community Types

- Exotic Plantings [Orange square]
- Native Plantings [Purple square]
- PCT 1778 / BVT ME65 - Coastal Sandstone Foreshores Forest [Light blue square]
- Planted Median [Light green square]
- Urban Exotic/Native [Pink square]

Premised Area (subject to change)
 [Red dashed outline symbol]

Warringah Freeway Upgrade	CPB	DRG	DWG	LOT No.	DRG No.	REV
Ref. No.	Completion rec.	Work package	Description	Designed	Verified	Approved
	Comp. rec.	Package	not provided	5/11/2021	5/11/2021	5/11/2021

Scale 1:3,500

0 94 188 Meters

Coordinate System: GDA 1994 MGA Zone 56 - Height Datum: AHD

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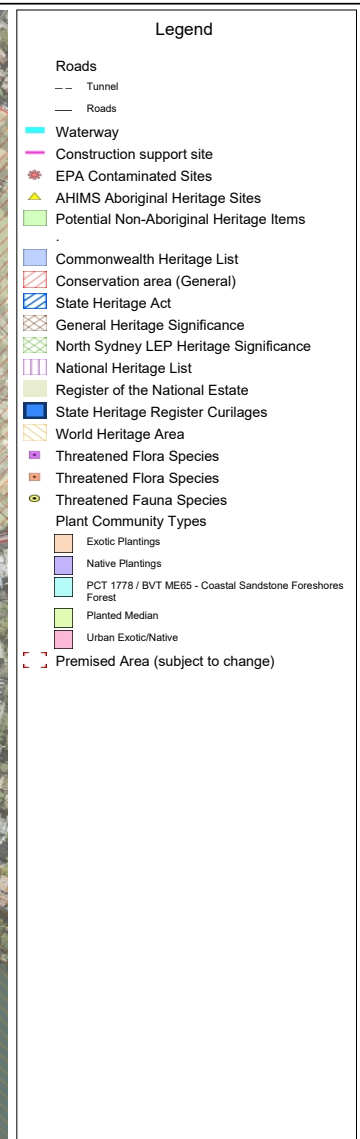


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Approved by:	not provided

Warringah Freeway Upgrade Sensitive Area Plan

FILE No:	n/a
SHEET No:	6
STATUS:	verified
DRG No:	DRG No.
EDMS No:	n/a



Warringah Freeway Upgrade						
Ref. No.	CPB	DRG	DWG	LOT No.	DRG No.	REV
5/11/2021	Comp. rec.	Work package	Description not provided	Designed 5/11/2021	Verified 5/11/2021	Approved 5/11/2021
Scale 1: 3,500						
Coordinate System: GDA 1994 MGA Zone 56 - Height Datum: AHD						
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Warringah Freeway Upgrade Sensitive Area Plan

FILE No:	n/a
SHEET No:	7
STATUS:	verified
DRG No:	DRG No.
EDMS No:	n/a



Legend

Roads

- Tunnel
- Roads

Waterway

- Construction support site
- EPA Contaminated Sites
- AHIMS Aboriginal Heritage Sites
- Potential Non-Aboriginal Heritage Items

Heritage

- Commonwealth Heritage List
- Conservation area (General)
- State Heritage Act
- General Heritage Significance
- North Sydney LEP Heritage Significance
- National Heritage List
- Register of the National Estate
- State Heritage Register Curilages
- World Heritage Area

Threatened Species

- Threatened Flora Species
- Threatened Flora Species
- Threatened Fauna Species

Plant Community Types

- Exotic Plantings
- Native Plantings
- PCT 1778 / BVT ME65 - Coastal Sandstone Foreshores Forest
- Planted Median
- Urban Exotic/Native

Premised Area (subject to change)

Warringah CPB DRG DWG LOT No. DRG No. REV

Ref. No.	Completion rec.	Work package	Description	Designed	Verified	Approved
Freeway Upgrade	Comp. rec.	Package	not provided	5/11/2021	5/11/2021	5/11/2021

Scale 1: 3,500

0 94 188 Meters

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Warringah Freeway Upgrade Sensitive Area Plan

FILE No: n/a

SHEET No: 8

STATUS: verified

DRG No: DRG No.

EDMS No: n/a

Appendix A-2 Consequence & Likelihood Criteria

The identification of significant construction activities and associated impacts that could eventuate during construction of the Project is central to the selection of appropriate environmental safeguards.

The risk management process involved an assessment of all specific project activities/aspects in or near environmentally sensitive areas and resulted in the development of a list of environmental risks (effects and impacts) and a corresponding risk mitigation strategy and risk ranking. Each environmental risk was categorised, based on the following:

- The environmental aspect
- Relative scale of the potential impact
- Type of potential impact
- Likelihood of occurrence.

The identification of risks included a review of the proposed works, the CoA, REMM, and review of the environmental risks identified by the EA and subsequent Submissions Report.

The following risk assessment process has been implemented, together with a review of proposed activities and known risks based on past project experience.

Risk Assessment Process

The following tables outline the risk assessment process using 3 steps to identify the appropriate management measures required.

Table 1 is used to determine the likelihood that the aspect will have an impact on the environment.

Table 2 is used to determine the potential consequence rating of the risk identified

From these two tables, a risk rating can then be assigned by using Table 3 to determine how severe the potential impact may be and what level of management each type of risk will require.

Table 2: Likelihood criteria

Score	Description		Percentage	Expected Frequency
5	Almost Certain	Common / Frequent Occurrence	Can be expected to occur 75% - 99%	More than 1 event per month
4	Likely	Is known to occur or "It has happened regularly"	Can quite commonly occur 50% - 75%	More than 1 event per year
3	Possible	Could occur or "I've heard of it happening"	May occasionally occur 25% - 50%	1 event per 1 to 10 years
2	Unlikely	Not likely to occur very often	May infrequently occur 10% - 25%	1 event per 10 to 100 years
1	Rare	Conceivable but only in exceptional circumstances	May occur in exceptional circumstances 0% – 10%	Less than 1 event per 100 years

Table 3: Consequence criteria

Consequence Rating	1	2	3	4	5
	Negligible	Minor	Moderate	Major	Substantial
Safety and Health	First Aid Treatment (or No treatment)	Medical Treatment Injury	Lost Time Injury	Permanent Injury (Paraplegia, Amputation)	Fatality (Single or multiple)
Environment and Heritage	Small, contained localised impact / Low level repairable damage	Short lived, well contained environmental impact / Minor remedial action required	Medium term, contained impact / Significant remedial action required	Impacts extend off-site / external ecosystem. Considerable remediation required	Long Term irreversible damage / Long Term Remediation required
Plant Damage	Little or No Damage	Damage less than \$15,000	Damage between \$15,000 and \$50,000	Damage between \$50,000 and \$100, 000	Damage greater than \$100, 000
Reputation	Brief local negative media coverage.	Local negative media coverage. Site or project problem.	Regional/short negative media coverage. Loss of Client / project.	Sustained national negative media coverage. Loss of long term key client.	International negative media coverage. Loss of business from key sector.
Time	Delay / Business interruption <1% of program days	Delay / Business interruption between 1%-3% of program days	Delay / Business interruption between 4%-6% of program days	Delay / Business interruption between 7%-10% of program days	Delay / Business interruption >10% of program days
Cost	Additional cost to the business / project <1% revenue	Additional cost to the business / project between 1%-3% revenue	Additional cost to the business / project between 4%-6% of revenue	Additional cost to the business / project between 7%-10% of revenue	Additional cost to the business / project >10% of revenue

Table 4: Risk severity

Consequence		Negligible	Minor	Moderate	Major	Substantial
Likelihood	Rating	1	2	3	4	5
Almost Certain	5	5 (Low)	10 (Moderate)	18 (Very High)	23 (Extreme)	25 (Extreme)
Likely	4	4 (Low)	9 (Moderate)	17 (Very High)	20 (Very High)	24 (Extreme)
Possible	3	3 (Low)	8 (Moderate)	13 (High)	19 (Very High)	22 (Very High)
Unlikely	2	2 (Low)	7 (Low)	12 (High)	15 (High)	21 (Very High)
Rare	1	1 (Low)	6 (Low)	11 (Moderate)	14 (High)	16 (High)

Appendix A-3 Environmental Risk Register

Issue	Construction activity/aspect	Potential impact	Risk level prior to mitigation	Indicative Mitigation Measures	Risk level following mitigation	Management Documents / Training Required
Air quality	<ul style="list-style-type: none"> General earthworks Vegetation clearing Open excavation works Spoil handling Stockpiling Vehicular movements on unsealed roads Material haulage Vehicle emissions Handling of chemicals, waste and hazardous goods. 	Complaints from neighbours, including loss of amenity, dust in living areas, swimming pools	Likelihood – 5 Consequence – 2 Risk – 10 (Moderate)	<ul style="list-style-type: none"> Induct personnel on air quality issues and safeguards Use water carts on unsealed surfaces and stockpiles Utilise safe dust suppressants to reduce dust generation Use street sweepers to reduce dust in areas of dust build up Modify or cease operations during high winds All trucks on public roads to cover loads Vehicles, equipment, machinery used and all facilities – designed, operated and maintained to control the emission of smoke, dust, odours and fumes All disturbed areas stabilised, revegetated and/or landscaped as soon as practicable Minimise tracked mud/dust on public roads No burning or incineration of any material at any time Dust monitoring 	Likelihood – 3 Consequence – 1 Risk – 3 (Low)	Air Quality Management Sub Plan (AQMP) Environmental Work Method Statements (EWMS) Soil and Water Management Sub Plan (SWMP) Complaints Procedure Project induction
		Potential adverse health effects	Likelihood – 3 Consequence – 2 Risk – 8 (Moderate)		Likelihood – 2 Consequence – 2 Risk – 7 (Low)	
		Degradation of water quality and other aspects of the natural environment	Likelihood – 3 Consequence – 2 Risk – 8 (Moderate)		Likelihood – 2 Consequence – 2 Risk – 7 (Low)	
		Health risks to neighbours and members of the public from	Likelihood – 3 Consequence – 2		Likelihood – 1 Consequence – 2	

Issue	Construction activity/aspect	Potential impact	Risk level prior to mitigation	Indicative Mitigation Measures	Risk level following mitigation	Management Documents / Training Required
		release of gases and/or smoke	Risk – 8 (Moderate)	<ul style="list-style-type: none"> • Avoid “hot-work” during total fire bans and obtain any necessary permits/exemptions from the Rural Fire Service • WorkCover licensing requirements will be complied with for the storage of hazardous substances and dangerous goods • Appropriately stocked spill kits will be readily available at all chemical storage locations and during chemical use • Material Safety Data Sheets (MSDSs) will be obtained, complied with and retained on site for all required chemicals • Pesticide use will be in accordance with the Pesticides Act, 1999 	Risk – 6 (Low)	
Biodiversity	<ul style="list-style-type: none"> • Clearing of native vegetation. • Tree removal • Stockpile / haul road construction near vegetation. • General earthworks near vegetation. • Vehicular movements. 	Loss of habitat for threatened species beyond minimum clearing footprint.	Likelihood – 3 Consequence – 2 Risk – 8 (Moderate)	<ul style="list-style-type: none"> • Induct personnel on biodiversity issues and mitigation measures. • Verify vegetation clearing boundaries prior to clearing • Ensure vegetation clearing boundaries clearly marked and visible as per FFMP • Consult with affected communities prior to removing large trees • Prior to construction – identify and fence all flora and fauna habitat areas required to be protected as identified in the FFMP. 	Likelihood – 2 Consequence – 2 Risk – 7 (Low)	Flora and Fauna Management Plan (FFMP) EWMS Vegetation Clearing procedure Fauna handling procedure Project induction
		Weed infestation	Likelihood – 5 Consequence – 2 Risk – 10 (Moderate)		Likelihood – 3 Consequence – 1 Risk – 3 (Low)	

Issue	Construction activity/aspect	Potential impact	Risk level prior to mitigation	Indicative Mitigation Measures	Risk level following mitigation	Management Documents / Training Required
	<ul style="list-style-type: none"> Open excavation works. Bushfires 	Potential longer term impacts associated with increased habitat fragmentation.	Likelihood – 2 Consequence – 2 Risk – 7 (Low)	<ul style="list-style-type: none"> Minimise clearing of all vegetation and undertake progressive revegetation. Pre-clearing inspections by Project Ecologist to review weeds and other threatened species Implement ongoing weed monitoring and management programs. Disturbed areas will be monitored for effective soil stabilisation and restoration / rehabilitation. Implement a staged clearing process and undertake fauna rescue during clearing as required. Project Arborist to provide advice on habitat tree health and provide ongoing advice. Undertake threatened species management as required under the FFMP and detailed design documentation / Approval. Undertake monitoring as required. Spark arresters on plant prevent fires. Obtain permits from Fire authorities during high risk fire season. 	Likelihood – 1 Consequence – 2 Risk – 6 (Low)	
		Direct impact to flora or fauna during construction.	Likelihood – 2 Consequence – 2 Risk – 7 (Low)		Likelihood – 1 Consequence – 2 Risk – 6 (Low)	

Issue	Construction activity/aspect	Potential impact	Risk level prior to mitigation	Indicative Mitigation Measures	Risk level following mitigation	Management Documents / Training Required
Aboriginal heritage	<ul style="list-style-type: none"> Initial clearing and/or grubbing of vegetation. Initial removal of topsoil. Construction of site compounds and material or equipment stockpile areas. Temporary access roads 	Impact to undiscovered or undocumented heritage sites	Likelihood – 2 Consequence – 3 Risk – 12 (High)	<ul style="list-style-type: none"> Induct personnel on heritage issues and mitigation measures. For ancillary sites, identify and assess Aboriginal heritage items and predict potential impacts. Implement unexpected find procedures as required. 	Likelihood – 1 Consequence – 2 Risk – 6 (Low)	Heritage Management Sub Plan (HMP) Unexpected Heritage Items Procedure Project induction
		Finding / disturbing burials or human remains	Likelihood – 2 Consequence – 2 Risk – 7 (Low)		Likelihood – 1 Consequence – 2 Risk – 6 (Low)	
Non-Aboriginal heritage	<ul style="list-style-type: none"> Initial clearing and/or grubbing of vegetation. Initial removal of topsoil. Construction of site compounds and spoil / mulch and / or equipment stockpile areas. Temporary access roads during construction Excavations and earthworks. 	Impact to identified heritage items.	Likelihood – 3 Consequence – 3 Risk – 13 (High)	<ul style="list-style-type: none"> Pre-construction surveys to identify and assess non-Aboriginal heritage items. Induct personnel on heritage issues and safeguards. Protect identified heritage items with protective fencing or flagging from being disturbed during construction. Undertake archival recording as required Implement unexpected find procedures Landholder consultation. 	Likelihood – 2 Consequence – 2 Risk – 7 (Low)	Heritage Management Sub Plan (HMP) Noise and Vibration Management Sub Plan (NVMP) Unexpected Heritage Items Procedure Project induction
		Vibration damage during the construction period to identified sites.	Likelihood – 3 Consequence – 2 Risk – 8 (Moderate)		Likelihood – 2 Consequence – 2 Risk – 7 (Low)	
		Impact to undiscovered or undocumented heritage sites.	Likelihood – 3 Consequence – 3 Risk – 13 (High)		Likelihood – 2 Consequence – 2 Risk – 7 (Low)	

Issue	Construction activity/aspect	Potential impact	Risk level prior to mitigation	Indicative Mitigation Measures	Risk level following mitigation	Management Documents / Training Required
	<ul style="list-style-type: none"> Pile driving causing vibration. Use of other vibratory equipment such as rollers. 	Change in visual integrity of heritage sites.	Likelihood – 2 Consequence – 2 Risk – 7 (Low)		Likelihood – 2 Consequence – 1 Risk – 2 (Low)	
Noise and vibration	<ul style="list-style-type: none"> Regular out of hour works (OOHW) Potentially noisy and vibration impact generating works: <ul style="list-style-type: none"> Site establishment. Earthworks Piling Paving Saw cutting 	Noise impacts on sensitive receivers during construction.	Likelihood – 5 Consequence – 3 Risk – 18 (Very High)	<ul style="list-style-type: none"> Consult with local communities and affected residents. Liaison AA and permits detailing justification for OOHW Construction Noise and Vibration Impact Statements (CNVIS) to be prepared to determine impact and consultation requirements Adherence to working hours in NVMP unless otherwise approved. Respite periods for particularly noisy/ short duration activities (in accordance with NVMP) or offers of respite as documented in CNVIS. Construction equipment selected, operated and maintained to minimise noise impacts and where necessary fitted with non-tonal reversing alarms. Minimise impacts from saw cutting/ use effective shielding. Regular noise monitoring to monitor predicted verses actual levels. 	Likelihood – 4 Consequence – 2 Risk – 9 (Moderate)	NVMP EWMS OOHW protocol Negotiated agreements Complaints procedure Project induction
		Vibration impacts on nearby receptors, including heritage.	Likelihood – 4 Consequence – 2 Risk – 9 (Moderate)		Likelihood – 3 Consequence – 2 Risk – 8 (Moderate)	

Issue	Construction activity/aspect	Potential impact	Risk level prior to mitigation	Indicative Mitigation Measures	Risk level following mitigation	Management Documents / Training Required
				<ul style="list-style-type: none"> • Implementing management measures where regenerated noise is found to be excessive and agreements are not in place. • Managing construction vehicle routes and speed of vehicles. • Modelling vibration impacts and monitoring where impacts are predicted. • Establish and maintain complaints management system. • Building condition reports on potentially impacted buildings and structures as required by Project approval. • review monitoring results and implement corrective actions as appropriate, such as for example revising mitigation measures, revising predictions. • Implement any additional feasible and reasonable mitigation measures, identified from the review of monitoring results, for minimising noise and vibration impacts • Discuss noise and vibration monitoring results at each ERG. 		

Issue	Construction activity/aspect	Potential impact	Risk level prior to mitigation	Indicative Mitigation Measures	Risk level following mitigation	Management Documents / Training Required
Soil and water quality	<ul style="list-style-type: none"> Clearing and grubbing. Earthworks and stockpile management. Storage of fuels and chemicals Maintenance of plant and equipment, including servicing and refuelling Sediment basin management Drainage works Concrete works Temp access road construction Bridge construction. Landscaping Landscaping maintenance 	Erosion and movement of soils.	Likelihood – 5 Consequence – 3 Risk – 18 (Very High)	<ul style="list-style-type: none"> Appropriately designed erosion control structures (e.g. rock checks, sedimentation basins, silt fences and sand bags) will be installed, maintained and cleaned regularly. Locate spoil stockpiles, plant and equipment away from drainage lines, watercourses or stormwater drains in accordance with established criteria. 	Likelihood – 3 Consequence – 2 Risk – 8 (Moderate)	SWMP EWMS Basin management procedure Project induction Targeted ERSED training
		Captured dirty water discharge from basins.	Likelihood – 4 Consequence – 3 Risk – 17 (Very High)	<ul style="list-style-type: none"> Install clean water diversions to ensure clean and dirty water are not mixed on site. Storage, compound access and parking areas sealed, as early during works as practicable. Chemical storage meets bunding requirements. Wheel mud reduction/ cleaning measures at exit of all sites where required. 	Likelihood – 3 Consequence – 2 Risk – 8 (Moderate)	
		Dirty water not captured and leaves site without controls.	Likelihood – 4 Consequence – 3 Risk – 17 (Very High)	<ul style="list-style-type: none"> Buffer zones of vegetation will be maintained adjacent to waterways for as long as practical. Rehabilitation and landscaping works of disturbed areas undertaken as soon as the works are completed and/or progressively where possible. 	Likelihood – 3 Consequence – 2 Risk – 8 (Moderate)	

Issue	Construction activity/aspect	Potential impact	Risk level prior to mitigation	Indicative Mitigation Measures	Risk level following mitigation	Management Documents / Training Required
		Haul road washout from flood event.	Likelihood – 3 Consequence – 2 Risk – 8 (Moderate)	<ul style="list-style-type: none"> Implement concrete washout process within bunded areas. Provide and maintain spill kits. Establish clean water catch drains/ diversion early in Project before topsoil stripping. Design drainage to maximise dirty water to sediment basins. Establish dedicated ERSED crews for the Project. Install signage at discharge points to assist workers to understand implications of dirty water release in sensitive areas. Meet TfNSW Dewatering guidelines. 	Likelihood – 2 Consequence – 2 Risk – 7 (Low)	
Flooding	<ul style="list-style-type: none"> Transverse drainage. Haul roads and Freeway. 	Restriction to flow paths causing localised flooding.	Likelihood – 4 Consequence – 3 Risk – 17 (Very High)	<ul style="list-style-type: none"> Design drainage structures to cope with design flood events and Environmental Assessment commitments. Locate compounds / plant / storage above 1 in 20 years flood level events. Design and build temporary crossings to be stabilised and minimise scour / erosion during flood events. Install scour protection as early as possible. Look at predicting flood events from gauges or rainfall predictions. 	Likelihood – 3 Consequence – 2 Risk – 8 (Moderate)	SWMP EWMS
		Changes to flood levels – increased impact to receivers.	Likelihood – 3 Consequence – 4 Risk – 19 (Very High)		Likelihood – 2 Consequence – 2 Risk – 7 (Low)	
		Stormwater inflow to site –	Likelihood – 5		Likelihood – 3	

Issue	Construction activity/aspect	Potential impact	Risk level prior to mitigation	Indicative Mitigation Measures	Risk level following mitigation	Management Documents / Training Required
		clean stormwater getting mixed with dirty site water.	Consequence – 3 Risk – 18 (Very High)	<ul style="list-style-type: none"> Design and construct Project in accordance with CoA . 	Consequence – 2 Risk – 8 (Moderate)	
		Flood damage to plant / equipment / satellite compounds.	Likelihood – 3 Consequence – 3 Risk – 13 (High)		Likelihood – 2 Consequence – 2 Risk – 7 (Low)	
		Erosion of haul/ access road during large flood events.	Likelihood – 3 Consequence – 2 Risk – 8 (Moderate)		Likelihood – 2 Consequence – 2 Risk – 7 (Low)	
Spoil and Fill	<ul style="list-style-type: none"> Cuts Fill areas Haulage of spoil and fill Stockpiling Spoil areas Site establishment utility 	Demand on local resources – local quarries / suppliers.	Likelihood – 4 Consequence – 1 Risk – 4 (Low)	<ul style="list-style-type: none"> Design for balanced earthworks. Offsite spoil movements to be monitored and tracked on the site waste disposal register to ensure spoil movements meet EPA guidelines, including characterisation of the spoil to determine correct disposal locations and volumes. Spoil to be beneficially reused, on or off site, where applicable and meeting environmental requirements. Includes reuse of excavated material, either as fill, or as earth mounds for noise control, or 	Likelihood – 3 Consequence – 1 Risk – 3 (Low)	SWMP EWMS and Work Packs AQMP CEMP Contaminated Land Management Procedure
		ERSED issues from cuts / batters / stockpiles.	Likelihood – 4 Consequence – 2 Risk – 9 (Moderate)		Likelihood – 3 Consequence – 2 Risk – 8 (Moderate)	

Issue	Construction activity/aspect	Potential impact	Risk level prior to mitigation	Indicative Mitigation Measures	Risk level following mitigation	Management Documents / Training Required
	<ul style="list-style-type: none"> Service relocations Earthworks Drainage works 	Sensitive area damage from stockpiling.	Likelihood – 3 Consequence – 2 Risk – 8 (Moderate)	<ul style="list-style-type: none"> beautification, shielding or revegetation mounds on site. All loads accessing public roads to be covered to prevent any loss of material, which may cause driver safety issues. Only locate stockpiles in accordance with criteria in CEMP/SWMP Classify and dispose of any contaminated land in accordance with EPA guidelines. 	Likelihood – 2 Consequence – 2 Risk – 7 (Low)	
		Contaminated land.	Likelihood – 3 Consequence – 3 Risk – 13 (High)		Likelihood – 2 Consequence – 2 Risk – 7 (Low)	
Waste Management	<ul style="list-style-type: none"> Generation of waste during construction activities including building materials, excess unsuitable spoil material, vegetation material. 	Excessive waste being directed to landfill.	Likelihood – 3 Consequence – 1 Risk – 3 (Low)	<ul style="list-style-type: none"> Apply waste hierarchy principles – avoid-reduce-reuse-recycle. Waste materials contained in waste bins or other suitable containers, and collected for recycling, reuse or disposal by the licensed waste contractor. Separate, contain, manage and dispose contaminated waste to prevent migration and further contamination whilst maintaining compliance with EPA requirements. Label and store all liquid waste containers in a bunded area prior to removal off-site. Undertake inspections of the worksite and waste storage areas to ensure litter / debris is regularly cleaned up and contained on site. 	Likelihood – 2 Consequence – 1 Risk – 2 (Low)	Waste and Energy Management Plan (WEMP) EWMS Waste register
		Incorrect disposal of contaminated waste.	Likelihood – 3 Consequence – 4 Risk – 19 Very High		Likelihood – 2 Consequence – 2 Risk – 7 (Low)	
		Meeting POEO Act requirements for	Likelihood – 3		Likelihood – 2	

Issue	Construction activity/aspect	Potential impact	Risk level prior to mitigation	Indicative Mitigation Measures	Risk level following mitigation	Management Documents / Training Required
		VENM, ENM, Recovered Aggregate, Reclaimed Asphalt pavement and mulch	Consequence – 3 Risk – 13 (High)	<ul style="list-style-type: none"> Establish recycling system early on in Project. Establish good segregation areas for concrete and waste concrete is not to be transported off site for land disposal. Section 143 Notices Under the POEO Act and provision of a letter to landholder highlighting the need for a “s.143 Notice”, the Contractor’s role and the respective roles of the TfNSW and the landholder in ensuring that the waste is appropriately managed. Consider types of waste, how each waste type will be used as a beneficial use and address in the approvals that no other type of waste will be used. 	Consequence – 2 Risk – 7 (Low)	
Traffic and transport	<ul style="list-style-type: none"> Haulage of material. Import of material / plant / equipment. Travel to / from site. Loss of street parking 	<p>Accidents - Safety of commuters, pedestrians, cyclists, contractors and subcontractors.</p> <p>Delays</p> <p>Noise Vibrations and Dust nuisance to residents on haul routes</p> <p>Unapproved use of local roads</p>	Likelihood – 4 Consequence – 4 Risk – 20 (Very High)	<ul style="list-style-type: none"> Develop and update Traffic Control Plans for all stages of work. Identify and assess roads likely to be affected by Project construction and develop methods to minimise traffic increases. Undertake before and after dilapidation surveys on local roads Traffic controllers and / or signage for both egress and ingress off the work sites. All vehicles carrying materials to be adequately covered to prevent any loss of material, which may cause driver safety issues. 	Likelihood – 3 Consequence – 3 Risk – 13 (High)	<p>Traffic Management Plan (TMP)</p> <p>EWMS</p> <p>AQMP</p> <p>WEMP</p> <p>Project induction</p> <p>Toolbox talks</p>

Issue	Construction activity/aspect	Potential impact	Risk level prior to mitigation	Indicative Mitigation Measures	Risk level following mitigation	Management Documents / Training Required
				<ul style="list-style-type: none"> Toolbox workforce on approved access routes Consult with affected communities prior to removing spaces for street parking 		
Visual Impact, Landscaping and Rehabilitation	<ul style="list-style-type: none"> Cuttings and cut finishes. Bridge design Revegetation / landscaping. Removal of visually prominent native vegetation. Evening / night works. 	General public aesthetic impacts	Likelihood – 3 Consequence – 1 Risk – 3 (Low)	<ul style="list-style-type: none"> Landscape and rehabilitation plan including extensive seeding planting in required areas will be developed and implemented. Landscape treatments will incorporate the surrounding landscape types and vegetation patterns and address view scapes. Embankments and cuttings will be stabilised by the use of appropriate landscape treatments. The use of night-lighting will be minimised where possible during the construction phase and directed away from residential areas. Site compounds and areas surrounding them will be kept tidy and be regularly cleaned and maintained. Undertake landscaping and revegetation works in accordance with the approved Urban Design and Landscape Management Plan. 	Likelihood – 2 Consequence – 1 Risk – 2 (Low)	Urban Design and Landscape Management Plan (UDLMP) FFMP
		Heritage related visual	Likelihood – 2 Consequence – 2 Risk – 7 (Low)		Likelihood – 1 Consequence – 2 Risk – 6 (Low)	
Contamination	<ul style="list-style-type: none"> Discovery of contaminated soils/ asbestos 	Contamination of land and /or waterways from	Likelihood – 4	<ul style="list-style-type: none"> Implement unexpected finds contamination management measures 	Likelihood – 2	Contaminated Land Management Procedure

Issue	Construction activity/aspect	Potential impact	Risk level prior to mitigation	Indicative Mitigation Measures	Risk level following mitigation	Management Documents / Training Required
	<ul style="list-style-type: none"> Management of known contamination 	spills/ asbestos/ land contamination.	Consequence – 3 Risk – 17 (Very High)	<ul style="list-style-type: none"> Undertake Detailed Site Investigations to determine location and extent of contamination 	Consequence – 2 Risk – 7 (Low)	EPA guidelines
General Environmental Management	<ul style="list-style-type: none"> Environmental management / supervision Incident response 	Poor environmental culture leading to peer environment outcomes. Non-compliance with CEMP, EPL, MCoA and legislative requirements.	Likelihood – 4 Consequence – 2 Risk – 9 (Moderate)	<ul style="list-style-type: none"> Ensure all environmental personnel are trained in the CEMP and all associated documents. Environment team diligence in including requirements from CEMP and procedures into EWMS and training. Regular review of environmental management documents. Regular environment team and ERG meetings. Environmental Manager to be involved in design and construction meetings. Training in environmental emergency response. Ensure NCR process is followed. Early consultation with regards to proposed upcoming works and approvals to be sought. Implementation of high operating standards & in accordance with accepted industry standards. 	Likelihood – 2 Consequence – 2 Risk – 7 (Low)	CEMP Procedures (in CEMP and sub-plans) TfNSW Incident Management procedures EWMS Compliance Tracking Program Internal / external audits ERG
		Failure to follow requirements of strategies / procedures.	Likelihood – 4 Consequence – 2 Risk – 9 (Moderate)			
		Failure to report environmental issues and incidents.	Likelihood – 4 Consequence – 2 Risk – 9 (Moderate)			
		Inconsistent advice to	Likelihood – 4			

Issue	Construction activity/aspect	Potential impact	Risk level prior to mitigation	Indicative Mitigation Measures	Risk level following mitigation	Management Documents / Training Required
		construction personnel.	Consequence – 2 Risk – 9 (Moderate)		Consequence – 2 Risk – 7 (Low)	
		Inadequate response to environmental incident/emergency.	Likelihood – 3 Consequence – 2 Risk – 8 (Moderate)		Likelihood – 2 Consequence – 2 Risk – 7 (Low)	
Planning Approvals	<ul style="list-style-type: none"> Approvals/ Legislative Compliance 	<p>Lost opportunities to implement innovations leading to better environmental outcomes</p> <p>Poor working relationships with regulators</p> <p>Delays due to receipt of approvals (e.g. CEMP, Planning Modifications, Environment Assessments for</p>	<p>Likelihood – 4 Consequence – 2 Risk – 9 (Moderate)</p> <p>Likelihood – 3 Consequence – 2 Risk – 8 (Moderate)</p> <p>Likelihood – 4 Consequence – 2 Risk – 9 (Moderate)</p>	<ul style="list-style-type: none"> Early consultation in preparing approvals and CEMP. Ensure all environmental personnel are trained in the CEMP and all associated documents. Environment team diligence in including requirements from CEMP and procedures into EWMS and training. Regular review of environmental management documents. Regular review of compliance with environmental management documents, MCoA etc. Regular environment team and ERG meetings. Early consultation with regards to proposed upcoming works and approvals to be sought. 	<p>Likelihood – 2 Consequence – 2 Risk – 7 (Low)</p> <p>Likelihood – 2 Consequence – 2 Risk – 7 (Low)</p> <p>Likelihood – 1 Consequence – 2 Risk – 6 (Low)</p>	<p>CEMP Compliance Tracking Program Internal / external audits ERG</p>

Issue	Construction activity/aspect	Potential impact	Risk level prior to mitigation	Indicative Mitigation Measures	Risk level following mitigation	Management Documents / Training Required
		Ancillary Facilities)				

Appendix A-4 Inventory of Potential Pollutants

Chemicals / hazardous substances	Estimated maximum quantity at each construction compound	Location / Storage
Spoil (including potentially contaminated spoil)	50,000 T	Temporary stockpiles, controls as per SWMP
Asbestos Containing Material	1,000 T	Temporary stockpiles (if not able to be directly removed from site), covered and in exclusion zone
Acetylene (G size cylinder)	20	Secure storage area
Bitumen emulsion	60,000 L	Supply truck
Cement and grout products, dry form	1000 kg	Covered storage area
Cleaning products, detergents, degreasers	100 L	Bunded storage area
Concrete washout water	5000 L	Impermeable washout basins or tanks
Curing compounds	600 L	Bunded storage area
Diesel	60,000 L	Fuel truck, bunded storage area

Chemicals / hazardous substances	Estimated maximum quantity at each construction compound	Location / Storage
Greases e.g. plant & equipment grease, mould oils & other greases	3000 kg	Bunded storage area
Hydraulic oil, engine oil, form oil	20,000 L	Bunded storage area
Oxygen (G size cylinder)	20	Secure storage area
Paints and surface coatings	100 L	Bunded storage area
Petrol	500 L	Bunded storage area
Primers, sealants	100 L	Bunded storage area
Sediment laden water	5,000 kL	Sediment basins, sumps, excavations
Sodium hydroxide	10,000 L	Bunded storage area
Soil stabilisers	4,000 L	Bunded storage area
Sulphuric acid	10,000 L	Bunded storage area
Transformer oils (at HV transformers and kiosks)	20,000 L	Bunded storage area
Water treatment chemicals eg gypsum	10 T	Bunded storage area

Chemicals / hazardous substances	Estimated maximum quantity at each construction compound	Location / Storage
Workshop materials (e.g. consumables, waste oil for collection or recycling)	6,000 L	Bunded storage area