

Site Establishment Management Plan

M4-M5 Link Mainline Tunnels
October 2018



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Glossary/Abbreviations

Abbreviation	Expanded text
ARI	Annual Recurrence Interval
ASS	Acid Sulfate Soils
CEMP	Construction Environmental Management Plan
CNVIS	Construction Noise and Vibration Impact Statement
CNVMP	Construction Noise and Vibration Management Plan
CoA	Conditions of Approval
CPAS	Construction Parking and Access Strategy
CPTED	Crime Prevention Through Environmental Design
CSSI	Critical State Significant Infrastructure
DDA	<i>Disability Discrimination Act 1992</i>
DIRD	Department of Infrastructure and Regional Development
DPE	Department of Planning and Environment
EIS	Environmental Impact Statement
EEC	Endangered Ecological Community
EPA	NSW Environment Protection Authority
Environmental aspect	Defined by AS/NZS ISO 14001:2015 as an element of an organisation's activities, products or services that can interact with the environment.
Environmental impact	Defined by AS/NZS ISO 14001:2015 as any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organisation's environmental aspects.
Environmental incident	An unexpected event that has, or has the potential to, cause harm to the environment and requires some action to minimise the impact or restore the environment.
EMM	Environmental Management Measure as outlined in the project EIS documentation.
Environmental objective	Defined by AS/NZS ISO 14001:2015 as an overall environmental goal, consistent with the environmental policy, that an organisation sets itself to achieve.
Environmental policy	Statement by an organisation of its intention and principles for environmental performance.
Environmental target	Defined by AS/NZS ISO 14001:2015 as a detailed performance requirement, applicable to the organisation or parts thereof, that arises from the environmental objectives and that needs to be set and met in order to achieve those objectives.
Environmental Representative	A suitably qualified and experienced person independent of project design and construction personnel employed for the duration of construction. The principal point of advice in relation to all questions and complaints concerning environmental performance.
EP&A Act	<i>Environmental Planning and Assessment Act 1979 (NSW)</i>

Abbreviation	Expanded text
EPL	Environment Protection Licence
ESCP	Erosion and Sediment Control Plan
EWMS	Environmental work method statement
FMS	Flood Mitigation Strategy
HAMU	Historical Archaeological Management Unit
HARD	Historical Archaeological Research Design
HCA	Heritage Conservation Area
ICNG	Interim Construction Noise Guideline
Incident	An occurrence or set of circumstances that causes, or threatens to cause, material harm to the environment, community or any member of the community, being actual or potential harm to the health or safety of human beings or to threatened species, endangered ecological communities or ecosystems that is not trivial.
LEP	Local Environmental Plan
LSBJV	Lendlease Samsung Bouygues Joint Venture
Material harm	This is harm that: <ul style="list-style-type: none"> (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).
Minister, the	Minister for Planning
Non-compliance	An occurrence, set of circumstances or development that is a breach of the Project approval but is not an incident
Non-conformance	Failure to conform to the requirements of Project system documentation including this SEMP or supporting documentation.
POEO Act	<i>Protection of the Environment Operations Act 1997 (NSW)</i>
Project, the	M4-M5 Link Mainline Tunnels
REMM	Revised Environmental Management Measure
Roads and Maritime	Roads and Maritime Services
ROL	Road occupancy licence
SAP	Sensitive Area Plan
Secretary	Secretary of the NSW Department of Planning and Environment or nominee, whether nominated before or after the date on which this approval was granted
SEMP	Site Establishment Management Plan
SPIR	Submissions and Preferred Infrastructure Report

Abbreviation	Expanded text
SSWMP	Construction Soil and Surface Water Management Plan
SWL	Standing water level
TCP	Traffic Control Plan
UMS	Utilities Management Strategy

1 Introduction

1.1 Purpose

This Site Establishment Management Plan (SEMP) relates to the M4-M5 Link Mainline Tunnels project (the Project) and has been prepared in accordance with Minister's Condition of Approval (CoA) C22 for the M4-M5 Link.

This SEMP has been prepared to address the requirements of the CoA, the WestConnex M4-M5 Link Environmental Impact Statement (EIS), the revised environmental management measures (REMM) listed in the WestConnex M4-M5 Link Submissions and Preferred Infrastructure Report (SPIR) and all applicable guidance and legislation.

1.2 Background and project description

1.2.1 Project background

The M4-M5 Link EIS (AECOM 2017) assessed the impacts of construction and operation of the Project. The EIS included a description of the construction ancillary facilities, within Chapter 6.5, and assessed the potential impacts in relation to the ancillary facilities in Chapters 8 – 26.

The EIS identified the potential for a range of minor impacts associated with ancillary facilities (and therefore site establishment works). However, it concluded any potential impacts could be managed by standard mitigation and management measures.

1.2.2 Project description

The WestConnex M4-M5 Link project is being constructed in two stages:

- Stage 1 (the Project and subject of this document): M4-M5 Link Mainline tunnels
- Stage 2: Rozelle interchange.

Sydney Motorway Corporation (SMC) has engaged Lendlease Samsung Bouygues Joint Venture (LSBJV) to design and construct Stage 1 of the project. The key features of the Mainline tunnels project include:

- Twin mainline motorway tunnels between the M4 East at Haberfield and the New M5 at St Peters. Each tunnel would be around 7.5 kilometres long and would generally accommodate up to four lanes of traffic in each direction
- Connections of the mainline tunnels to the M4 East project, comprising:
 - A tunnel-to-tunnel connection to the M4 East mainline stub tunnels east of Parramatta Road near Alt Street at Haberfield
 - Entry and exit ramp connections between the mainline tunnels and the Wattle Street interchange at Haberfield (which is currently being constructed as part of the M4 East project)
 - Minor physical integration works with the surface road network at the Wattle Street interchange including road pavement and line marking
- Connections of the mainline tunnels to the New M5 project, comprising:
 - A tunnel-to-tunnel connection to the New M5 mainline stub tunnels north of the Princes Highway near the intersection of Mary Street and Bakers Lane at St Peters
 - Entry and exit ramp connections between the mainline tunnels and the St Peters interchange at St Peters (which is currently being constructed as part of the New M5 project)

- Minor physical integration works with the surface road network at the St Peters interchange including road pavement and line marking
- Construction of tunnel stubs to provide for future underground connection of the mainline tunnels to the Rozelle interchange and Iron Cove Link
- A motorway operations complex at St Peters (Campbell Road) (MOC5). The types of facilities that would be contained within the motorway operations complexes would include substations, water treatment plants, ventilation facilities and outlets (the Campbell Road ventilation facility), offices, on-site storage and parking for employees
- Tunnel ventilation systems, including ventilation supply and exhaust facilities, ventilation fans, ventilation outlets and ventilation tunnels
- Fitout (mechanical and electrical) of part of the Parramatta Road ventilation facility at Haberfield (which is currently being constructed as part of M4 East project) for use by the M4-M5 Link project
- Drainage infrastructure to collect surface and groundwater for treatment at dedicated facilities
- Water treatment would occur at the operational water treatment facility at the Campbell Road motorway operations complex (subject to future Modification)
- Ancillary infrastructure and operational facilities for electronic tolling and traffic control and signage (including electronic signage)
- Emergency access and evacuation facilities, including pedestrian and vehicular cross and long passages and fire and life safety systems
- Utility works, including protection and/or adjustment of existing utilities, removal of redundant utilities and installation of new utilities
- Temporary construction ancillary facilities to facilitate construction of the project at the following locations:
 - Northcote Street civil and tunnel site (C3a), Haberfield (subject to future Modification)
 - Haberfield civil site (C2b), Haberfield
 - Parramatta Road East civil site (C3b), Haberfield
 - Parramatta Road West civil site (C1b), Ashfield
 - Wattle Street civil and tunnel site (C1a), Haberfield
 - Pyrmont Bridge Road tunnel site (C9), Camperdown/Annandale
 - Campbell Road civil and tunnel site (C10), St Peters
 - White Bay civil site (C11), Rozelle.

1.3 Scope

The scope of this Plan is to describe how LSBJV propose to manage site establishment works at the Campbell Road civil and tunnel site (hereby referred to as the Campbell Road site), the Pyrmont Bridge Road tunnel site (hereby referred to as the Pyrmont Bridge Road site) and the Parramatta Road East civil site and the Parramatta Road West civil site (hereby referred to as the Parramatta Road East and West site). Site establishment works are defined in Section 1.4 and summarised in **Table 1-1**.

It is presently proposed and approved under the EIS to demolish the former Bank of NSW building (164 Parramatta Road) at the Pyrmont Bridge Road site. This building has not been listed as a heritage item on either the local or state registers, however a feasibility study (as required by CoA E160) has been prepared and works are set to proceed in accordance with the EIS.

It should also be noted that this SEMP applies to part of the Campbell Road site, as shown in Appendix C. A separate portion would be made available in late 2019/early 2020 on completion of the New M5 project. It is proposed to establish the separate portion of the Campbell Road site in accordance with the CEMP, as per the ancillary facilities approval pathways described in Section 1.6.

Operation of the sites and operational measures during construction do not fall within the scope of this SEMP and therefore are not included within this Plan. Operation of the sites during the construction works would be managed in accordance with the Construction Environmental Management Plan (CEMP). However, it should be noted that any site establishment activities not completed by the time of CEMP approval would then be undertaken in accordance with the CEMP.

Table 1-1 Proposed site establishment works

No	Site	Site establishment works									
		Demolition of existing structures	Removal of vegetation	Management of contamination	Erection of site fencing / hoarding	Provision of utility services to the site	Site levelling	Provision of site access	Erection of demountable buildings	Provision of hardstand areas	Provision of erosion and sedimentation controls
C1b	Parramatta Road West civil site	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
C3b	Parramatta Road East civil site	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
C9	Pyrmont Bridge Road tunnel site	✓		✓	✓	✓	✓	✓	✓	✓	✓
C10	Campbell Road civil and tunnel site			✓	✓	✓	✓	✓	✓	✓	✓

1.4 Legislative and other requirements

This plan is constructed to meet the requirements of CoA C22 which outlines that an approved SEMP is required prior to the establishment of any construction ancillary facility. An ancillary facility is defined by the CoA as:

A facility established for construction of the project which will be decommissioned at the end of construction including an office and amenities compound, construction compound, material crushing and screening plant, material storage compound, maintenance workshop, testing laboratory, material stockpile area car parking compound and truck marshalling facility.

Site establishment works are defined by the CoA as:

Activities undertaken to establish a construction ancillary facility so that it is able to be used to support the construction of the CSSI, including demolition of existing structures on the site, erection of site fencing / hoarding, provision of utility services to the site, site levelling, provision of

site access, erection of demountable buildings, provision of hardstand areas, and erosion and sedimentation controls.

However, site establishment works do not include:

- (a) piling (except for piling required for the erection of noise barriers around construction compounds); or*
- (b) the erection of acoustic sheds at construction compounds including the hardstand area on which it will be erected; or*
- (c) establishing tunnel shafts/dives.*

The site establishment activities as defined above are addressed in this document. References to where specific sections of CoA C22 are addressed is in **Table 1-2**. Refer to Appendix A for information on where all other conditions of approval relevant to site establishment are addressed. The operation of all ancillary facilities associated with the project will be in accordance with the CEMP as required by CoA C23.

Table 1-2: CoA requirement for SEMP

CoA No.	Requirement	Reference	How addressed
C22	<p>Before establishment of any construction ancillary facility as identified in the EIS and SPIR (and excluding minor construction ancillary facilities established under Condition C24), the Proponent must prepare a Site Establishment Management Plan which outlines the environmental management practices and procedures to be implemented for the establishment of the construction ancillary facilities.</p> <p>The Site Establishment Management Plan must be prepared in consultation with the relevant council(s) and government authorities. The Plan must be submitted to the Secretary for approval one (1) month prior to establishment of any construction ancillary facilities. The Site Establishment Management Plan must detail the management of the construction ancillary facilities and include:</p>	<p>This plan</p> <p>Section 6.3</p>	<p>This Site Establishment Management Plan has been prepared in accordance with this Condition of Approval and describes how LSBJV propose to approach environmental management practices and procedures to be implemented during the site establishment of the construction ancillary facilities.</p> <p>The consultation requirements as outlined by this Condition of Approval have been fulfilled and are outlined in Section 6.3.</p>
(a)	<p>a description of activities to be undertaken during establishment of the construction ancillary facility (including scheduling and duration of works to be undertaken at the site);</p>	<p>Section 3</p> <p>Table 1-1</p>	<p>Section 3 of the plan describes site establishment activities to be undertaken during establishment of the construction ancillary facilities.</p> <p>Table 1-1 shows the different stages of the proposed site establishment works. Precise scheduling and duration of works cannot be confirmed until this plan is approved and works can commence.</p>
(b)	<p>figures illustrating the proposed operational site layout(s);</p>	<p>Appendix C</p>	<p>Appendix C provides the indicative site layout plans for the construction ancillary facilities.</p>

CoA No.	Requirement	Reference	How addressed
(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 works;	Section 5 Section 6	The Site Establishment Risk Analysis outlined in Section 5 has been prepared by LSBJV to supplement the Environmental Risk Analysis conducted as part of the EIS and SPIR.
(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 the EIS and SPIR,	Table 1-3	The performance outcomes presented in Table 1-3 have been established to achieve, and are adopted from, the environmental performance outcomes listed in Appendix A of the EIS. The Project has also established key performance indicators (KPIs) and a program for monitoring to ensure the performance outcomes have been met.
(ii)	to address the traffic and pedestrian impact assessment required by Condition E51, and	Section 4.1.1	Sections 4.1.1 identifies site access and parking provisions during the site establishment phase, and details the local roads required for heavy vehicle use. Note, further detail can also be found in the Project Construction Parking and Access Strategy. Where required, as determined in consultation with DPE, preparation of traffic and pedestrian impact assessments under CoA E51 will be prepared to support requests for heavy vehicles on local roads not included in the EIS/SPIR.

CoA No.	Requirement	Reference	How addressed
(iii)	manage the risks identified in the risk analysis undertaken in subsection (c) of this condition; and	Section 5 Appendix B	The risks identified as part of the Site Establishment Risk Analysis outlined in Section 5 will be mitigated and managed in accordance with measures outlined in Appendix B.
(e)	a program for monitoring the performance outcomes, including a program for construction noise monitoring consistent with the requirements of Conditions C9 and C10.	Section 1.8 Section 5.2.7	KPI No. 7 of Table 1-3 outlines the desired performance outcome, KPI and approach to monitoring for construction noise.
	Nothing in this condition prevents the Proponent from preparing individual Site Establishment Management Plans for each construction ancillary facility.	Section 1.6	Noted. This SEMP is a combined plan – refer to Section 1.6 for further detail.

Refer to Appendix A for all other CoA relevant to the development of this Plan.

1.5 Services/utilities

Generally, the site establishment works will require connection to available utilities and services such as water, power, communication and sewer. Where possible, these will be within the road reserve in close proximity to the site establishment works. Where this is not available, the closest location with minimal environmental impacts would be selected as identified by the utility owner.

In the case of the Campbell Road site, utilities have already been provided, however will need to be reticulated around/within the site. The other sites will require the removal and termination of existing utilities prior to demolition and new connections will be established as required.

Minor connections and disconnections will be undertaken in accordance with this SEMP.

Utilities required to be installed prior to CEMP approval, as defined by the definition of 'low impact' utilities works, will be managed in accordance with the Utilities Management Strategy, developed in accordance with CoA E140 approved by the Department of Planning and Environment (DPE) (refer to Section 5.2.4).

1.6 Ancillary facilities approval pathways

Two approval pathways streams for ancillary facilities, as presented in **Figure 1-1**.

- Ancillary facilities identified in the EIS and/or SPIR:

These ancillary facilities (listed in Section 1.2.2) where they are to commence site establishment activities prior to approval of the CEMP, are required to be approved under a SEMP (this document) as per CoA C22. Sites C1b and C3b, C9 and C10 are being prepared under this approval pathway as part of this document.

Where site establishment works are to commence after CEMP approval, these will be included within the CEMP and managed under this process. The remaining sites listed in Section 1.2.2 will be managed through the CEMP.

- Minor ancillary facilities not detailed in the EIS or SPIR:

Minor ancillary facilities not detailed in the EIS or SPIR which would be of minimal environmental impact may be approved under CoA 24. Note, the criteria of CoA C24 must be met to enable this pathway. The details of this approvals process are described in the CEMP.

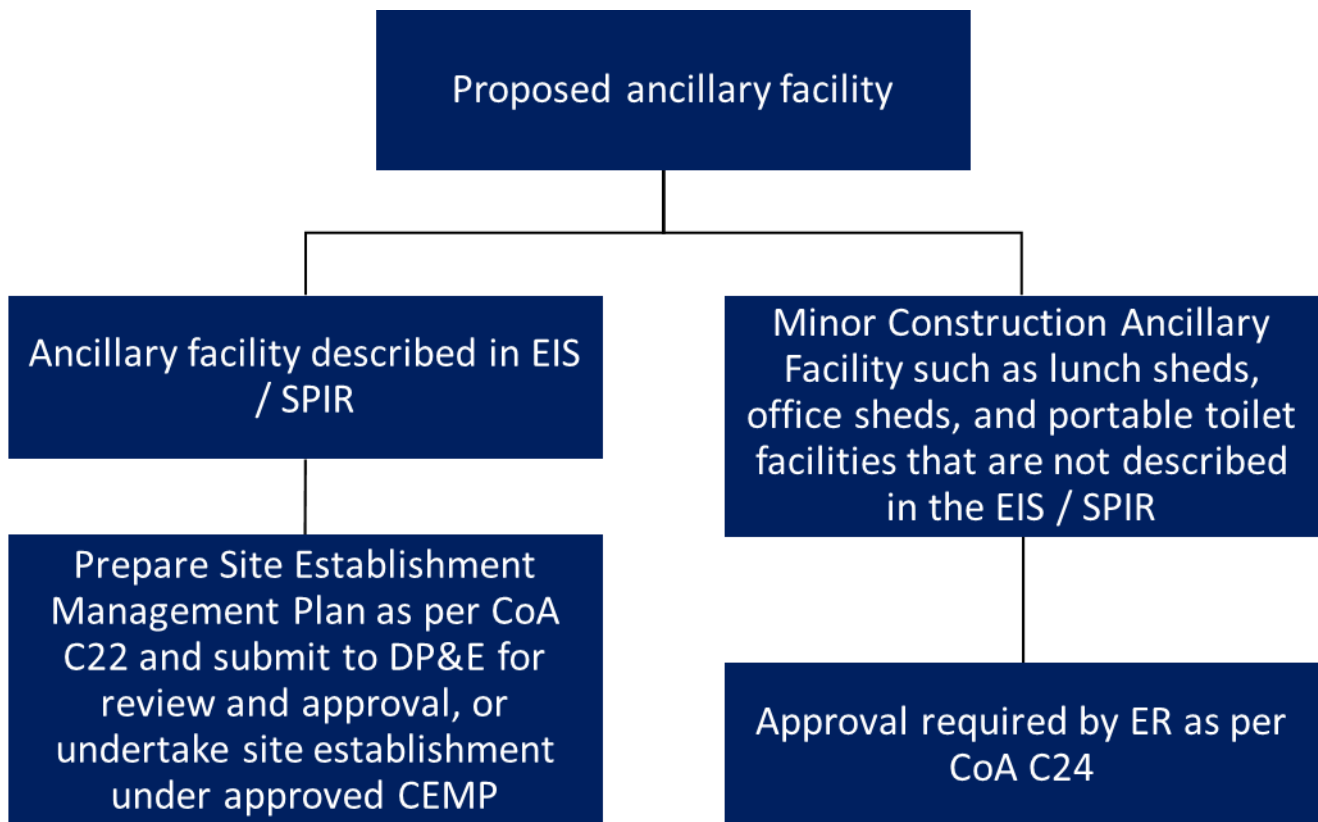


Figure 1-1 Approval flowchart for ancillary facilities

1.7 Objectives

The key objective of the SEMP is to ensure all CoA, environmental management measures and licence/permit requirements relevant to site establishment works are described, scheduled and assigned responsibility as outlined in:

- The Environmental Impact Statement prepared for WestConnex M4-M5 Link
- The Submissions and Preferred Infrastructure Report prepared for WestConnex M4-M5 Link
- Conditions of Approval dated 17 April 2018
- Roads and Maritime specifications G36, G38 and G40
- All relevant legislation and other requirements described in Section 2 of this Plan.

1.8 Environmental performance outcomes and program for monitoring

The following performance outcomes, presented in **Table 1-3**, are related to the management of site establishment works. They have been established to achieve, and adopted from, the environmental performance outcomes listed in Appendix A of the EIS and within the SPIR. The project has also established key performance indicators (KPIs) and a program for monitoring for these performance outcomes.

Table 1-3 KPIs for site establishment works

No.	Performance outcome	KPI	Records	Program for monitoring	Source
1	No regulatory infringements (Penalty Infringement Notices PINs or prosecutions).	Audits, CTP, Environment Protection Licence (EPL), annual returns, management review.	Environmental Audit Program	At all times	CoA A36
2	Minimise impacts to sensitive receivers and ensure sensitive receivers are notified of the works.	Low number of complaints are (if any) are received as a result of site establishment works.	Complaints register Community Communication Strategy	At all times	Best practice
3	Identify and manage risks to, and impacts on, the environment from our work.	Maintain a risk register, which includes an assessment of environmental risks Track environmental compliance against relevant requirements.	Risk register, construction compliance reporting through CTP	At all times	Best practice
Performance outcomes relevant to site establishment as identified in Appendix A of EIS					
4	Transport and Traffic <ul style="list-style-type: none"> Minimise impacts to road network efficiency during site establishment Maintain pedestrian and cyclist safety Access to properties to be maintained. 	Implementation of mitigation measures 20 - 24.	Inspection records	Weekly inspections / observations	EIS Appendix A CoA C22(d)(i)
5	Air Quality Effective management of dust, odour and other emissions during site establishment.	Implementation of mitigation measures 25 - 35.	Inspection records	Weekly inspections / observations	EIS Appendix A CoA C22(d)(i)

No.	Performance outcome	KPI	Records	Program for monitoring	Source
6	<p>Health and Safety</p> <ul style="list-style-type: none"> Establish and operate ancillary facilities and construction sites to protect road user and public Hazardous materials within project areas will be managed to protect human health Minimise incidents and crashes and risks to public safety during construction. 	Implementation of mitigation measures 1 - 100.	Inspection records	Weekly inspections / observations	EIS Appendix A CoA C22(d)(i)
7	<p>Noise and Vibration</p> <ul style="list-style-type: none"> Effective management of construction noise and vibration in accordance with relevant guidelines No damage to features of heritage conservation significance from vibration. 	Implementation of mitigation measures 36 - 64.	Inspection / monitoring records	Weekly noise monitoring. Vibration monitoring as required.	EIS Appendix A CoA C22(d)(i)
8	<p>Biodiversity</p> <ul style="list-style-type: none"> Minimise impact to aquatic biodiversity values Minimise removal of high retention value trees. 	Implementation of mitigation measures 80 - 87.	Inspection records	Weekly inspections / observations	EIS Appendix A CoA C22(d)(i)
9	<p>Urban Design and Visual Amenity</p> <p>Establish and operate ancillary facilities to minimise adverse impacts on the visual amenity of the local community.</p>	Implementation of mitigation measures 1 and 66 - 69.	Inspection records	Weekly inspections / observations	EIS Appendix A CoA C22(d)(i)
10	<p>Socio-economic, Land Use and Property</p> <p>Minimise impacts to businesses during construction.</p>	Implementation of mitigation measures 98 - 99	Inspection records	Weekly inspections / observations	EIS Appendix A CoA C22(d)(i)

No.	Performance outcome	KPI	Records	Program for monitoring	Source
11	Water - Hydrology and Quality <ul style="list-style-type: none"> Effectively treat water to meet water quality discharge criteria Maximise reuse of treated water during construction. 	Implementation of mitigation measures 70 – 75.	Inspection records	Weekly inspections / observations	EIS Appendix A CoA C22(d)(i)
12	Flooding Meet flooding criteria determined during project detailed design	Implementation of mitigation measure 79.	Inspection records	At all times	EIS Appendix A CoA C22(d)(i)
13	Soils <ul style="list-style-type: none"> Erosion and sediment controls will be implemented in accordance with <i>Managing Urban Stormwater – Soils and Construction</i>, Volume 1 (Landcom 2004) and Volume 2D (DECCW 2008), commonly referred to as the 'Blue Book' Manage acid sulfate soils in accordance with good practice measures Manage contamination to protect environmental values and human health. 	Implementation of mitigation measures 70 - 76	Inspection records	Weekly inspections / observations	EIS Appendix A CoA C22(d)(i)

No.	Performance outcome	KPI	Records	Program for monitoring	Source
14	<p>Heritage</p> <ul style="list-style-type: none"> • Establish archival recording of items of heritage significance that will be demolished • Salvage features and fabric of heritage significance for redistribution to the community • Minimise impacts on heritage items during site establishment • Minimise damage to features of heritage conservation significance from vibration. 	Implementation of mitigation measures 5 – 8, 88 – 90.	Inspection records	At all times	EIS Appendix A CoA C22(d)(i)
15	<p>Waste</p> <ul style="list-style-type: none"> • Recycle or reuse uncontaminated spoil either onsite or off-site • Manage off-site waste re-use in accordance with relevant EPA resource recovery exemptions and requirements • Dispose of waste at appropriately licensed facilities. 	Implementation of mitigation measures 91 - 94.	Inspection records	At all times	EIS Appendix A CoA C22(d)(i)

2 Environmental requirements

2.1 Relevant legislation

Legislation relevant to site establishment works under this approval includes:

- *Protection of the Environment Operations Act 1997 (POEO Act)*;
- *Environmental Planning and Assessment Act 1979 (EP&A Act)*;
- *Contaminated Lands Management Act 1997 (CLM Act)*;
- *Biodiversity Conservation Act 2016 (BC Act)*; and
- *Heritage Act 1977*.

2.2 Conditions of approval

The CoAs relevant to this plan are listed in Appendix A (with the exception of CoA C22, which is addressed in Section 1.4).

2.3 Revised environmental management measures

Refer to Appendix A for all REMMs relevant to the development of this plan.

2.4 Additional approvals, licences, permits and requirements

An EPL will be obtained for the project as it will trigger a scheduled activity listed in Schedule 1 (Clause 35: road construction) of the POEO Act. This licence will include premises boundaries that will incorporate ancillary facilities, including the site establishment works at the sites as required.

Other requirements for site establishment works may include the following:

- Road Occupancy Licence
- Trade Waste Agreement
- Utilities Agreements (to be managed in accordance with the Utilities Management Strategy).

2.5 Guidelines

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

- Roads and Maritime Services QA Specifications G36 – Environmental Protection (Management System) (G36)
- Roads and Maritime Services Specification D&C G38 – Soil and Water Management (G38)
- Roads and Maritime Services Specification D&C G40 – Clearing and Grubbing (G40)
- Managing Urban Stormwater: Soils and Construction. Volume 2D: Main Road Construction, DECC (2008)
- Managing Urban Stormwater: Soils and Construction. Volume 1: 'Blue Book', Landcom (2004)
- Roads and Maritime Construction Noise and Vibration Guidelines (Roads and Maritime 2016)
- Roads and Maritime Noise Mitigation Guidelines (Roads and Maritime, 2015)
- Roads and Maritime Noise Criteria Guideline (Roads and Maritime, 2015)

- Road and Traffic Authority Environmental Noise Management Manual (ENMM) (RTA 2001)
- NSW Interim Construction Noise Guideline (ICNG), Department of Environment and Climate Change 2009
- NSW Industrial Noise Policy (INP), Environment Protection Authority 2000)
- NSW Road Noise Policy (RNP), Department of Environment Climate Change and Water 2011
- NSW Assessing Vibration – a Technical Guideline (AVTG), Department of Environment and Conservation 2006
- British Standard BS 6472-2008, 'Evaluation of human exposure to vibration in buildings 1-80Hz)
- British Standard 7385: Part 2-1993 'Evaluation and Measurement for Vibration in Buildings'
- German DIN 4150-1999 Structural vibration Part 3: 1999 Effects of Vibration on Structures (DIN 1999)

3 Site establishment works

3.1 Site establishment works overview

Site establishment works are scheduled to commence in late September 2018 (on approval of this SEMP) until the CEMP is approved (scheduled to be November 2018). Once the CEMP is approved the Project is considered to have entered the construction phase and the site establishment phase has concluded. Subsequently, any remaining works for the purpose of preparing ancillary facilities will be undertaken as part of the construction phase.

The site establishment works, and their indicative timeframes, proposed within this SEMP are summarised in below. Note, activities as described below may overlap and therefore timeframes should not be considered cumulatively with regards to total time required for works to be completed. All site works will be generally consistent, excluding Campbell Road where no demolition is required, and the site was partially prepared (hardstand and fencing) by the New M5 Project prior to handover.

- A. Site preparation, including (approximately one to three weeks per site):
 - Provision of site security such as ATF fencing panels and signage
 - Provision of minimum WHS requirements including:
 - Toilet facilities
 - Offices
 - Lunch rooms.
 - Survey and site investigation works including:
 - Ground penetrating radar or electromagnetic ground investigation
 - Contamination investigation.

- B. Site establishment activities including (approximately two to twelve (where demolition is required) weeks):
 - Installation of environmental controls including:
 - Erosion and sediment controls, including installation of rip rap and drainage sump at entry
 - Further site investigations
 - Treatment of contaminated materials (if required)
 - Delineation of sensitive areas and temporary fencing.
 - Site access including:
 - Traffic controls
 - Internal roads
 - Installation of gates.
 - Site preparation including:
 - Demolition of existing structures (at Pymont Bridge Road site and Parramatta Road East and West site only)
 - Protection of existing services

- Realignment of Bignell Lane (at Pyrmont Bridge Road site only)
- Management of contamination
- Vegetation and tree removal (at Parramatta Road East and West site only)
- Installation of new services (including high voltage (HV) cables and kiosk), drainage and communications.
- Site installation involving:
 - Office block and shipping containers prior to foundation works
 - Foundations and sealing of surfaces
 - Staff amenity structures and fitout
 - Workshop structures and fitout
 - Water treatment plant and water tank including fitout including excavation and concrete works
 - Installation of fuel and chemical storage activities
 - Formalisation of on-site car parking (at Campbell Road site and Parramatta Road East and West site only)
 - Formalisation of roads and external connections
 - Establishment and use of crane.
- Fit out, commissioning and install of remaining site infrastructure including (approximately one week):
 - Fuel storage
 - Site sealing
 - Chemical storage
 - Hazardous material storage
 - Stockpile/laydown.

The project aims to restrict working hours for site establishment between;

- 7am – 6pm Monday to Friday
- 8am – 6pm Saturday.

Some works may need to occur outside of standard construction hours, for example; works that are required to be conducted under a Road Occupancy Licence such as the delivery of oversized sheds or equipment. These works will be carried out in accordance with the requirements of the project EPL or the Out-of-Hours Works Protocol.

Activities that result in high noise impacts will be subject to respite periods as outlined in the Site Establishment Construction Noise and Vibration Impact Statement (CNVIS) and CoA E72, which states:

Except as permitted by an EPL, highly noise intensive works that result in an exceedance of the applicable NML at the same receiver must only be undertaken:

(a) between the hours of 8:00 am to 6:00 pm Monday to Friday;

(b) between the hours of 8:00 am to 1:00 pm Saturday; and

(c) in continuous blocks not exceeding three (3) hours each with a minimum respite from those activities and works of not less than one (1) hour between each block.

High noise impacts works include those considered as 'Highly noise intensive works' in the CoA Definitions, being:

- Use of power saws, such as used for cutting timber, rail lines, masonry, road pavement or steel work
- Grinding metal, concrete or masonry
- Rock drilling
- Line drilling
- Vibratory rolling
- Rail tamping and regulating
- Bitumen milling or profiling
- Jackhammering, rock hammering or rock breaking
- Impact piling.

4 Potential environmental impacts

4.1 Traffic and transport

4.1.1 Parking and access

The proposed site access for both light and heavy vehicles at all sites is presented in **Table 4-1**. Site access at all sites has been developed to limit movements on local streets, specifically for heavy vehicles. Local roads identified as potential access routes in the EIS and SPIR included Alt Street at the Parramatta Road West site, Alt Street and Bland Street (east) at the Parramatta Road East site and Albert Street at the Campbell Road site. Additional local roads proposed for heavy vehicle use during site establishment include Bland Street (west) and Bignell Lane.

The use of Bland Street east as originally included in the EIS is no longer proposed and has been replaced with Bland Street west, which is considered a more appropriate option with regards of reducing potential amenity and safety impacts for Haberfield Public School, located in close proximity to the site access originally proposed in the EIS. As a result, the site access increases from about 250m to about 400m from the nearest non-residential sensitive receiver.

Additionally, Bignell Lane is proposed for use as this is an existing site access, and no other access is possible until building demolition has commenced. It is understood that Bignell Lane may be controlled by RMS as part of the Project and as such may not be considered a local road for the purpose of the Project. Where required, as determined in consultation with DPE, preparation of traffic and pedestrian impact assessments will be prepared to support requests for heavy vehicles on local roads not included in the EIS/SPIR.

Dilapidation Reports will be prepared as per CoA E61 for local roads (and associated infrastructure within the road reserve) proposed to be used by heavy vehicles for works associated with the CSSI, before the commencement of use by such vehicles.

Limited on site worker parking will be available during the site establishment phase at each ancillary facility, except where this is forbidden for safety reasons (for example, during demolition works), and will be supplemented by on street parking (if required) until specific nominated parking areas and satellite parking facilities are established. Parking demand is expected to be very low during early stages of works, and partially offset by relocation of existing businesses in the areas of the Parramatta Road East and West and Pyrmont Bridge Road ancillary facilities.

Parking and site access requirements, along with appropriate mitigation of potential impacts, is detailed in the CPAS required under CoA E54 and REMM TT04. The CPAS will be prepared in consultation with affected stakeholders and will be approved for use by DPE prior to any parking impacts, including the site establishment phase.

Table 4-1 Indicative access routes to and from the sites

No	Site	Access and egress points	
		Heavy Vehicles	Light Vehicles
C1b	Parramatta Road West civil site	Parramatta Road (left-in, left-out) Alt Street south (between site access point and Parramatta Road) Bland Street south (between site access point and Parramatta Road)	Alt Street south (between site access point and Parramatta Road) Bland Street south (between site access point and Parramatta Road)

C3b	Parramatta Road East civil site	Parramatta Road (left-in, left-out). Alt Street north (between site access point and Parramatta Road)	Parramatta Road (left-in, left-out) Alt Street north (between site access point and Parramatta Road)
C9	Pymont Bridge Road tunnel site	Mallett Street (left-in) Bignell Lane (left-in) Pymont Bridge Road (left-out).	Pymont Bridge Road (left-in and left-out).
C10	Campbell Road civil and tunnel site	Princes Highway, Canal Road, Burrows Road and Campbell Road.	Princes Highway, Canal Road, Burrows Road and Campbell Road.

4.1.2 Community Information Centre

The M4-M5 Link Mainline Tunnels Community Information Centre will have a minimum of four parking spaces including one DDA compliant¹ space, for the exclusive use of visitors to the Centre. These spaces will be located separately to the construction parking area and their location will be determined once the site layout is finalised.

The centre will also be wheelchair accessible and have safe, delineated pedestrian access, separate from site-inducted staff access. Delineations will be obvious and easy to follow, in order to avoid any confusion by pedestrians and motorists when visiting the centre.

4.1.3 Workforce and vehicle movements

Indicative workforce and vehicle movements, specifically for the establishment phase, was not included in the EIS. However, estimates based on activities required as described in this document are provided in **Table 4-2**.

Table 4-2 Indicative site establishment vehicle numbers per site

Activity	Heavy Vehicles/day	Light vehicles/day
Demolition works	40	50
All other works	10	50

There is potential for cumulative traffic impacts during site establishment works at both the Campbell Road and the Parramatta Road (East and West) sites. This is due to the site establishment works occurring concurrently with construction works of the New M5 project to the Campbell Road site and the M4 East project at the Parramatta Road (East and West) sites.

. As described in Section 4.1.1, parking and site access requirements, along with appropriate mitigation of potential impacts, is detailed in the CPAS required under CoA E54 and REMM TT04.

Traffic and transport management and mitigation measures are listed in Appendix B.

¹ Disability Discrimination Act 1992

4.2 Air quality

There is potential for air quality impacts at the site during site establishment works due to the following;

- Dust as a result of ground disturbance and demolition
- Emissions due to the use of plant, machinery and vehicles
- Dust due to the storage of equipment.

The EIS concluded that impacts on air quality would be minor in nature. Any potential impacts would be managed by implementing the management and mitigation measures listed in Appendix B.

4.3 Noise and vibration

Proposed site establishment works may result in potential noise and vibration impacts through the use of heavy machinery hammering activities on hardstands/slabs/plinths, demolition of buildings and walls and loading out demolition rubble. Site establishment works will occur during standard construction hours where possible, however some works may be required outside standard construction hours.

Standard construction hours as approved in the CoA are as follows:

- Monday to Friday: 7:00 am to 6:00 pm
- Saturday: 8:00 am to 6:00 pm
- At no times on Sundays and Public Holidays.

Works outside of standard construction hours may be needed due to the requirements of Road Occupancy Licences for activities such as the delivery of oversize items and/or the installation of temporary hoardings (where the positioning of utilities such as overhead power lines prove to be an obstruction). Works outside of standard construction hours would be permitted providing they meet the requirements of CoA E73, the EPL or if they are undertaken as per the Out-of-Hours Work Protocol (as per CoA E77).

Activities that result in high noise impacts (such as concrete hammering, installation of utilities) will be subject to respite periods as outlined in the Site Establishment CNVIS. Site establishment works will be managed in accordance with the CoAs, this SEMP and the Site Establishment CNVIS which outlines the mitigation measures required for works outside of normal construction hours during site establishment activities at the site.

In accordance with CoA E89, LSBJV will prepare and implement a Noise Insulation Program (NIP) for receivers at which requirements of CoA E88 apply. The NIP must detail at receiver noise mitigation in the form of at-property treatments, which must be offered prior to the commencement of works (including site establishment works). The NIP will be approved by DPE prior to implementation.

Potential noise and vibration impacts and further management and mitigation measures such as final detail of the noise wall requirements, are detailed in the Site Establishment CNVIS.

4.4 Land use and property

The Campbell Road site has most recently been used as an ancillary facility for the WestConnex New M5 project. Therefore, land use would be consistent with existing land use. The Pyrmont Bridge Road site has most recently comprised of commercial and light industrial land uses. Land uses surrounding the site include light industrial, local centre, mixed use, special purpose infrastructure (educational), residential and commercial. The Parramatta Road East and West sites were most recently used for commercial purposes.

Any ongoing potential land use and property impacts during site establishment activities would be managed in accordance with the management and mitigation measures listed in Appendix B. Crime Prevention Through Environmental Design (CPTED) review will be undertaken as part of the design review for the final layout of the site as per REMM UD2.

4.5 Urban design and visual amenity

Chapter 13 and Appendices L, M and O of the EIS assessed potential urban design and visual amenity impacts. Potential visual impacts would be related to the presence of equipment, machinery, site establishment facilities and personnel.

For the Campbell Road site the EIS identified that overall visual impacts at the site would be low to high depending on the receiver. Residents in houses on Campbell Street would experience a high impact (the highest anticipated at the site) similar to that experienced for the previous construction activities in this location.

For the Pymont Bridge Road site the EIS identified that overall visual impacts at the site would be low to high-moderate depending on the receiver. Residents in houses on Pymont Bridge Road, Booth Street and Mallett Street would experience a high-moderate impact (the highest anticipated at the site). Overall night lighting impacts would range from low to moderate-low. Residents on Booth Street and Mallett Street would experience a moderate-low impact (the highest anticipated at the site) from lighting. Given that the site is located about 4,500 metres north of Sydney (Kingsford Smith) Airport at Mascot, lighting from the site is not anticipated to affect aircraft operations. Consultation about positioning of aviation hazard lighting with authorities listed in E124 is therefore not required regarding the Pymont Bridge Road site.

For the Parramatta Road East and West site the EIS identified that overall visual impacts at the site would be low to high depending on the receiver. Residents in surrounding residential blocks on Alt Street, Bland Street and Parramatta Road would experience low to moderate night lighting impacts (the highest anticipated at the site). Motorists and pedestrians are expected to experience low overall impacts.

Potential urban design and visual amenity impacts would be managed in accordance CoA's C25, E116, E122, E123 and E124 (E124 for Campbell Road only), REMMs LV2 and LV7 and the management and mitigation measures listed in Appendix B. CPTED review will be undertaken as part of the design review for the final layout of the site as per REMM UD2.

4.6 Social and economic

At all sites social impacts would largely be related to traffic and transport (refer to Section 4.1), air quality (refer to Section 4.2), noise and vibration (refer to Section 4.3) and visual amenity impacts (refer to Section 4.5). These potential impacts would be managed in accordance with the management and mitigation measures for their respective aspects.

The project is expected to contribute to an increase in construction and project-related jobs. It will also provide a stimulus for the local economy (local cafes, restaurants and shops) due to the influx of the project workforce.

4.7 Soil and water quality

The EIS identified that the key soil and water quality issues as a result of the site establishment works would relate to soil erosion and sedimentation as a result of ground disturbance and/or storage of stockpiled materials. This could potentially lead to the sedimentation of urban stormwater infrastructure and nearby waterways.

All sites are sites of potential or known contamination (refer to Section 4.8) and the EIS also identified the potential presence of acid sulfate soils (ASS) at the Campbell Road site. This presents a further risk that any potential erosion and/or run off material may acidify or pollute receiving waterways.

There are further potential soil and water quality impacts as a result of site establishment works due to potential accidental spills and/or leakages of fuels or chemicals required for machinery. As well as polluting soils, there would be potential that local waterways could also be impacted due to stormwater runoff being conveyed to local waterways. Any potential soil and water quality impacts would be managed by implementing the management and mitigation measures listed in Appendix B and implementing the erosion and sediment control plan (ESCP) (refer to Section 5.2.5).

4.8 Contamination

4.8.1 Campbell Road site

The EIS identified the Campbell Road site as being a site of known contamination, primarily due to historic land used on the site including quarry and brick works from 1908 until 1962, and the Alexandria Landfill from 1988 until 2002. Contaminants of potential concern at the site include;

- Landfill gases
- Metals
- PAHs
- Asbestos
- TRH
- SVOCs
- VOCs
- BTEXN
- ASS.

As the site has been used for the New M5 project it has undergone Phase 1 and Phase 2 contamination investigations. A remedial action plan (RAP) has also been prepared and implemented for part of the site as part of the New M5 project.

4.8.2 Pyrmont Bridge Road site

The EIS identified the Pyrmont Bridge Road West site as being a site of potential contamination, primarily due to mechanical workshops on the site that may have stored and handled oils, fuels and solvents and the presence of underground storage tanks. Contaminants of potential concern at the site include;

- Metals
- TRH
- BTEXN
- PAHs
- VOCs
- Asbestos
- PCB

4.8.3 Parramatta Road East and West site

The Parramatta Road East and West site is known to contain underground storage tanks. There is potential that the tanks may have leaked and contaminated the surrounding soils and groundwater. The EIS identified that the Parramatta Road East site is located on land previously utilised for commercial purposes (including a car dealership and associated maintenance facilities). Previous soil and groundwater sampling works have been carried out (GHD 2014, GHD 2015) which indicate some exceedances of contaminant concentrations above the ASC NEPM (NEPC 2013) health investigation levels and groundwater investigation levels. Contaminants of potential concern at the site include:

- Metals
- TRH
- BTEX
- PAHs
- VOCs
- Asbestos
- PCBs
- OCPs
- OPPs.

The Parramatta Road West site is located on land previously utilised for commercial purposes (including a car dealership, a newsagency and television repairs and sales business). Previous soil and groundwater sampling has been carried out (GHD 2015). No asbestos was detected at the sampling locations and there were no exceedances of the ASC NEMP health investigation levels for proposed recreational open space and commercial/industrial land uses. GHD (2015) classified the Parramatta Road East site as a site of moderate potential for contamination.

At all sites there is potential for ground disturbance to result in the spread of contaminated material if managed inappropriately, through cross contamination and contamination of soils and/or water outside the project area. In addition, there is potential for contaminants to be mobilised during demolition, which could then be inhaled/ingested as dust.

The site establishment works at all locations would be managed in accordance with the management and mitigation measures listed in Appendix B, as well as CoA's E181, E182, E183 and E184 (refer to Section 5.2.11).

4.9 Flooding and drainage

4.9.1 Campbell Road site

Chapter 17 and Appendix Q of the EIS assessed potential flooding and drainage impacts. The Campbell Road site is located outside the 20-year ARI (annual recurrence interval) and outside the PMF (probable maximum flood) extent associated with mainstream flooding. In addition, the New M5 project has included measures to protect the site from flooding, including the development of a stormwater drainage strategy. As a result, it is considered unlikely that there would be any flooding and drainage impacts at the site as a result of the site establishment works.

4.9.2 Parramatta Road East and West site

The Parramatta Road East and West site is located within the Dobroyd Canal (Iron Cove Creek) catchment. Parramatta Road West site is located outside of 100-year ARI flood extent for mainstream flooding and outside the PMF extent associated with mainstream flooding. Overland flow paths are along Parramatta Road, Bland Street and Alt Street. Given that no topographic changes are proposed to Parramatta Road, Bland Street and Alt Street, it is considered unlikely that there would be any flooding and drainage impacts at the site as a result of the site establishment works. Parramatta Road East site is located outside the PMF extent associated with mainstream flooding. There are no anticipated potential impacts at the site as a result of the site establishment works.

4.9.3 Pyrmont Bridge Road site

At Pyrmont Bridge Road, the following flood impacts occur at the lowest point of Bignell Lane, based upon the current (i.e. pre-site establishment) arrangement:

- A flooding depth of 0.1m – 0.2m would be experienced during a 10-year ARI
- A flooding depth of one metre would be experienced during a 100-year ARI.

Chapter 17 and Appendix Q of the EIS indicates flooding impacts would be reduced as a result of site establishment works, as overland flow paths would be less concentrated and site drainage would be installed as part of the project.

Regardless, the risk of flooding remains as the Pyrmont Bridge Road site is located the 20-year ARI it therefor is subject to REMM FD01 and requires a Flood Mitigation Strategy (FMS) to be prepared (refer to Section 5.2.12).

4.10 Biodiversity

The Campbell Road site has most recently been used as an ancillary facility for the New M5 project. The site has been cleared of vegetation and is of low biodiversity value. No vegetation

removal is required as part of the site establishment works. Therefore, any impacts to biodiversity are unlikely as a result of the site establishment works.

The Pyrmont Bridge Road site is located in a dense urban environment that is devoid of vegetation and is of low biodiversity value. No vegetation removal would be required as part of the site establishment works. Therefore, any impacts to biodiversity are unlikely as a result of the site establishment works.

Tree removal would be required at the Parramatta Road East and West site. It is currently understood that about five trees would be removed to facilitate the project. These tree species, which are likely to be removed may include the following species: *Jacaranda mimosifolia* (Jacaranda), *Lophostemon confertus* (Queensland Brush Box), *Juniperus chinensis* (Green Spartan Juniper), *Musa sp.* (banana tree species), *Lophostemon confertus*, *Archontophoenix Alexandrea* (Alexander Palm), *Araucaria heterophylla* (Norfolk Island Pine). The total number of trees to be removed would be determined during pre-clearing/demolition/construction survey works, carried out prior to site establishment by the Project Ecologist.

All opportunities for retaining additional trees will be explored during detailed design. Tree removal, pruning and maintenance work will be carried out by an arborist with a minimum AQD Level 2 qualification in accordance with *AS 4373-2007 Pruning of Amenity Trees* and the *NSW WorkCover Code of Practice for the Amenity Tree Industry* (1998) and advice provided by an arborist with a minimum AQF Level 5 qualification in Arboriculture (or equivalent). The project will provide replacement trees as per CoA E177 and CoA E178 (to be detailed within the CEMP Flora and Fauna Management Sub-plan).

The M4-M5 Link EIS Biodiversity Assessment Report identified the Grey-headed Flying-fox, which is listed as a vulnerable species under the BC Act, is likely to use some of the vegetation in the project footprint for foraging (Eco Logical Australia Pty Ltd 2017). The assessment concluded that the impacts to the species were not significant. This was due to the large expanses of available habitat in the locality and due to the project not impacting on any roosting sites or camps.

Biodiversity management and mitigation measures to be implemented in the unlikely event that biodiversity impacts occur are included in Appendix B.

4.11 Groundwater

Site establishment works would generally involve works that require limited excavations. Most excavations would be related to the installation of utilities. This would involve trenching to various depths. The EIS considered potential groundwater impacts in Chapter 19 and Appendix T. Standing water levels (SWL) within at the Campbell Road site varied from 2.39 m below ground level to 16.37 m below ground level. SWL in proximity to the Pyrmont Bridge Road site varied from 2.28 m below ground level to 8.71 m below ground level. SWL at the Parramatta Road East and West site was typically greater than two metres below ground level, however they varied from 0.58 m below ground level on one occasion up to 2.73 m below ground level. It is likely that excavations during site establishment works would be to a maximum depth of about two metres. It is therefore considered unlikely that groundwater would be encountered. As all the sites are either known to be contaminated or have potential to be contaminated, if any groundwater is encountered during site establishment works it is likely that that the groundwater will also be contaminated and would require appropriate handling and management prior to being discharged, as per the measures listed in Appendix B.

4.12 Non-Aboriginal heritage

4.12.1 Campbell Road

As the Campbell Road site has most recently been used as an ancillary facility for the New M5 project it is of limited heritage value. Chapter 20 and Appendix U of the EIS summarised that the key non-Aboriginal heritage items in the vicinity of the site include the Central Brick and Tile Company kilns (a potential item of archaeological heritage) and the terrace group at 2-34 Campbell

Road (an item of built heritage listed in the Sydney LEP 2012 as an item of local significance (item I12)). The EIS concluded any potential impacts to the archaeological remains from the Central Brick and Tile Company kilns are being managed as part of the New M5 project. Impacts as a result of site establishment works are therefore considered unlikely. In addition, item I12 may potentially be impacted by settling or vibration impacts, however this is unlikely during site establishment works as the activities involved are relatively non-vibration intensive. Non-Aboriginal heritage management and mitigation measures are listed in Appendix B.

4.12.2 Pyrmont Bridge Road

As identified in the EIS, the site falls within a Historical Archaeological Management Unit (HAMU) as a result of:

- Various items of local heritage significance listed in the Marrickville LEP 2011, Leichhardt LEP 2013 and the Sydney LEP 2012 that are in close proximity to the Pyrmont Bridge Road site, including;
 - Kerb and gutter, Chester Street, Camperdown, Leichhardt LEP 2013 (ID I613)
 - Warehouse, including interiors, 52–54 Pyrmont Bridge Road, Camperdown, Leichhardt LEP 2013 (ID I616)
 - Former Grace Bros Repository including interiors, 6–10 Mallett Street, Camperdown, Sydney LEP 2012 (ID I2242)
 - Bridge Road School (former Camperdown Public School), including interiors, 127 Parramatta Road, Camperdown, Marrickville LEP 2011 (ID I5)
- Potential heritage item (not listed) that would be directly impacted by the demolition works during the construction phase; the former Bank of NSW building at 164 Parramatta Road
- Two items of potential archaeological heritage significance in proximity to the works; Bignell Lane (moderate to high potential) and Parramatta Road/Pyrmont Bridge Road (low potential).

No listed non-Aboriginal heritage items would be directly impacted by the site establishment works at the Pyrmont Bridge Road site. A feasibility study into the potential retention of the building façade has been undertaken as per CoA E160. A Heritage Archival Recording and Salvage Report for the façade will be prepared, as per CoA E163, E164 and E165.

As per CoA E168 and E169, as the works are located within a HAMU they will be managed in accordance with a Historical Archaeological Research Design and Excavation Methodology, prepared by the Excavation director.

4.12.3 Parramatta Road East and West

Five potential heritage items were identified in close proximity to the Parramatta Road East and West site. The potential heritage items are all single storey brick Federation cottages located outside of the project footprint, on Bland and Alt streets. The sites are outside of the Haberfield heritage conservation area (HCA) and were not assessed as part of the Project. As identified in the EIS, the site falls within HAMU 1, however the EIS concluded that significant archaeological remains are unlikely to be present. Based on the information provided in the EIS, it can be concluded that potential impacts to non-Aboriginal and archaeological heritage are unlikely during site establishment works.

As the ancillary facility located within a HAMU works would be managed in accordance with a Historical Archaeological Research Design and Excavation Methodology, prepared by the Excavation director, as per CoA E168 and E169.

Non-Aboriginal heritage management and mitigation measures are listed in Appendix B.

4.13 Aboriginal heritage

All sites are located within highly disturbed environments. Chapter 21 and Appendix V of the EIS assessed potential Aboriginal heritage impacts. The EIS did not identify any sites or potential sites of Aboriginal heritage in the vicinity of the proposed ancillary facility sites. As a result, it is unlikely that the site establishment works at the sites would impact on Aboriginal heritage. Management and mitigation measures to avoid, minimise and mitigate potential impacts to previously unidentified items of Aboriginal heritage are included in Appendix B.

4.14 Greenhouse gas

Greenhouse gases in relation to the site establishment activities at the site would be minor, and typically associated with the use of plant, vehicles and electricity use. Management and mitigation measures are included in Appendix B.

4.15 Resource use and waste minimisation

Resource use as a result of site establishment works at the site would be limited, and would largely be made up of construction materials (concrete, asphalt, steel, fuel etc.), water and power. Waste generated as a result of site establishment works would largely be made up of material generated from the demolition of buildings on site. Resource use and waste minimisation management and mitigation measures are listed in Appendix B.

4.16 Climate change risk and adaption

Chapter 24 of the EIS evaluated potential climate change risk and adaption impacts. Potential climate change risk and adaption impacts related to the site establishment works at the site largely relate to flooding as a result of increased intensity and frequency of extreme rainfall events. Refer to Section 4.9 for detail on flooding.

4.17 Hazard and risk

Potential hazard and risk impacts at the site would include accidental spills of fuels and/or chemicals which could result in contamination of soils and/or waterways, mismanagement of contaminated material, emission of gasses from contaminated material, and potential light spill that could interfere with aircraft operations at Sydney Airport (relevant to the Campbell Road site). It is considered that these potential impacts can be managed by implementing the management and mitigation measures listed in Appendix B.

4.18 Cumulative impacts

Chapter 26 of the EIS assessed potential cumulative impacts. Cumulative impacts are caused by spatial and temporal proximity of projects to one another. This can lead to additional traffic, access, noise and vibration, air quality and visual amenity impacts for sensitive receivers, and in turn can lead to construction fatigue. The EIS identified other projects that may lead to construction fatigue and cumulative impacts at the site. These included the New M5 Project, the M4 East Project and the Sydney Metro City and Southwest (Chatswood to Sydenham) project.

The New M5 project has until recently used the Campbell Road site as an ancillary facility. The New M5 project will continue to use the area to the south of the Campbell Road site as an ancillary facility until 2020. The New M5 works would therefore overlap with site establishment works at the Campbell Road site. The most likely impacted sensitive receivers are residents located on Campbell Road, Campbell Street, Barwon Park Road and Crown Street in addition to users of Sydney Park. Potential impacts include construction traffic, parking, construction noise and vibration, dust and visual impacts. The Sydney Metro City and Southwest project Marrickville dive site is located about one kilometre northwest of the site. Main tunnelling works at the Marrickville dive site have begun and are proposed to last until 2020. They would therefore overlap with the

site establishment works at the Campbell Road site, however given their distance from the Campbell Road site cumulative impacts would be negligible.

The M4 East project is located in close proximity to the Parramatta Road East and West site. Construction for the M4 East project is scheduled to continue until 2019. During the overlap period, the works at the Parramatta Road East and West site would be focused on site establishment works such as building demolition and utility works. The residential areas likely to be most impacted by construction fatigue include Alt Street, Bland Street and properties along Parramatta Road. Potential impacts include construction traffic, parking, construction noise and vibration, dust and visual impacts.

Cumulative impacts would be managed through the effective implementation of environmental controls as detailed within this document, as well as the CCS, prepared in accordance with CoA B1.

5 Site establishment risk assessment and management approach

5.1 Site Establishment Risk Assessment

This Site Establishment Risk Assessment has been prepared by LSBJV to supplement the Environmental Risk Analysis conducted as part of the EIS and SPIR. The identification of significant site establishment activities and associated impacts that could eventuate during the Project is central to the selection of appropriate environmental safeguards.

The risk assessment has been prepared for the site establishment works described in this document, to assess the key environmental risks identified in Sections 3 and 4. The risk management process involved an assessment of all specific 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, REMMs, and review of the environmental risks identified by the EIS and subsequent SPIR. The risk matrix identified in **Table 5-1** has been used to undertake the risk assessment located in **Table 5-2**.

An environmental risk assessment workshop was held on 24 August for the Project to refine this risk assessment.

Table 5-1: Risk assessment matrix

Risk Analysis Risk Classification = Consequence x Likelihood		LIKELIHOOD				
		5 Very high*	4 High*	3 Medium*	2 Low*	1 Very low*
CONSEQUENCE	5 Very large Major irreversible environmental harm on-site and/or off-site damage.	25 Critical	20 Significant	15 Significant	10 Moderate	5 Minor
	4 Large Major on-site and/or off-site impacts with clean up or remedy requires significant effort.	20 Significant	16 Significant	12 Moderate	8 Minor	4 Minor
	3 Medium Moderate on-site and/or off-site impacts (but no significant irreversible damage) with clean up or remedy work incurring a moderate level of effort	15 Significant	12 Moderate	9 Moderate	6 Minor	3 Minor
	2 Small Treatable on-site impact with clean up or remedy work incurring a small level of effort.	10 Moderate	8 Minor	6 Minor	4 Minor	2 Negligible
	1 Very small Reversible and insignificant environmental impact.	5 Minor	4 Minor	3 Minor	2 Negligible	1 Negligible

* It is necessary to refer to LLE 109 Engineering Risk and Opportunity Management System (ROMS) in order to fully apply this risk assessment matrix. The information provided here is a summary.

Table 5-2: Aspect and impact register

Issue	Potential impact	Likelihood	Consequence	Risk level prior to mitigation	Mitigation Measure	Likelihood	Consequence	Risk level following mitigation
Site establishment including vegetation clearing and demolition	Clearing outside of an approved area, including: <ul style="list-style-type: none"> Accidental clearing outside of the project boundaries Accidental clearing beyond the requirements of the Project Approval 	2	4	8 Minor	<ul style="list-style-type: none"> Toolbox talks regarding clearing limits Clearly delineate the Project footprint prior to clearing. 	1	4	4 Minor
	Impacts on unexpected threatened species, including microbats	2	4	8 Minor	<ul style="list-style-type: none"> Toolbox talks regarding the potential for unexpected threatened species Microbat surveys prior to site establishment activities performed by a suitably qualified ecologist. 	1	3	3 Minor
	Spreading of noxious weeds via personnel, plant / equipment, topsoil / mulch	2	2	4 Minor	<ul style="list-style-type: none"> Toolbox talks regarding the location and treatment of weeds Weeds within the construction footprint would be managed in accordance with the measures outlined in Weed Management Protocol. 	1	2	2 Negligible
	Generation of dust leading to amenity	3	3	9 Moderate	<ul style="list-style-type: none"> Site establishment activities with the potential to generate dust will be modified or ceased during unfavourable 	3	2	6 Minor

Issue	Potential impact	Likelihood	Consequence	Risk level prior to mitigation	Mitigation Measure	Likelihood	Consequence	Risk level following mitigation
	and/or community nuisance				<p>weather conditions to reduce the potential for dust generation</p> <ul style="list-style-type: none"> • Access roads within Project sites will be maintained and managed to reduce dust generation • Storage of materials that have the potential to result in dust generation will be minimised within Project sites at all times • During high wind and/or dry conditions, programming of dust generating activities is to be considered in order to reduce nuisance to neighbouring properties • Demolition activities will be planned and carried out to minimise the potential for dust generation • Adequate dust suppression will be applied during all demolition works required to facilitate the Project. 			
	Erosion and sedimentation impacting downstream waterways due to exposed land, inadequate controls or control failure	4	3	12 Moderate	<ul style="list-style-type: none"> • Erosion and Sediment Control Plans (ESCPs) will be prepared for all work and implemented in advance of site disturbance • All on site personnel will undergo a site induction and ongoing toolbox talks that will detail erosion and sediment 	3	3	9 Moderate

Issue	Potential impact	Likelihood	Consequence	Risk level prior to mitigation	Mitigation Measure	Likelihood	Consequence	Risk level following mitigation
					<p>control management measures</p> <ul style="list-style-type: none"> • Further targeted training to key on site personnel • Environmental Work Method Statements (EWMS) will be prepared for high risk activities • A soil conservation specialist will be engaged if relevant to provide advice regarding erosion and sediment control • Hardstand areas and surrounding public roads will be cleaned as required using methods such as brooms, bobcat attachments or street sweepers. 			
	Inappropriate disposal of waste (including demolition, vegetation and hazardous / special waste) or disposal at an unlicensed waste facility	2	4	8 Minor	<ul style="list-style-type: none"> • All on site personnel will undergo a site induction and ongoing toolbox talks that will detail waste and resource management measures • Vegetation disposal in accordance with the FFMP and Weed Management Protocol • Hazardous Materials (HAZMAT) surveys and removal of asbestos prior to demolition activities • Suitably licensed waste contractors will be used for the collection and transport of all non-domestic, retail and 	1	4	4 Minor

Issue	Potential impact	Likelihood	Consequence	Risk level prior to mitigation	Mitigation Measure	Likelihood	Consequence	Risk level following mitigation
					commercial wastes for either offsite processing and/or disposal to an appropriately licensed facility. Receipts for waste transfer and disposal will be checked to ensure all details are correct and retained for audit purposes.			
	Complete / partial loss of heritage value for future generations	3	3	9 Moderate	<ul style="list-style-type: none"> A suitably qualified archaeologist will oversee and advise on matters associated with historic archaeology and to prepare a Historical Archaeological Research Design and Excavation Methodology (HARDEM) The LSBJV Excavation Director will be consulted where excavation works are required in the vicinity of potential archaeological sites Any excavations, intrusive works or other operations that have the potential to impact areas of known heritage, cultural or archaeological items must ensure works are performed in accordance with a HARDEM's Any item of potential Aboriginal archaeological / cultural heritage conservation significance, or human remains discovered during 	1	3	3 Minor

Issue	Potential impact	Likelihood	Consequence	Risk level prior to mitigation	Mitigation Measure	Likelihood	Consequence	Risk level following mitigation
					<p>construction will be managed in accordance with the Unexpected Heritage Items Procedure developed in accordance with CoA E157</p> <ul style="list-style-type: none"> Archival recording in accordance with CoA E163 as required. 			
	Missed opportunities to maximise the beneficial re-use of wastes	5	1	5 Minor	<ul style="list-style-type: none"> Resource recovery will be applied to the management of construction waste and will include the recovery of resources for reuse-reusable materials generated by the Project will be segregated for reuse on site, or off site where possible Recovery of recyclable resources generated during construction and demolition Recovery of resources for reprocessing, such as the onsite mulching of cleared vegetation for use in landscaping use, in the absence of a higher beneficial use being identified Segregation of resources for recycling for effective processing at recycling facility. 	3	1	3 Minor
	Noise and vibration impacts to sensitive receivers adjoining the compounds	5	4	20 Significant	<ul style="list-style-type: none"> Maximise works within the standard construction hours 	4	3	12 Moderate

Issue	Potential impact	Likelihood	Consequence	Risk level prior to mitigation	Mitigation Measure	Likelihood	Consequence	Risk level following mitigation
					<ul style="list-style-type: none"> Erection of temporary acoustic barriers where required Community updates will be provided throughout the site establishment works Noise mitigation measures identified in the CNVIS will be implemented. 			
	Generation of odours during demolition due to contaminated soils	1	3	3 Minor	<ul style="list-style-type: none"> Staging of works to minimise public exposure Application of water and/or odour suppressants as required. 	1	2	2 Minor
	Traffic impacts on local roads	3	2	6 Minor	<ul style="list-style-type: none"> Designated haul routes for heavy vehicles Drivers to be tool boxed on haulage routes during inductions. 	2	2	4 Minor
Site facility establishment	Amenity and visual impacts on nearby receivers due to compounds, including light spill and overshadowing	5	2	10 Moderate	<ul style="list-style-type: none"> Site establishment works will be conducted to minimise visual impacts. Where there is no noise wall or hoarding in place, boundary fencing will be installed to minimise visual, noise and air quality impacts on adjacent sensitive receivers Retention of existing vegetation or treatment of key temporary structures Minimise light spill from the project by directing construction lighting into the 	3	2	6 Minor

Issue	Potential impact	Likelihood	Consequence	Risk level prior to mitigation	Mitigation Measure	Likelihood	Consequence	Risk level following mitigation
					construction areas and ensuring the site is not over-lit.			
	Dust impacts to receivers due to stockpiling, exposed surfaces, material handling	4	3	12 Moderate	<ul style="list-style-type: none"> Construction activities with the potential to generate dust will be modified or ceased during unfavourable weather conditions to reduce the potential for dust generation Access roads within Project sites will be maintained and managed to reduce dust generation Storage of materials that have the potential to result in dust generation will be minimised within Project sites at all times During high wind and/or dry conditions, programming of dust generating activities is to be considered in order to reduce nuisance to neighbouring properties Stockpiling will be undertaken primarily within acoustic sheds Community liaison and notification. 	4	2	8 Minor
	Noise and vibration impacts on nearby receivers, including out of hours impacts	5	3	15 Significant	<ul style="list-style-type: none"> All on site personnel will undergo a site induction and ongoing toolbox talks that will detail noise and vibration requirements from this plan 	4	3	12 Moderate

Issue	Potential impact	Likelihood	Consequence	Risk level prior to mitigation	Mitigation Measure	Likelihood	Consequence	Risk level following mitigation
					<p>through inductions, toolboxes and targeted training</p> <ul style="list-style-type: none"> Noise and vibration monitoring undertaken in accordance with the Project's Construction Noise and Vibration Monitoring Program The safe working distances for vibration intensive plant would be complied with where feasible and reasonable. This would include the consideration of smaller equipment when working in close proximity to existing structures Out of Hours Works are to be carried out in accordance with the Project's Out-of-Hours-Works Protocol and EPL Erection of noise walls as identified in the CNVIS Community liaison and notification. 			
	Contamination of soil or water from spill or leak from plant / equipment	5	2	10 Moderate	<ul style="list-style-type: none"> Hazardous substance handling and use will be conducted away from drainage or stormwater lines and, wherever possible, within defined bunds Any refuelling undertaken on site will be undertaken in designated areas only, outside of riparian areas and 	5	1	5 Minor

Issue	Potential impact	Likelihood	Consequence	Risk level prior to mitigation	Mitigation Measure	Likelihood	Consequence	Risk level following mitigation
					<ul style="list-style-type: none"> well away from stormwater system inlets Any spills or leakages will be immediately contained and absorbed Spill containment kits will be placed at locations where there is direct discharge of stormwater to receiving waterways Plant and machinery maintenance schedule All sites are hardstand. 			
	Contamination of soil or water from spill or leak of dangerous or hazardous materials from bulk storage	2	4	8 Minor	<ul style="list-style-type: none"> The use of any hazardous substance that could result in a spill will be undertaken away from drainage or stormwater lines and, wherever possible, within defined bunds Any refuelling undertaken on site shall be undertaken in designated areas only, outside of riparian areas and well away from stormwater system inlets All spills or leakages will be immediately contained and absorbed Spill containment kits will be placed at locations where there is direct discharge of stormwater to receiving waterways 	1	4	4 Minor

Issue	Potential impact	Likelihood	Consequence	Risk level prior to mitigation	Mitigation Measure	Likelihood	Consequence	Risk level following mitigation
					<ul style="list-style-type: none"> All sites are hardstand Inspection regime of bulk storage facility. 			
	Erosion and sedimentation impacts on downstream waterways due to exposed land, inadequate controls or failure of controls	2	2	4 Minor	<ul style="list-style-type: none"> ESCPs will be prepared for all work and implemented in advance of site disturbance All on site personnel will undergo a site induction and ongoing toolbox talks that will detail erosion and sediment control management measures Further targeted training to key on site personnel EWMS will be prepared for high risk activities A soil conservation specialist will be engaged if relevant to provide advice regarding erosion and sediment control Hardstand areas and surrounding public roads will be cleaned as required using methods such as brooms, bobcat attachments or street sweepers. 	1	2	2 Negligible
	Inappropriate disposal of waste (including demolition, vegetation and hazardous / special waste) or disposal at an unlicensed waste facility	4	4	16 Significant	<ul style="list-style-type: none"> All on site personnel will undergo a site induction and ongoing toolbox talks that will detail waste and resource management measures Vegetation disposal in accordance with the FFMP 	3	2	6 Minor

Issue	Potential impact	Likelihood	Consequence	Risk level prior to mitigation	Mitigation Measure	Likelihood	Consequence	Risk level following mitigation
					<ul style="list-style-type: none"> and Weed Management Protocol HAZMAT surveys and removal of asbestos prior to demolition activities Suitably licensed waste contractors will be used for the collection and transport of all non-domestic, retail and commercial wastes for either offsite processing and/or disposal to an appropriately licensed facility. Receipts for waste transfer and disposal will be checked to ensure all details are correct and retained for audit purposes. 			
	Inappropriate disposal of office wastes	5	1	5 Minor	<ul style="list-style-type: none"> All recyclable solid wastes (paper/ cardboard/ plastic/ glass/ timber/ metals/ fluorescent lighting/ printer cartridges/ICT equipment) will be segregated for recycling purposes and volumes reported. Wherever possible, packaging should be avoided or minimised to prevent waste products being unnecessarily brought onto an operation. 	3	1	3 Minor
	Traffic and parking impacts due to increased number of construction vehicles, site access arrangements	5	3	15 Significant	<ul style="list-style-type: none"> Use of the virtual superintendent system Deployment of surveillance officers 	3	3	9 Moderate

Issue	Potential impact	Likelihood	Consequence	Risk level prior to mitigation	Mitigation Measure	Likelihood	Consequence	Risk level following mitigation
					<ul style="list-style-type: none"> Staff log-in at designated parking stations Limiting vehicle movements to designated entries and exits and haulage routes All on site personnel will undergo a site induction and ongoing toolbox talks that will detail traffic, transport and access management measures Communication and adherence to a Worker Code of Conduct Minimise construction vehicle parking on public roads Queuing and idling of construction vehicles in residential streets will be minimised Measures identified in the Traffic Control Plan (TCP) will be implemented for each ancillary facility/construction compound which requires direct access/egress onto the local/arterial road network. 			
	Tracking of mud at ancillary facilities access points	5	3	15 Significant	<ul style="list-style-type: none"> Site exits will be fitted with hardstand material or other appropriate measures to limit the amount of material transported off site (where required) Wheel washes at exit points 	3	3	9 Moderate

Issue	Potential impact	Likelihood	Consequence	Risk level prior to mitigation	Mitigation Measure	Likelihood	Consequence	Risk level following mitigation
					<ul style="list-style-type: none"> Street sweepers. 			
	Dust impacts at the breweries at PBR	4	3	12 Moderate	<ul style="list-style-type: none"> Standard dust suppression measures Community liaison with the brewery. 	3	3	9 Moderate

5.2 Site Establishment Management Approach

5.2.1 Site Establishment Management Plan

This SEMP has been prepared in accordance with CoA C22, and must be approved by the Secretary prior to the commencement of site establishment works. This SEMP contains the framework for environmental management of site establishment works at the Campbell Road site, Pymont Bridge Road site and the Parramatta Road East and West site. Once established, operation of the ancillary facilities would be managed in accordance with the project CEMP and relevant sub-plans as per CoA C23.

5.2.2 Sensitive area plans

The Project traverses a range of environmental and socially sensitive areas. To assist with planning and management, these site constraints are consolidated on a series of map-based sheets that extend the length of the Project. The SAPs include information pertaining, but not limited to:

- Noise sensitive receivers (e.g. residential dwellings, hospitals, educational institutions)
- Flora features, including threatened species and endangered ecological communities
- Aboriginal and non-Aboriginal heritage sites, including items, places, objects and conservation areas
- Local waterways
- Contamination, including potential or actual acid sulphate soil areas, contaminated sites or a “sensitive place” as defined in Roads and Maritime Specification G36 Clause 1.3.

SAPs will be used in conjunction with EWMS to help identify key risk areas and to promote ongoing communication to construction personnel during the Project.

As SAPs are a working element of the SEMP, they will be regularly reviewed to reflect true ground conditions and identify new environmentally sensitive areas. A SAP update will not require the SEMP to be updated as they will be document controlled within the Project’s Geographic Information System (GIS). The GIS can be accessed by all Project personnel via the Project’s Intranet. The current SAPs are presented in Appendix D.

5.2.3 Environmental Work Method Statement

EWMS will be prepared for activities that carry a high level of environmental risk as identified in the risk assessment, or if required under the Contract Specification. EWMS will be developed to manage and control activities that have the potential to negatively impact on the environment.

EWMSs will be reviewed by the relevant Construction Manager and then approved by the Environment and Sustainability Manager. Weekly inspections, including the completion of an environmental inspection checklist will be carried out. In addition, a monthly review against the relevant EWMS will be undertaken by environmental personnel to ensure that all controls are being followed. Any improvements will be noted, recorded and corrective actions implemented.

5.2.4 Utilities Management Strategy

A Utilities Management Strategy (UMS) developed in accordance with CoA E140 and approved by DPE will identify how utility works will be defined and managed. The UMS will be approved prior to any utilities works commencing and will include:

- A definition of low impact utility work. The definition must consider parameters including, but not limited to, type of works, duration of works, hours of works, noise impacts, and traffic and access impacts

- The functions of the Utility Coordination Manager
- A description of all utility works to be undertaken, including low impact utility works and how they meet the definition in subclause (a)
- The management measures that will be implemented to manage dust, noise, traffic, access and lighting impacts associated with low impact utility works. Utilities works to be undertaken prior to the commencement of construction will be managed in accordance with the UMS and this SEMP.

Where low impact utilities works are required during the site establishment period, these will be undertaken in accordance with the UMS. Currently no low impact works are proposed to occur during the site establishment phase. All other utilities works will occur during the construction period (i.e. following CEMP approval). Minor connections and disconnections will be undertaken in accordance with this SEMP.

5.2.5 Erosion and Sediment Control Plan

ESCPs will be prepared prior to any site establishment works commencing. The plans will contain site specific details including identifying locations for material storage and detention basins. The plans will be developed as the project progresses and the sites change.

The ESCPs will incorporate the following aspects:

- Layout of the sites including location of access roads, ancillary infrastructure, cleared and protected areas and stockpiling areas
- Location of erosion, sedimentation and water quality control measures proposed to treat stormwater before disposal
- Site establishment period and staging.

Information relevant to the preparation of the plans is obtained from Managing Urban Stormwater; Soils and Construction Volume 1 (Landcom 2006) (the Blue Book) and Volume 2D Main Roads Construction (DECCW 2008) and site specific soil data. Environmental staff, in consultation with a qualified Soil Conservationist, Foremen and Environment and Sustainability Manager, will prepare and update the ESCPs. The Soil Conservationist will review the initial ESCPs, which will be approved by the Project Environment and Sustainability Manager.

Further details on the continued management measures of the ancillary facilities once established will be examined within the Construction Soil and Surface Water Management Plan (SSWMP).

5.2.6 Construction Noise and Vibration Impact Statement

Works associated with the establishment of the sites has been modelled within a Site Establishment CNVIS, required under CoA E79, completed by the project acoustic consultant, which will be reviewed and endorsed by the Project Acoustic Advisor. Acoustic Advisor endorsement will be received prior to the commencement of any site establishment activities. Activities modelled in the Site Establishment CNVIS include those listed in Section 3, including initial site setup and investigations, building demolition (where required), delivery and installation of site services, installation of foundations and pavements.

Potential anticipated noise impacts identified within the current CNVIS include:

- Noise levels above NMLs for some site establishment phases for the proposed Parramatta Road East and West, Pyrmont Bridge Road and Campbell Road sites for works during standard and out of hours periods.
- Cumulative noise impacts from the project with other components of the WestConnex project (New M5 and M4 East) are possible at Parramatta Road East and West and Campbell Road sites. Where this is the case, this will be investigated to understand which project site is contributing most. It is expected that the Project's level of noise mitigation and

management would be proportionate to Project's input to the cumulative noise level at receivers.

- NMLs for the project are based on background noise levels measured at the EIS in the absence of construction noise from each stage of the WestConnex project. Therefore, adhering to NMLs as far as practicable would therefore also assist in minimising cumulative noise impacts from the project.
- Project traffic on public roads has been assessed against the NSW RNP and RMS CNVG. Traffic volumes during the site establishment are negligible relative to existing volumes and volumes expected during tunnel excavation. The relative increase in road traffic noise levels due to site establishment is less than 2 dB which satisfies the RNP and RMS guidelines.
- The potential for vibration impacts emanating from vibration intensive construction activity, including an assessment of safe working distances to these activities, outside of which structural vibration and human response criteria would be expected to be met. Vibration sensitive structures may be located within the defined safe working distances. Where these safe working distances are encroached in practice, alternate work practices will be considered, including real time monitoring systems to monitor live vibration levels whilst construction is happening.

CNVIS modelling outcomes will inform how noise and vibration from site establishment activities may impact surrounding receivers. Upon this basis, the CNVIS will detail reasonable and feasible mitigations measures, in consideration of:

- Potential for sleep disturbance
- Surrounding land use
- Cumulative noise impacts
- Impacts to the general amenity of adjacent residents and other sensitive receivers such as aged care facilities, schools etc.

These mitigation measures will be incorporated into Appendix A of this SEMP and the EWMS for implementation prior to and during site establishment activities. In order to develop an accurate CNVIS and modelling that represents the activities which will take place, specific details of the construction methodology will be included such as size and type of equipment and operating times. The location of sensitive receivers was ground-truthed during the detailed land use surveys carried out as per CoA E66. As per CoA E79, the CNVIS will be prepared before any work that results in noise and vibration impacts commences and should be read in conjunction with this SEMP. Mitigation measures specific to the expected noise impacts will be identified in the CNVIS.

Further details on the continued management measures of the ancillary facilities during site establishment and (once established) will be examined within the Construction Noise and Vibration Management Plan (CNVMP).

5.2.7 Noise and Vibration Monitoring

Noise Monitoring during Site Establishment

During site establishment, monitoring of noise levels will be undertaken as follows:

- Monitoring will be carried out at the commencement of activities for which a location and activity specific noise and vibration impact assessment has been prepared to confirm that actual noise and vibration levels are consistent with noise and vibration impact predictions and that the management measures that have been implemented are appropriate.

- Where a change in methodology, plant or equipment is anticipated to result in a significant increase in noise impact
- Where appropriate in response to a noise related complaint(s) (determined on a case-by-case basis)
- As otherwise required by the CNVIS or Out of Hours Works (OOHW) Protocol
- Following the implementation of mitigation measures or noise attenuation as a result of exceedance of predicted noise levels
- Ongoing spot checks for noise intensive plant and equipment will be undertaken during Site Establishment to ensure compliance with the maximum noise level goals for plant and equipment.

Noise monitoring locations will vary and be determined on a case-by-case basis by a CNVIS, the Project's noise predictive noise and vibration tool or where in response to complaints.

In accordance with the ICNG the duration and amount of noise monitoring will depend on the scale of the activities and extent of expected noise impacts. Noise monitoring will cover a representative period of the activity.

Where possible, monitoring will be undertaken at the most affected noise sensitive receiver/s location in proximity to the activities.

Noise monitoring locations will consider factors including:

- The location of previous monitoring sites
- The proximity of the receiver to a Project worksite
- The sensitivity of the receiver to noise
- Background noise levels
- The expected duration of the impact.

All environmental noise monitoring will be taken with the following meter settings:

- Time Constant: Fast (i.e. 125 milliseconds)
- Frequency Weightings: A-weighting
- Sample period: 15 minutes.

Environmental noise monitoring will be recorded over 15 minute sample intervals, where every 15 minutes the data is to be processed statistically and stored in memory. The minimum range of noise metrics to be stored in the memory for later retrieval include the following A-weighted noise levels: L_{A90} , L_{Aeq} , L_{A10} , L_{A1} and $L_{A(max)}$.

For spot checks of noise intensive plant and equipment, duration of monitoring will depend on the source of noise being monitored. Sources of continuous noise (such as generators), measurements will be monitored over one-to-two minute intervals. For dynamic plant, such as front-end loaders, spot checks will capture a representative activity, such as one truck-and-dog load cycle.

Vibration Monitoring during Site Establishment

Attended vibration monitoring is to be undertaken as follows:

- At the commencement of operation for each plant or activity on site, which has the potential to generate significant vibration levels, where the vibration screening criteria is likely to be exceeded or as determined by a CNVIS
- At the commencement of vibration generating activities that have the potential to impact on heritage items to confirm/identify the minimum working distances to prevent cosmetic damage
- Where vibration sensitive locations are determined to fall within the 'safe working distances' established for each item of plant, so to refine the indicative minimum working distances
- Where deemed to be relevant to Site Establishment activities in response to a vibration related complaint
- As otherwise required by the CNVIS or OOHV Protocol.

Where human comfort is a concern, vibration monitoring results will be assessed and reported against the values set out in Tables 2.2 and 2.4 of the EPA's Assessing Vibration – a technical guideline.

Where property damage is a concern, vibration monitoring results will be assessed and reported against the German Standard DIN4150-1999 Structural vibration Part 3: Effects of vibration on Structures.

Vibration monitoring equipment will be mounted directly to the buildings foundation using bees wax or other suitable means, where possible. Selected monitoring location will be solid and rigid to best represent the vibration entering the structure of the building under investigation. Any alternative mounting techniques will be determined by an appropriately experienced person in accordance the relevant standards and guidelines.

Where attended vibration monitoring is not feasible, due to extended periods of vibration intensive civil works, unattended vibration monitoring system could be installed to warn plant operators (via flashing light etc.) that there is potential cosmetic damage to buildings and structures.

Where unattended vibration monitors are left in place on a private property they will be picked up at a mutually agreed time with the resident.

The following vibration metrics will be stored in memory and reported:

- Vibration Dose Values (VDVs) – for the assessment of human comfort concerns
- Peak-Particle Velocity (PPV) – for the assessment of cosmetic damage concerns.

All short term attended vibration monitoring will be recorded over a representative sampling interval where the worst case vibration levels can be captured. Where unattended vibration monitoring is proposed, monitoring will be undertaken continuously whilst the vibrating plant is operational to capture the worst case vibration levels within the pre-determined 'safe working distance' from the potentially affected building.

5.2.8 Traffic Management

Traffic Management Plans (TMPs) provide a safe work area for both workers and the general public while maintaining the road network operational capacity by minimising lane closures and traffic stoppage during peak traffic periods and operate within the Road Occupancy Licence (ROL) conditions. The TCP generally details the following:

- Traffic control signage and traffic flow arrangement
- Work area
- Speed limits
- Direction of construction traffic and if necessary reversing arrangements

- Parking locations (both construction and public)
- ROL conditions (if applicable).

It should be noted that ROL provisions apply to the arterial road network which includes Parramatta Road, Wattle Street, City West Link, Princes Highway, M4 Motorway and M5 Motorway. Broadly, this restricts lane closures, uncontrolled traffic movements and other impediments to vehicle flows to night periods (generally 8:30pm-6am). On this basis, traffic movements day and night to and from the sites, particularly heavy vehicles, vary significantly. ROLs are expected to be required to facilitate the delivery of oversized items (such as site sheds) and may also be required to facilitate demolition activities.

Pedestrian and cyclist access will be maintained around ancillary facilities; however, some detours may be required to improve safety and amenity of pedestrians and cyclists, or the accessibility of trucks entering or exiting ancillary facilities. Alternate routes will aim to minimise inconvenience to pedestrians and cyclists and will be clearly signed and marked. Where the current route is DDA compliant, the alternate route will be designed to be DDA compliant to ensure consistency.

If bus stops need to be temporarily relocated during site establishment works they will be relocated within 400m of the existing stop and will have similar capacity to the existing stop, in accordance with the requirements of condition E43.

5.2.9 Light spill

As noted in Section 3, lighting may be required at night such as for the purposes of works that are required to be conducted under a Road Occupancy Licence, including the delivery of oversized materials/plant, site sheds or potholing investigations. All practical and reasonable steps to mitigate residual temporary night lighting impacts for adjoining properties will be undertaken as required under CoAs E116, E122, E123 and E124, and REMMs LV2 and LV7. To meet these requirements, site establishment works will incorporate the following aspects:

- Lights will be located as far as possible and pointed away from neighbours and away from sensitive areas, such as bedroom windows and Sydney Park
- Existing features will be used to hide the light source from view e.g. shielding from existing structures
- Lights will be directed to illuminate the target area. If there is no alternative to up-lighting, fit shields and baffles to help keep spill light to a minimum
- Consultation with the Civil Aviation Safety Authority (CASA), Department of Infrastructure and Regional Development (DIRD) and Sydney Airport Operators (in relation to the Campbell Road site).

5.2.10 Boundary screening approach

Boundary fencing will be erected around site establishment works that are adjacent to sensitive receivers as required under CoA C25. This will be for the duration of construction unless otherwise agreed with relevant councils, and affected residents, business operators or landowners. All boundary fencing will minimise visual, noise and air quality impacts as per CoA C26 and will include the Critical State Significant Infrastructure (CSSI) name and application number as per CoA A45.

Boundary fencing at the sites would be as per the recommendations of the Site Establishment CNVIS. All fencing and hoarding will be in accordance with the requirements of the CCS. Noise walls will be erected where recommended by the Site Establishment CNVIS. As well as minimising noise impacts, noise walls will minimise visual and air quality impacts by providing a barrier between work sites and receivers. Where noise walls are not required, plywood hoarding or chainwire fencing with cloth shade will be erected. Like the noise walls, plywood hoarding and chainwire fencing with shade cloth will also reduce visual and air quality impacts by providing a barrier between work sites and receivers.

Given the minimal level of vegetation removal required, temporary landscaping and/or vegetation screening is not proposed during site establishment works.

5.2.11 Contamination

Campbell Road

CoA E181 requires the preparation of a Site Contamination Report for sites that are suspected or known to be contaminated. The site was identified as having known contamination in the EIS. However, the site has also been used for the New M5 project. As part of the New M5 project the site has undergone Phase 1 and Phase 2 contamination assessments, whilst a Remediation Action Plan (RAP) has also been prepared and implemented for part of the site. These documents are applicable to the site establishment works as part of the Project. It is therefore considered that the works are consistent with CoA E181, as well as CoA's E182 and E183.

Pymont Bridge Road and Parramatta Road East and West

CoA E181 requires the preparation of a Site Contamination Report for sites that are suspected or known to be contaminated. Site Contamination Reports document the findings of Phase 1 and Phase 2 contamination assessments. In the EIS both the Pymont Bridge Road and Parramatta Road East and West sites were identified as potentially having contamination present, therefore a Site Contamination Report will be prepared for the site. If the site, or part of the site, is identified as requiring remediation, a Remediation Action Plan will be prepared and implemented. On completion of remediation a Site Audit Statement and Site Audit Report will be prepared by a NSW Environment Protection Authority (EPA) Accredited Site Auditor to declare that the site is suitable for purpose as per CoA E182 and E183.

An Unexpected Contaminated Land and Asbestos Finds Procedure has been prepared for use at all sites and is included in Appendix E. Immediate actions to be undertaken upon uncovering potential contamination would be included in the toolbox to ensure all workers are informed.

5.2.12 Flood Mitigation Strategy

The Pymont Bridge Road site is located within the Rozelle catchment and within the Johnstons Creek sub-catchment. The Johnstons Creek catchment is a heavily urbanised environment. The creek was converted into a stormwater channel in the mid-1890s and discharges into Rozelle Bay. The project EIS identified that the site is located within the 10-year ARI flood extent, with potential flood depths of over one metre on Bignell Lane in a 100-year ARI event.

Works associated with the site establishment works at the Pymont Bridge Road will be assessed as part of the project Flood Mitigation Strategy, prepared by a suitably qualified and experienced person in consultation with directly affected landowners, the NSW Department of Industry – Water, State Emergency Service, Sydney Water and Inner West Council, as per REMM FD01. Based on the outcomes of the EIS, which indicated flooding impacts would be reduced as a result of site establishment works, as overland flow paths would be less concentrated and site drainage would be installed as part of the project, it is expected that the FMS will demonstrate that the existing flooding characteristics will not be exacerbated as a consequence of the project. However, should flood exacerbation be identified by the FMS, appropriate mitigation measures as will be included in the relevant EWMS.

The Strategy will provide measures to be implemented to minimize soil erosion and scour as a result of the project and to protect project works/operations from potential flooding. Section 8.1.1 of Appendix Q of the EIS (Technical working paper: Surface water and flooding) outlines what will be included in the FMS.

Any potential flooding and drainage impacts would be managed in accordance with the Flood Mitigation Strategy and the management and mitigation measures listed in Appendix B. All relevant flooding information from the project will be provided to the NSW Department of Industry – Water, State Emergency Service, Sydney Water and Inner West Council.

6 Review and Improvement

6.1 Continuous improvement

Continuous improvement of this 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
- Review contractual and legislative requirements.

6.2 SEMP update and amendment

Reviews of this document may be undertaken periodically and following any major incident, non-conformance or non-compliance, until such time as the site becomes operational under the approved CEMP. The purpose of any review is to ensure that the systems implemented within this Plan are meeting the requirements of the standards, policies and objectives and, if not, to amend the SEMP to ensure compliance.

6.3 Document approval

This SEMP has been prepared in consultation with Inner West Council, City of Sydney Council and EPA in accordance with CoA C22.

This plan has been prepared with the review of SMC, Roads and Maritime Services, and the LSBJV Project Director and Environment and Sustainability Manager prior to submission to the DPE. Submission to DPE is required no later than one month prior to commencement of works or as otherwise agreed.

The SEMP must be approved by the Secretary of DPE prior to the commencement of site establishment activities. Approval of changes to the SEMP will be determined on a case-by-case basis in consultation with the ER and where required will be endorsed by the ER or approved by DPE.

Appendix A Other Conditions of Approval and Revised Environmental Management Measures relevant to this Plan

CoA No.	Requirement	Reference
A45	Signage on hoardings surrounding construction ancillary facilities must include the CSSI name and application number.	Section 5.2.10 Appendix B – 69
B6	A Public Liaison Officer(s) must be appointed for construction ancillary facility(s) and for utility works to assist the public with questions and complaints they may have at any time during construction. The Public Liaison Officer(s) must be available at all times that works are occurring.	Community Communication Strategy (CCS)
C23	The operation of a construction ancillary facility must not commence until the CEMP required by Condition C1, relevant CEMP Sub-plans required by Condition C4 and relevant Construction Monitoring Programs required by Condition C9 have been approved by the Secretary.	Section 1.4 Section 5.2.1
C25	Boundary fencing that incorporates screening must be erected around all construction ancillary facilities that are adjacent to sensitive receivers for the duration of site establishment and construction unless otherwise agreed with relevant council(s), and affected residents, business operators or landowners.	Section 5.2.10 Appendix B – 69
C26	Boundary fencing required under Condition C25 of this approval must minimise visual, noise and air quality impacts on adjacent sensitive receivers.	Section 5.2.10 Appendix B – 66
E51	<p>All requests to the Secretary for local road usage need to include a traffic and pedestrian impact assessment, and should include a swept path analysis if required. The traffic and pedestrian impact assessment, incorporated in the Site Establishment Management Plan or Traffic and Transport CEMP as relevant, must:</p> <ul style="list-style-type: none"> (a) demonstrate that the local road usage will not compromise the safety of the public and have minimal amenity impacts; (b) provide details as to the date of completion of the road dilapidation surveys for the subject local roads; and (c) describe the measures that will be implemented to avoid where practicable the use of local roads past schools, aged care facilities and child care facilities during peak times for operation. 	Section 4.1.1

CoA No.	Requirement	Reference
E54	<p>A Construction Parking and Access Strategy must be prepared and implemented to identify and mitigate impacts resulting from on- and off-street parking changes during construction of the CSSI. The Strategy must include, but not necessarily be limited to:</p> <ul style="list-style-type: none"> (a) confirmation and timing of the removal of on- and off-street parking associated with construction of the CSSI; (b) parking surveys of all parking spaces to be removed to determine current demand during peak, off-peak, school drop off and pickup, and weekend periods; (c) consultation with affected stakeholders utilising existing on- and off-street parking stock which will be impacted as a result of construction; (d) assessment of the impacts of changes to on- and off-street parking stock taking into consideration outcomes of consultation with affected stakeholders; (e) identification of mitigation measures to manage impacts to stakeholders as a result of on- and off-street parking changes including, but not necessarily limited to, staged removal and replacement of parking, provision of alternative parking arrangements, managed staff parking arrangements and working with relevant council(s) to introduce parking restrictions adjacent to work sites and compounds; (f) provision of a shuttle bus service(s) to transport workers to site(s) and details of the shuttle bus service(s), including service timing and frequency; (g) mechanisms for monitoring, over appropriate intervals, to determine the effectiveness of implemented mitigation measures; (h) provision of contingency measures should the results of mitigation monitoring indicate implemented measures are ineffective; and (i) provision of reporting of monitoring results to the Secretary and relevant council(s) at three (3) monthly intervals. <p>The Construction Parking and Access Strategy must be submitted to the Secretary for approval at least one (1) month prior to the commencement of any works that impact parking.</p>	Section 4.1.1

CoA No.	Requirement	Reference
E61	A Road Dilapidation Report must be prepared by a suitably qualified person, for local roads (and associated infrastructure within the road reserve) proposed to be used by heavy vehicles for works associated with the CSSI, before the commencement of use by such vehicles. Copies of the Road Dilapidation Report must be provided to the relevant road authorities within three (3) weeks of completing the surveys and no later than one (1) month before the use of local roads by such vehicles.	Section 4.1.1
E66	A detailed land use survey must be undertaken to confirm sensitive receivers (including critical working areas such as operating theatres and precision laboratories) potentially exposed to construction noise and vibration, construction ground-borne noise and operational noise. The survey may be undertaken on a progressive basis but must be undertaken in any one area prior to the commencement of works which generate construction or operational noise, vibration or ground-borne noise in that area. The results of the survey must be included in the Construction Noise and Vibration Management Sub-plan.	Section 5.2.6
E73	<p>Notwithstanding Conditions E68 to E72 works may be undertaken outside the hours specified under those conditions in the following circumstances:</p> <ul style="list-style-type: none"> (a) for the delivery of materials required by the NSW Police Force or other authority for safety reasons; or (b) where it is required in an emergency to avoid injury or the loss of life, to avoid damage or loss of property or to prevent environmental harm; or (c) where different construction hours are permitted or required under an EPL in force in respect of the CSSI; or (d) works approved under an Out-of-Hours Work Protocol for works not subject to an EPL as required by Condition E77; or (e) construction that causes LAeq(15 minute) noise levels: <ul style="list-style-type: none"> i. no more than 5 dB(A) above the rating background level at any residence in accordance with the <i>Interim Construction Noise Guideline</i> (DECC, 2009), and ii. no more than the 'Noise affected' noise management levels specified in Table 3 of the <i>Interim Construction Noise Guideline</i> (DECC, 2009) at other sensitive land uses, and 	Section 4.3 Appendix B - 39

CoA No.	Requirement	Reference
	<p>iii. continuous or impulsive vibration values, measured at the most affected residence are no more than the maximum values for human exposure to vibration, specified in Table 2.2 of <i>Assessing Vibration: a technical guideline</i> (DEC, 2006), and</p> <p>iv. intermittent vibration values measured at the most affected residence are no more than the maximum values for human exposure to vibration, specified in Table 2.4 of <i>Assessing Vibration: a technical guideline</i> (DEC, 2006).</p> <p><i>Note: Section 5.24(1)(e) of the EP&A Act requires that an EPL be substantially consistent with this approval. For example, an EPL cannot authorise spoil movements at the Darley Road construction ancillary facility outside of the hours specified in Conditions E68 and E69. Out of Hours Works considered under Conditions E73(c) and (d) must be justified and include an assessment of mitigation measures.</i></p>	
E74	<p>On becoming aware of the need for emergency works in accordance with Condition E73(b), the Proponent must notify the AA, the ER and the EPA of the need for that work. The Proponent must use best endeavours to notify all noise and/or vibration affected sensitive receivers of the likely impact and duration of those works.</p>	Appendix B - 65
E79	<p>Construction Noise and Vibration Impact Statements must be prepared for construction ancillary facility(s) before any works that result in noise and vibration impacts commence, and include specific mitigation measures identified through consultation with affected sensitive receivers. The Statements must supplement the Construction Noise and Vibration Management Sub-plan or Site Establishment Management Plan(s) and are to be implemented for the duration of the works.</p> <p>The Construction Noise and Vibration Impact Statement for the White Bay civil site (C11) must be prepared in consultation with the Port Authority of NSW and NSW Heritage Council.</p>	Section 5.2.6
E88	<p>At receiver noise mitigation in the form of at-property treatment must be offered to the land owner for habitable living spaces, or other mitigation or management measures as agreed by the occupier, to residential properties identified in Appendix E. Mitigation must be offered prior to works commencing.</p> <p>This requirement does not apply if the sensitive receiver has been provided with noise mitigation under the RMS Noise Abatement Program or the State Environment Planning Policy (Infrastructure) 2007 (clause 102(3)). The adequacy of at-property treatments will be reviewed where previous treatments have been installed as part of other SSI or CSSI projects.</p>	Section 4.3

CoA No.	Requirement	Reference
	<p><i>Note: This condition does not preclude the application of other noise and vibration mitigation and management measures.</i></p>	
E89	<p>A Noise Insulation Program must be prepared and implemented for the duration of CSSI works for receivers at/to which the requirements of Conditions E87 and E88 apply. The Program must be incorporated into the Construction Noise and Vibration Management Sub-plan.</p> <p>The Noise Insulation Program must detail the following matters:</p> <ul style="list-style-type: none"> (a) receivers eligible for the scheme; (b) the scope of the insulation package; (c) responsibility for the noise insulation works; (d) procedure and the terms of the noise insulation works; (e) program monitoring; and (f) program review and amendment. <p>The Noise Insulation Program must be endorsed by the AA.</p>	Section 4.3
E116	<p>The CSSI must be constructed in a manner that minimises visual impacts of construction sites, including, providing temporary landscaping and vegetative screening of the construction sites, minimising light spill, and incorporating architectural treatment and finishes within key elements of temporary structures that reflect the context within which the construction sites are located.</p>	<p>Section 5.2.9 Section 5.2.10 Appendix B – 66 - 69</p>
E122	<p>The Proponent must construct and operate the CSSI with the objective of minimising light spillage to residential properties. All lighting associated with the construction and operation of the CSSI must be consistent with the requirements of <i>Australian Standard 4282-1997 Control of the obtrusive effects of outdoor lighting</i> and relevant Australian Standards in the series <i>AS/NZ 1158 – Lighting for Roads and Public Spaces</i>. Notwithstanding, the Proponent must provide mitigation measures to manage any residual night lighting impacts to protect properties adjoining or adjacent to the CSSI, in consultation with affected landowners.</p>	<p>Section 4.5 Section 5.2.9 Appendix B - 67</p>

CoA No.	Requirement	Reference
E123	The Proponent must construct and operate the CSSI with the objective of avoiding adverse or distracting lighting configuration, spillage or intensity to aircraft operations. All lighting associated with the construction and operation of the CSSI must adhere to the <i>Lighting in the Vicinity of Aerodromes: Advice to Lighting Designer</i> (CASA, 1999) and <i>National Airports Safeguarding Framework Guideline E: Managing the Risk of Distractions to Pilots from Lighting in the Vicinity of Airports</i> (DIRD, 2012). Notwithstanding, the Proponent must provide mitigation measures to manage any residual night lighting impacts to protect aircraft operations, in consultation with CASA and DIRD.	Section 4.5 Section 5.2.9
E124	Notwithstanding Condition E123, the Proponent must consult with CASA, DIRD and Sydney Airport Operators prior to the commencement of construction to determine the need and potential positioning of aviation hazard lighting on any equipment or built form component associated with the CSSI where such consultation deems it necessary.	Section 4.5 Section 5.2.9 Appendix B - 1
E160	The Proponent must investigate the feasibility of retaining Cadden Le Messurier (84 Lilyfield Road), Former Hotel (78 Lilyfield Road) and the facade of the former Bank of NSW building (164 Parramatta Road) during detailed design.	Section 4.12 Appendix B - 5
E163	<p>The Proponent must prepare a Heritage Archival Recording and Salvage Report, including photographic recording of heritage items which have been identified for demolition in the documents referred to in Condition A1 and outline how any salvage or recovery of material will be undertaken from these items.</p> <p>Archival recording must be undertaken by a suitably qualified heritage specialist and prepared in accordance with NSW Heritage Office's <i>How to Prepare Archival Records of Heritage Items</i> (1998) and <i>Photographic Recording of Heritage Items Using Film or Digital Capture</i> (2006).</p> <p>Within 12 months of completing the archival recording, the Proponent must submit the Heritage Archival Recording and Salvage Report to the Secretary, relevant council(s), relevant local libraries and local historical societies in the respective local government area(s).</p>	Section 4.12 Appendix B - 6
E164	Archival recording as required by Condition E163 must also be undertaken for the Cadden Le Messurier, former Hotel and the former Bank of NSW building, should these structures be demolished.	Section 4.12 Appendix B - 6

CoA No.	Requirement	Reference
E165	<p>Following archival recording as required by Condition E163, and prior to demolition, the Proponent must assess options for sympathetic reuse (including integrated heritage displays and interpretation) on the project or other options for conservation, including architectural salvage for re-use in comparable buildings and display.</p> <p>Where salvage supports good conservation outcomes, the material is to be collected and stored in suitable repository locations established in consultation with relevant council(s). The salvage from any State-listed items or elements must be determined in consultation with the Heritage Division of OEH.</p> <p>Any residual items and materials are to be made available, through a process to be developed by the Proponent in consultation with the relevant council(s), to landowners within the locality from where the material originated.</p>	Section 4.12 Appendix B - 7
E168	<p>Prior to works that have a direct material impact on a Historical Archaeological Management Unit (HAMU), the Proponent must engage a suitably qualified archaeologist whose experience complies with the Heritage Council of NSW's <i>Criteria for Assessment of Excavation Directors</i> (July, 2011) (referred to as the Excavation Director) to oversee and advise on matters associated with historic archaeology and to prepare an Historical Archaeological Research Design and Excavation Methodology.</p>	Section 4.12 Appendix B - 8
E169	<p>The Historical Archaeological Research Design and Excavation Methodology must to be submitted to the Heritage Council of NSW (or its delegate) for review and comment prior to finalisation. The Historical Archaeological Research Design and Excavation Methodology must:</p> <ul style="list-style-type: none"> (a) be consistent with the NSW Heritage Council's Archaeological Assessments Guideline (1996) or as updated; (b) provide for the detailed analysis of any heritage items discovered during the investigations; (c) include management options for discovered heritage items, whether known or unexpected finds (including options for avoidance, salvage, relocation and display); (d) for unexpected finds that are determined to be relics, set out the assessment process that will determine an appropriate archaeological response to managing their significance; 	Section 4.12 Appendix B - 8

CoA No.	Requirement	Reference
	<p>(e) include procedures for notifying the Heritage Council of NSW (or its delegate) and Secretary of any relic findings; and</p> <p>(f) if the findings of the investigations are significant, provide for the preparation and implementation of a Heritage Interpretation Plan, as required under Condition E167.</p>	
E175	<p>Prior to removing/clearing any vegetation, or demolition of structures identified as potential roosting sites for microbats, pre-clearing/demolition inspections for microbats and threatened species must be undertaken. The inspections, and any subsequent relocation of species and associated management/offset measures, must be undertaken under the guidance of a suitably qualified and experienced ecologist. Surveys for the presence of microbat roosting must be undertaken to cover the period of roosting, under guidance of a suitably qualified and experienced. Survey methodologies must be incorporated into the Construction Flora and Fauna Management Sub-plan required under Condition C4 and Site Establishment Management Plan required under Condition C22, as relevant.</p>	Appendix B – 9 and 12
E181	<p>A Site Contamination Report, documenting the outcomes of Phase 1 and Phase 2 contamination assessments of land upon which the CSSI is to be carried out, that is suspected, or known to be, contaminated must be prepared by a suitably qualified and experienced person in accordance with guidelines made or approved under the <i>Contaminated Land Management Act 1997</i> (NSW).</p>	Section 5.2.11
E182	<p>If a Site Contamination Report prepared under Condition E181 finds such land contains contamination, a site audit is required to determine the suitability of a site for a specified use. If a site audit is required, a Site Audit Statement and Site Audit Report must be prepared by a NSW EPA Accredited Site Auditor. Contaminated land must not be used for the purpose approved under the terms of this approval until a Site Audit Statement is obtained that declares the land is suitable for that purpose and any conditions on the Site Audit Statement have been complied with.</p>	Section 5.2.11
E183	<p>A copy of the Site Audit Statement and Site Audit Report must be submitted to the Secretary and relevant council for information no later than one (1) month prior to the commencement of operation.</p>	Section 5.2.11
E184	<p>An Unexpected Contaminated Land and Asbestos Finds Procedure must be prepared and must be followed should unexpected contaminated land or asbestos be excavated or otherwise discovered during construction.</p>	Section 5.2.11 Appendix B - 78

Revised Environmental Management Measures relevant to the development of this Plan

No.	Impact category	Revised environmental management measure	Reference
TT04	Traffic and transport	<p>The car parking strategy described in the CTAMP will:</p> <ul style="list-style-type: none"> • Quantify construction workforce parking demand around project work sites and ancillary facilities during site establishment and the construction phase generally • Identify public transport options and other management measures (such as carpooling and shuttle-buses) to reduce construction workforce parking demand • Identify all locations that will be used for construction workforce parking (including potential use of government owned land and other potential areas near to the construction ancillary facilities) • Identify potential offsite areas that could be used for construction workforce parking that would be investigated and secured for use during construction where required and possible • Identify parking exclusion zones, in consultation with potentially affected stakeholders, around construction sites and facilities where construction workforce parking would be restricted. <p>The strategy will also be developed in consultation with the M4 East and New M5 contractors to identify opportunities to use existing parking arrangements associated with those projects during their respective construction periods and once those periods are completed.</p>	<p>Traffic and Transport Access Management Plan (TTAMP)</p> <p>Construction Parking and Access Strategy (CPAS)</p>
TT18	Traffic and transport	<p>Prepare a road dilapidation report, in consultation with relevant councils and road owners, identifying existing conditions of local roads and mechanisms to repair damage to the road network caused by heavy vehicle movements associated with the project.</p>	<p>Section 4.1.1</p> <p>Appendix B – 2</p>
AQ16	Air quality	<p>Demolition activities will be planned and carried out to minimise the potential for dust generation.</p>	<p>Appendix B – 3 and 10</p>

No.	Impact category	Revised environmental management measure	Reference
AQ17	Air quality	Adequate dust suppression will be applied during all demolition works required to facilitate the project.	Appendix B – 3 and 10
AQ18	Air quality	All potentially hazardous material will be identified and removed from buildings in an appropriate manner prior to the commencement of and/or progressively during demolition and in accordance with all relevant codes of practice.	Appendix B - 4 and 11
NV3	Noise and vibration	Detailed noise assessments will be carried out for all ancillary facilities required for construction of the project. The assessment will consider the proposed site layouts and noise generating activities that will occur at the facilities and assess predicted noise levels against the relevant noise management levels determined in accordance with the requirements of the Interim Construction Noise Guideline (ICNG) (NSW Department of Environment and Climate Change NSW (DECC) 2009). The assessments will be used to determine the appropriate heights and configurations of noise barriers, and other appropriate noise management measures, consistent with the requirements of the ICNG and the CNVG. Noise barriers, as confirmed through the noise assessments, will be installed as early as possible during site establishment and as a minimum prior to the commencement of excavation associated with tunnel access.	CNVIS to be prepared as per CoA E79.
UD2	Landscape and visual	Specific design measures at construction ancillary facilities to prevent crime, based on principles of Crime Prevention Through Environmental Design (CPTED), will be identified and implemented at each facility prior to the commencement of facility operation.	Section 4.5
LV2	Landscape and visual	Site lighting will be designed to minimise glare issues and light spillage in adjoining properties and will be generally consistent with the requirements of Australian Standard 4282-1997 Control of the obtrusive effects of outdoor lighting.	Section 5.2.9
LV4	Landscape and visual	Construction worksites and construction ancillary facilities will be established in such a manner as to minimise the need to remove screening vegetation wherever practicable.	Appendix B – 66
LV5	Landscape and visual	Hoardings and temporary noise walls (in accordance with the CNVIS) will be erected as early as possible within the site establishment phase to provide visual screening.	Appendix B – 66

No.	Impact category	Revised environmental management measure	Reference
LV7	Landscape and visual	Where necessary, construction lighting will comply with the requirements of the Civil Aviation Safety Authority (CASA) and Sydney Airport at all times.	Section 5.2.9 Appendix B - 1
LV10	Landscape and visual	Where construction ancillary facilities are located in close proximity to sensitive residential receivers such as residents and users of recreational space, high quality fencing suitable for parks and public spaces should be considered.	Appendix B – 66
FD08	Flooding and drainage	The Pymont Bridge Road tunnel site (C9) will be designed with consideration of and to appropriately manage the existing surface water flow path on Bignell Lane.	Section 4.9 and 5.2.12
NAH03	Non-Aboriginal heritage	<p>Photographic archival recording will be undertaken of:</p> <ul style="list-style-type: none"> • Infrastructure associated with the White Bay Power Station site that could be affected by the project • Whites Creek Stormwater Channel (in the area to be impacted) • Stormwater Canal off Lilyfield Road • ‘Cadden Le Messurier’ at 84 Lilyfield Road • Former Hotel at 78 Lilyfield Road • Victoria Road overbridge • Each house at 260–266 Victoria Road • Each house at 248–250 Victoria Road • Former Bank of NSW (164 Parramatta Road). <p>It will be undertaken in accordance with the NSW Heritage Office guidelines <i>Photographic Recording of Heritage Items Using Film or Digital Capture</i> (2006).</p>	Appendix B - 6

No.	Impact category	Revised environmental management measure	Reference
		The photographic archival recording will occur prior to any works that have the potential to impact upon the items and will include the identification of appropriate stakeholders to receive copies of the documentation.	
NAH04	Non-Aboriginal heritage	<p>As part of the CHMP, a Historical Archaeological Research Design (HARD) will be prepared before the start of proposed works within each of the following Historical Archaeological Management Units (HAMUs): HAMU 3, HAMU 6, HAMU 7, HAMU 10, and HAMU 11. The HARD will be prepared by a qualified archaeologist in consultation with the NSW Heritage Council and will include:</p> <ul style="list-style-type: none"> • Descriptions of clear significance thresholds for possible archaeological items that may be uncovered during works • A methodology and scope for a program of archaeological excavation, investigation, and recording of any historical archaeological remains that will be impacted by the project • Requirement for post-excavation reporting, including artefact analysis and additional historical research, where necessary, and long term management of records • Details of what will happen with any artefacts uncovered and associated reports. 	Appendix B - 8
NAH09	Non-Aboriginal heritage	A Heritage Salvage Strategy will be prepared to identify the salvage potential of the fabric and features from heritage items and potential heritage items that will be demolished to facilitate the project. This could include timber joinery, fireplaces, stained glass, stairs, decorative tiles, bricks, steel truss structures, windows etc. The strategy will also identify options and a process for dissemination of salvaged items to owners, community groups and interested parties.	Appendix B - 6
HR1	Hazard and risk	<p>Storage of dangerous goods and hazardous materials will occur in accordance with suppliers' instructions and relevant Australian Standards and legislation including the:</p> <ul style="list-style-type: none"> • Work Health and Safety Act 2011 (NSW) • Storage and Handling of Dangerous Goods Code of Practice (WorkCover NSW 2005) 	Appendix B – 95

No.	Impact category	Revised environmental management measure	Reference
		<ul style="list-style-type: none"> Environment Protection Manual for Authorised Officers: Bunding and Spill Management, technical bulletin (NSW EPA 1997). <p>Storage methods may include bulk storage tanks, chemical storage cabinets/ containers or impervious bunds.</p>	
HR2	Hazard and risk	Secure, bunded areas will be provided around storage areas for oils, fuels and other hazardous liquids. Impervious bunds will be of sufficient capacity to contain at least 110 per cent of the volume of the largest stored container.	Appendix B – 95
HR3	Hazard and risk	Management measures to reduce the potential for spills, reduce potential spill volumes and prevent any contamination will be developed and implemented for activities such as vehicle refuelling, servicing, maintenance and washdown, where there is a potential for spills and contamination.	Appendix B – 95, 96 and 97
HR4	Hazard and risk	Safety Data Sheets for dangerous goods and hazardous substances will be stored on site prior to their arrival.	Appendix B – 95

Appendix B

Management and Mitigation Measures

No.	Mitigation and Management Measures	Responsibility	Timing	Reference
EM – Environment & Sustainability Manager, EO – Environmental Officer, PD – Project Director, PM - Plant Manager, FM- Foreman, PE – Project Engineers, CM – Construction Manager, SI – Superintendent, DM – Design Manager, TR – Traffic Manager, CRM – Community Relations Manager				
Campbell Road site specific mitigation and management measures				
1	Lighting for site establishment works will comply with the Civil Aviation Safety Authority (CASA) and Sydney Airport requirements. CASA, the Department of Infrastructure, Regional Development and Cities (DIRD) and Sydney Airport will be consulted with prior to site establishment works regarding these requirements.	DM / CM / EM	Prior to Establishment / Establishment	CoA C123 CoA C124 REMM LV7 and HR6
Pymont Bridge Road site specific mitigation and management measures				
2	A road dilapidation report will be prepared for the use of Bignell Lane.	CM / EM	Prior to Establishment / Establishment	CoA E61 REMM TT18
3	Dust suppression will be used during demolition as required.	EM / CM	Establishment	REMM AQ16 and AQ17
4	A hazardous materials assessment will be carried out prior to and during the demolition of buildings. Demolition works will be undertaken in accordance with the relevant Australian Standards and relevant NSW WorkCover Codes of Practice, including the Work Health and Safety Regulation 2011.	EM / CM	Prior to Establishment / Establishment	REMM AQ18 and CM03
5	A feasibility study into the retention of the bank of the former Bank of NSW building (164 Parramatta Road) will be prepared.	EM / CM	Prior to establishment	CoA E160
6	In the event that the former Bank of NSW building (164 Parramatta Road) is impacted a Heritage Archival Recording and Salvage Report will be prepared prior to any works that have potential impact. This will be undertaken in accordance with the NSW Heritage Office's <i>How to Prepare Archival Records of Heritage Items (1998)</i> and <i>Photographic Recording of Heritage Items Using Film or Digital Capture (2006)</i> .	EM / CM	Prior to Establishment/ Establishment	CoA E163 and E164 REMM NAH03 and NAH09
7	In the event that demolition of the façade of former Bank of NSW building (164 Parramatta Road) is required, assessment into potential other conservation options will be undertaken.	EM / CM	Prior to Establishment/ Establishment	CoA E165
8	Works will take place in accordance with a Historical Archaeological Research Design and Excavation Methodology prepared in accordance with CoA E168 and E169.	EM / CM	Prior to Establishment/ Establishment	CoA E168 and E169 REMM NAH04
9	Pre-clearing surveys will be conducted by a qualified ecologist prior to demolition to confirm the potential presence of microbats and other threatened species.	EM / CM	Prior to Establishment/ Establishment	CoA E175 REMM B2
Parramatta Road East and West site specific mitigation and management measures				
10	Dust suppression will be used during demolition as required.	EM / CM	Establishment	REMM AQ16 and AQ17
11	A hazardous materials assessment will be carried out prior to and during the demolition of buildings. Demolition works will be undertaken in accordance with the relevant Australian Standards and relevant NSW WorkCover Codes of Practice, including the Work Health and Safety Regulation 2011.	EM / CM	Prior to Establishment / Establishment	REMM AQ18 and CM03

No.	Mitigation and Management Measures	Responsibility	Timing	Reference
EM – Environment & Sustainability Manager, EO – Environmental Officer, PD – Project Director, PM - Plant Manager, FM- Foreman, PE – Project Engineers, CM – Construction Manager, SI – Superintendent, DM – Design Manager, TR – Traffic Manager, CRM – Community Relations Manager				
12	Pre-clearing surveys will be conducted by a qualified ecologist prior to demolition and vegetation removal to confirm the potential presence of microbats and other threatened species.	EM / CM	Prior to Establishment/ Establishment	CoA E175 REMM B2 and B6
13	Tree removal, pruning and maintenance work will be carried out by an appropriately qualified arborist.	EM /CM	Prior to Establishment/ Establishment	REMM B1 G40
14	As many trees as possible will be retained during construction. In the event that trees removal cannot be avoided, a tree replacement strategy will be prepared. Replacement trees will be included in the UDLP to be developed and implemented for the project.	EM / CM	Prior to Establishment/ Establishment	REMM B6
15	Works will take place in accordance with a Historical Archaeological Research Design and Excavation Methodology prepared in accordance with CoA E168 and E169.	EM / CM	Prior to Establishment/ Establishment	CoA E168 and E169 REMM NAH04
General requirements				
16	The Campbell Road site, the Pymont Bridge Road site and the Parramatta Road East and West site will be established in accordance with the project approval documents and this SEMP.	EM	Establishment	CoA C22
17	Training on potential sensitive receivers and environmental constraints will be provided to all project personnel, including relevant subcontractors on SEMP requirements through inductions, toolboxes and targeted training.	EO / FM	Prior to Establishment/ Establishment	Best practice
18	Community complaints will be recorded and actioned in accordance with the Community Communication Strategy procedures.	CRM	Prior to Establishment/ Establishment	CoA B1
19	If any minor construction ancillary facilities are required to support development of the site establishment works at sites that were not identified in the EIS or the SPIR, these will be developed in accordance with CoA C24.	EM / CM	Prior to Establishment/ Establishment	CoA C24
Traffic and transport				
20	Limit vehicle movements to designated entries and exits and haulage routes. Site exits will be fitted with hardstand material or other appropriate measures to limit the amount of material transported off-site (where required).	CM / SI	Establishment	REMM TT05
21	Minimise construction vehicle parking on public roads.	CM / SI	Establishment	CoA E52
22	The queuing and idling of construction vehicles in residential streets will be minimised.	CM / SI	Establishment	CoA E52
23	New/modified local road, parking, pedestrian and cycle infrastructure shall be designed to meet relevant design, engineering and safety guidelines.	CM	Prior to Establishment/ Establishment	CoA E55
24	A Traffic Control Plan (TCP) should be developed and implemented for each ancillary facility/construction compound which requires direct access/egress onto the local/arterial	TM / PE / CM	Prior to Establishment/ Establishment	Best practice

No.	Mitigation and Management Measures	Responsibility	Timing	Reference
EM – Environment & Sustainability Manager, EO – Environmental Officer, PD – Project Director, PM - Plant Manager, FM- Foreman, PE – Project Engineers, CM – Construction Manager, SI – Superintendent, DM – Design Manager, TR – Traffic Manager, CRM – Community Relations Manager				
	road network. Measures specified in the TCP will be implemented as appropriate for the life of the facility.			
Air quality				
25	Minimise dust generating activities especially on high wind days and use a water cart to control dust as required.	EO / FM	Establishment	CoA E1 REMM AQ4, AQ5 and AQ7 Best practice
26	Training will be provided to relevant project personnel, including relevant subcontractors on sound air quality control practices and the requirements from this plan through inductions, toolboxes and targeted training.	CM / EM	Prior to Establishment/ Establishment	G36 G38
27	Construction activities will be modified, reduced or controlled during high or unfavourable wind conditions if they have a potential to increase the generation or emission of dust.	FM / SI / EO	Establishment	REMM AQ4
28	Control measures including water carts, sprinklers, sprays/suppressants, dust screens or the application of geo-binding agents will be utilised where applicable to control dust and/or odour emissions. The frequency of use will be modified to accommodate prevailing conditions.	SI / FM	Establishment	REMM AQ7, AQ13, AQ14 and AQ19
29	The application of pesticides will be modified, reduced or controlled during high or unfavourable wind conditions where wind can carry pesticides outside of the defined treatment area.	EM / FM	Establishment	G36
30	Disturbed areas will be stabilised as soon as practicable in accordance with <i>Managing Urban Stormwater – Soils and Construction Vols 1 and 2, 4th Edition (Landcom, 2004)</i> to prevent or minimise windblown dust.	EM / PE / FM	Establishment	REMM AQ21
31	Cutting of materials such as concrete or bricks will be undertaken in a manner that minimises the generation of dust, such as the wetting of the cutting face.	SI / FM	Establishment	REMM AQ13
32	The storage of materials that have the potential to result in dust generation will be reduced as far as is practicable.	SI / FM	Establishment	REMM AQ8
33	Should regular inspections or monitoring identify air quality issues, mitigation measures being implemented are to be reviewed and revised to ensure that the most appropriate measure or combination of measures is employed.	EO	Establishment	REMM AQ3 Best practice
34	A wheel washing system or rumble grid will be installed at the site exit.	CM / SI	Prior to establishment	REMM AQ25
35	Where practicable, identified hazardous materials must be removed prior to the commencement of general demolition works.	EM / CM	Prior to Establishment / Establishment	Best practice
Noise and vibration				

No.	Mitigation and Management Measures	Responsibility	Timing	Reference
EM – Environment & Sustainability Manager, EO – Environmental Officer, PD – Project Director, PM - Plant Manager, FM- Foreman, PE – Project Engineers, CM – Construction Manager, SI – Superintendent, DM – Design Manager, TR – Traffic Manager, CRM – Community Relations Manager				
36	Training will be provided to relevant project personnel, including relevant subcontractors on these noise and vibration requirements through inductions, toolboxes and targeted awareness training.	EM	Prior to Establishment/ Establishment	G36 Best practice
37	Reasonable and feasible noise mitigation measures (such as those listed within this table and those within the CNVIS) will be implemented with the aim of achieving the noise and vibration objectives specified in the CoA and the relevant conditions of the project's EPL.	CM / EM / SI / FM	Prior to Establishment/ Establishment	CoA E81
38	Noise and vibration monitoring will be conducted periodically at the commencement of site establishment works.	CM / SI / FM / EC	Establishment	REMM NV6
39	The establishment of approved ancillary facilities will be undertaken during the following standard construction hours: <ul style="list-style-type: none"> • 7am to 6pm Mondays to Fridays, inclusive • 8am to 6pm Saturdays • At no time on Sundays or public holidays. Unless otherwise assessed and approved in accordance with the Project Out of Hours Works Protocol, EPL or CoA E73.	CM / EM / SI	Establishment	CoA E68 G36
40	Site access and egress points will be located as far as feasible and reasonable from noise sensitive receivers.	CM / SI / FM / EO	Establishment	Best practice
41	Neighbours, potentially noise affected sensitive receivers, local councils, EPA and key stakeholders will be notified of planned site establishment works at least five days and no longer than 10 days prior to commencement. Information provided will include: <ul style="list-style-type: none"> • The hours establishment works will be carried out • The types of activities to be undertaken • The location of activities. Details of the community information line and how to make an enquiry and/or complaint will be included in the notifications.	CM / EM / SI / CRM	Establishment	G36
42	Community updates will be provided throughout the site establishment works, in accordance with the Community Communication Strategy.	CRM / EM / CM	Establishment	CoA B1 G36
43	All complaints will be managed in accordance with the Community Communication Strategy.	CRM / EM	Prior to Establishment/ Establishment	G36
44	Non-tonal movement alarms will be used in place of tonal reversing alarms.	PM / CM	Prior to Establishment/ Establishment	Best practice
45	Drivers will be advised of designated vehicle routes, parking locations, acceptable delivery hours specific to the site and other relevant practices (i.e. minimising the use of engine brakes, no compression brakes, and no extended periods of engine idling).	TM / SI / FM / PE / Operator	Prior to Establishment/ Establishment	REMM TT15 Best practice

No.	Mitigation and Management Measures	Responsibility	Timing	Reference
EM – Environment & Sustainability Manager, EO – Environmental Officer, PD – Project Director, PM - Plant Manager, FM- Foreman, PE – Project Engineers, CM – Construction Manager, SI – Superintendent, DM – Design Manager, TR – Traffic Manager, CRM – Community Relations Manager				
46	Deliveries and removal of materials and wastes associated with site establishment works will be planned to minimise parking or queuing on public roads and particularly in local residential streets unless required by a road authority for community and motorist safety.	SI / PE / Operator / CRM	Establishment	CoA E52
47	Deliveries and removal of materials and wastes associated with site establishment works will be managed through specific traffic control plans to manage truck movements in order to minimise noise impacts.	SI / PE / Operator / CRM	Establishment	Best practice
48	Plant and equipment will be switched off when not in operation for periods of greater than 15 minutes.	FM / Operator	Establishment	Best practice
49	Where feasible and reasonable noisy equipment will be substituted by alternative low noise emitting equipment and/or the task method or process may be substituted to minimise noise impacts on potential noise sensitive receivers.	CM / PE / EM / SI / FM	Prior to Establishment/ Establishment	Best practice
50	Where possible, maintenance work on plant and equipment will be undertaken off site. If maintenance is to be onsite the task will be carried out, where reasonable and feasible, away from noise sensitive receivers.	Operators / SI / FM	Establishment	Best practice
51	Plant and machinery movement associated with site establishment works will be in a manner that limits the need for reversing movements where feasible and reasonable.	FM / PE / Operator	Establishment	Best practice
52	Plant and equipment used for site establishment works will be fitted with properly maintained noise suppression devices in accordance with the manufacturer's specifications.	PM	Prior to Establishment/ Establishment	Best practice
53	Plant and equipment used for site establishment works will be maintained in an efficient condition.	PM	Prior to Establishment/ Establishment	G36
54	All plant and equipment used on the site will be operated in a proper and efficient manner.	SI / FM / Operator	Establishment	G36
55	Additional temporary screening or enclosures will be considered for equipment where additional measures are feasible and reasonable to minimise noise impacts.	CM/ SI/ FM/ EO	Establishment	Best practice
56	Noisy equipment will be orientated away from neighbouring properties where practicable.	CM/ SI / FM / EO	Establishment	Best practice
57	The use of portable radios, public address systems or other methods of site communication that may unnecessarily impact upon nearby residents will be avoided where possible.	CM/ SI / FM / EO	Prior to Establishment/ Establishment	Best practice
58	The use of equipment that generates impulsive noise will be avoided as far as practicable.	CM/ SI / FM / EO	Prior to Establishment/ Establishment	Best practice
59	The movement of materials and plant and truck movements will be minimised.	CM/ SI / FM / EO	Prior to Establishment/ Establishment	Best practice
60	Unnecessary metal-on-metal contact will be minimised.	CM/ SI / FM / EO	Prior to Establishment/ Establishment	Best practice

No.	Mitigation and Management Measures	Responsibility	Timing	Reference
EM – Environment & Sustainability Manager, EO – Environmental Officer, PD – Project Director, PM - Plant Manager, FM- Foreman, PE – Project Engineers, CM – Construction Manager, SI – Superintendent, DM – Design Manager, TR – Traffic Manager, CRM – Community Relations Manager				
61	The distance between plant and noise sensitive receivers will be maximised as much as feasible and reasonable.	CM / SI / FM / EO	Establishment	Best practice
62	The safe working distances for vibration intensive plant will be complied with where feasible and reasonable. This will include the consideration of smaller equipment when working in close proximity to existing structures. Where the safe working distance cannot be achieved vibration monitoring will be carried out to determine the actual vibration levels and the vibration guidelines will be followed.	SI / FM	Establishment	G36
63	Where use of vibration intensive activities with the potential to impact upon sensitive receivers or structures are proposed these activities will be assessed with consideration of safe working distances provided in the Site Establishment CNVIS.	CM / PE / SM / EM / SI / FM	Establishment	G36
64	Non-noise generating structures will be used as noise barriers where practicable.	CM / SI / FM / EO	Establishment	Best practice
65	Where emergency works (those required to avoid injury or the loss of life, to avoid damage to property or to prevent environmental harm) are required to be undertaken outside of standard construction hours, the Project Acoustic Advisor, Environmental Representative and the EPA will be informed of the need for the works. In addition, noise and/or vibration affected receivers will also be informed of the likely impact and duration of the works where practicable.	CM / EM / SI / CRM	Establishment	CoA E74
Urban design and visual amenity				
66	Site establishment works will be conducted to minimise visual impacts where reasonable and feasible on nearby sensitive receivers. Where there is no noise wall or hoarding in place, boundary fencing must be installed minimise visual, noise and air quality impacts on adjacent sensitive receivers. Other measures may include retention of existing vegetation or treatment of key temporary structures. Measures will be implemented as early as possible.	EM / EO	Prior to Establishment / Establishment	CoA C25 CoA C26 REMM LV1 and LV10 Best practice
67	Minimise light spill from the project into adjacent visually sensitive properties and areas (such as bedroom windows and Sydney Park) by directing construction lighting into the construction areas and ensuring the site is not over-lit. This includes the sensitive placement and specification of lighting to minimise any potential increase in light pollution.	CM / EM	Prior to Establishment / Establishment	CoA E116 CoA E122 REMM LV2
68	Graffiti on site hoarding and construction litter around site perimeters will be removed throughout site establishment.	CM	Establishment	REMM LV3
69	Where noise walls or hoarding is not required, sites will be screened, with shade cloth (or similar material) (where necessary) as early as possible to minimise visual impacts. Screening must include CSSI name and number.	CM / EM	Establishment	CoA A45 CoA C25 CoA C26 REMM LV5
Soil and water quality				

No.	Mitigation and Management Measures	Responsibility	Timing	Reference
EM – Environment & Sustainability Manager, EO – Environmental Officer, PD – Project Director, PM - Plant Manager, FM- Foreman, PE – Project Engineers, CM – Construction Manager, SI – Superintendent, DM – Design Manager, TR – Traffic Manager, CRM – Community Relations Manager				
70	Soil and water management measures consistent with <i>Managing Urban Stormwater - Soils and Construction Vols 1 and 2, 4th Edition</i> (Landcom, 2004), including those listed in this table will be designed, installed and managed during the construction of the project to minimise soil erosion and the discharge of sediment and other pollutants to land and/or waters.	SI / FM / EO	Establishment	CoA E180
71	Prevent soil erosion through minimising ground disturbance and sealing ground surfaces as soon as is practicable.	EO / FM	Prior to Establishment/ Establishment	REMM SW05 and SW07
72	An Erosion and Sediment Control Plan (ESCP) will be developed and implemented for all sites. The ESCPs will be updated where changes to site use, storage and conditions change.	EO / FM	Prior to Establishment/ Establishment	REMM SW03
73	A soil conservation specialist will be engaged if relevant to provide advice regarding erosion and sediment control and review the initial ESCPs..	EO / EM	Prior to Establishment/ Establishment	REMM SW04
74	Environmental Work Method Statements (EWMS) will be prepared for high risk activities.	EO / FM	Prior to Establishment/ Establishment	Best practice
75	During construction planning, the project will seek to minimise the use of potable water and to identify any potential alternate water sources, including recycled water.	CM / EM	Establishment	CoA E198
76	Hardstand areas and surrounding public roads will be cleaned as required using methods such as brooms, bobcat attachments or street sweepers.	EO / FM	Establishment	Best practice
Contamination				
77	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 <i>Contaminated Land Management Act 1997</i> (NSW) (CLM Act). This includes further investigations in areas of potential contamination identified in the project footprint. If contamination posing a risk to human or ecological receptors is identified, a Remediation Action Plan will be prepared and implemented.	EM / CM	Prior to Establishment / Establishment	CoA E181 CoA E182 CoA E183 REMM CM01
78	An Unexpected Contaminated Land and Asbestos Finds Procedure will be implemented to manage any potentially contaminated materials that may be encountered during site establishment works.	EM / CM	Prior to Establishment / Establishment	CoA E184 REMM CM02 and CM06
Flooding and drainage				
79	Flooding and drainage will be managed in accordance with the Flood Mitigation Strategy.	EM / CM	Prior to Establishment / Establishment	Best practice
Biodiversity				

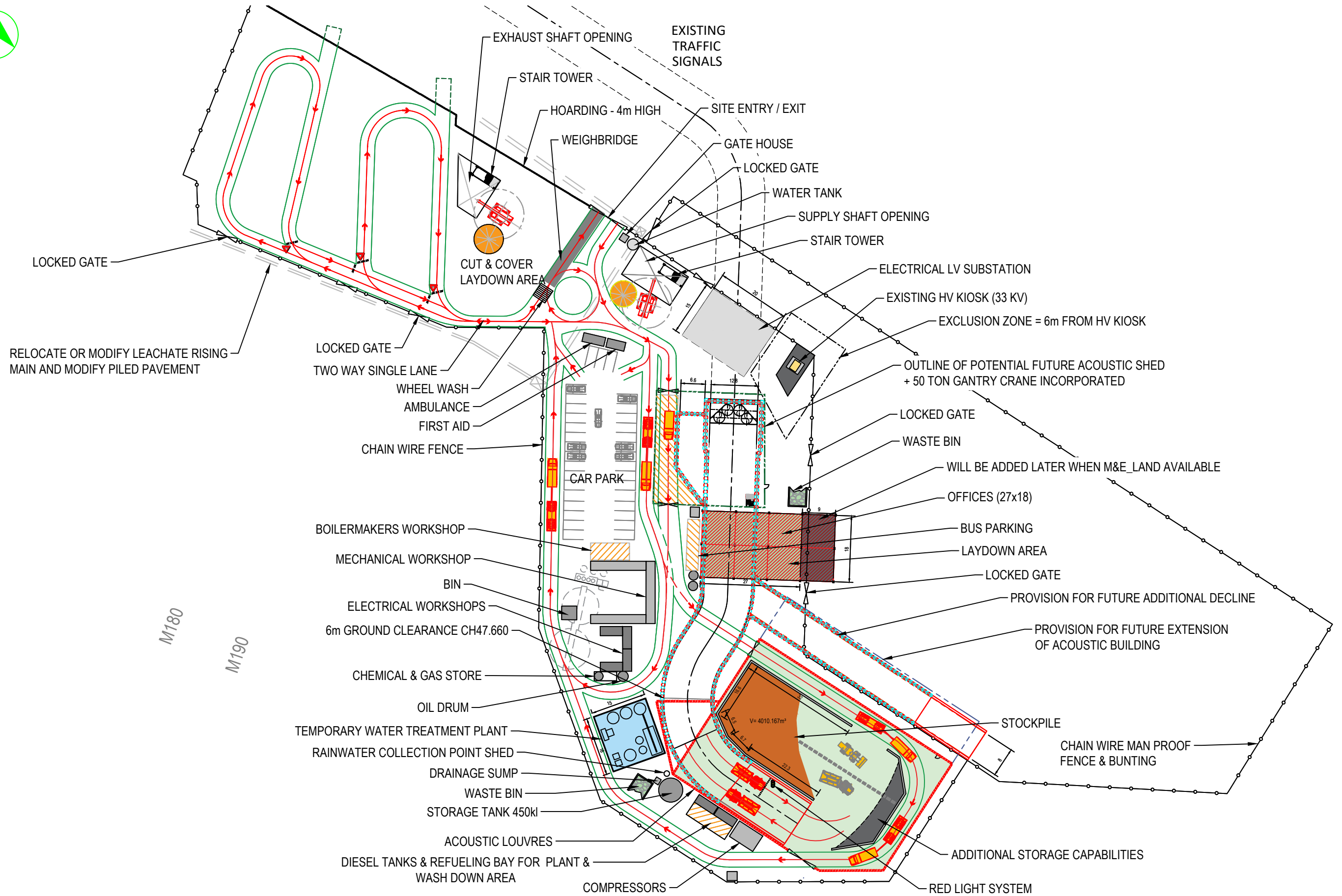
No.	Mitigation and Management Measures	Responsibility	Timing	Reference
EM – Environment & Sustainability Manager, EO – Environmental Officer, PD – Project Director, PM - Plant Manager, FM- Foreman, PE – Project Engineers, CM – Construction Manager, SI – Superintendent, DM – Design Manager, TR – Traffic Manager, CRM – Community Relations Manager				
80	Training will be provided to relevant project personnel, including relevant subcontractors on flora and fauna requirements through inductions, toolboxes and targeted training.	EM	Establishment	Best practice
81	Any works required outside the construction footprint will be referred to the Environment and Sustainability Manager for advice on further assessment and approval requirements.	CM / EM	Prior to Establishment/ Establishment	Best practice
82	In the event that a newly discovered threatened species or Endangered Ecological Community (EEC) are unexpectedly encountered during site establishment works, the LSBJV Threatened Fauna/EEC Procedure will be followed.	EM / PE / FM	Prior to Establishment/ Establishment	G36
83	Weeds management during the site establishment works will be in accordance with the project weed management protocols, which will be part of the Construction Flora and Fauna Management Plan. Prior to commencement of clearing, weeds located within the approved footprint of the site establishment works will be 'tagged' to ensure weed material is kept separated from mulch during the clearing process, potentially transferring weeds throughout the site and offsite. Weed material will be disposed of at an appropriately licensed waste receiving facility or managed in accordance with <i>Noxious Weeds Act 1993</i> or local council requirements.	FM / EO / Clearing Contractor	Prior to Establishment/ Establishment	REMM B1 G40 Best practice <i>Noxious Weed Act 1993</i>
84	Areas disturbed during the site establishment works will, where reasonable and feasible, be progressively stabilised as a temporary environmental management measure at the earliest opportunity. Where practicable, local indigenous plant species will be utilised during temporary re-vegetation to maintain and enhance habitat, particularly in key habitat areas.	EC / PE / FM	Prior to Establishment/ Establishment	Best practice
85	Site establishment works occurring within or near areas containing native trees to be retained, will be undertaken in accordance with LSBJV Working Around Trees Guideline.	FM / Project Ecologist / EO	Prior to Establishment/ Establishment	Best practice
86	Any displaced or injured fauna encountered during the site establishment works, will be managed in accordance with the LSBJV Fauna Handling and Rescue Procedure.	FM / Project Ecologist / EO	Prior to Establishment/ Establishment	Best practice
87	Works will be programmed to minimise the extent and duration of disturbance to vegetation where possible. This will include leaving clearing (unless undertaken manually or by other means that cause minimal disturbance (i.e. felling trees and leaving the stump in situ) and initial earthworks in intermittent and permanent watercourses until subsequent works are about to commence.	FM / PE / EM	Prior to Establishment/ Establishment	CoA E174
Non-Aboriginal heritage and Aboriginal heritage				
88	Training will be provided to relevant project personnel, including relevant subcontractors on the location of known Aboriginal and non-Aboriginal heritage items, areas of archaeological sensitivity and artefacts (including photographs where available) along with key requirements from this plan through the project induction. Toolboxes and targeted training will also be employed where appropriate, to sites where there is a high risk of direct impacts to heritage.	All personnel and subcontractors	Prior to Establishment/ Establishment	CoA E154 CoA E173 REMM NAH01

No.	Mitigation and Management Measures	Responsibility	Timing	Reference
EM – Environment & Sustainability Manager, EO – Environmental Officer, PD – Project Director, PM - Plant Manager, FM- Foreman, PE – Project Engineers, CM – Construction Manager, SI – Superintendent, DM – Design Manager, TR – Traffic Manager, CRM – Community Relations Manager				
89	If any unexpected heritage items (including human remains) are encountered, works potentially affecting the find will cease immediately and the RMS Standard Management Procedure – Unexpected Heritage Items March 2015) will be followed.	All personnel and subcontractors	Prior to Establishment/ Establishment	CoA E155 CoA E157 REMM NAH08 and AH1 G36
90	The Proponent will not harm, modify or otherwise impact any heritage items outside the CSSI footprint. Project boundaries will be clearly delineated where relevant.	CM / EM	Establishment	CoA E154
Resource use and waste minimisation				
91	Installation of segregated bins for recyclable materials and provision of this material to be recycled and reused where possible.	EM / CM	Prior to Establishment / Establishment	REMM RW2, RW4 and RW5 Best practice
92	All waste generated during site establishment must be classified in accordance with the Waste Classification Guidelines Part 1: Classifying waste (EPA 2014).	EM / CM	Prior to Establishment / Establishment	REMM RW2 Best practice
93	Suitably licensed waste contractors will be used for the collection and transport of all non-domestic, retail and commercial wastes for either offsite processing and/or disposal to an appropriately licensed facility. Receipts for waste transfer and disposal will be checked to ensure all details are correct and retained for audit purposes.	EM / CM	Prior to Establishment / Establishment	Best practice
94	All waste materials removed from the sites must only be directed to a waste management facility or premises lawfully permitted to accept the materials.	EM / CM	Prior to Establishment / Establishment	REMM RW5 Best practice
Hazard and risk				
95	All fuels, chemicals and hazardous liquids will be stored within bunded areas in accordance with Australian Standards and EPA Guidelines.	SI / FM / PE	Prior to Establishment / Establishment	REMM HR1, HR2, HR3 and HR4
96	Emergency spill kits will be kept on-site at all times. Staff will be made aware of the location of the spill kits.	EM / EO	Prior to Establishment/ Establishment	REMM HR3
97	Equipment storage, stockpiling of resources and vehicle access will be placed in designated areas, where practicable.	CM / SI / FM	Establishment	Best practice
Land use and property				
98	Access to all properties will be maintained during site establishment, where feasible and reasonable, unless otherwise agreed by the relevant property owner or occupier. Any access physically affected by the project will be reinstated to at least an equivalent standard, unless agreed with by the property owner.	EM / CM	Establishment	REMM PL2 Best Practice
99	In the event that damage occurs to a property as a result of the construction of the project, the damage will be appropriately rectified. Any disputes between a property or infrastructure	EM / CM	Establishment	REMM PL13

No.	Mitigation and Management Measures	Responsibility	Timing	Reference
EM – Environment & Sustainability Manager, EO – Environmental Officer, PD – Project Director, PM - Plant Manager, FM- Foreman, PE – Project Engineers, CM – Construction Manager, SI – Superintendent, DM – Design Manager, TR – Traffic Manager, CRM – Community Relations Manager				
	owners regarding damage and rectification will be referred to the Independent Property Impact Assessment Panel for resolution.			Best Practice
Cumulative impacts				
100	Regular communication with the New M5 and the M4 East project personnel will occur to ensure cumulative impacts are managed accordingly.	EM	Establishment	REMM AQ2 Best practice

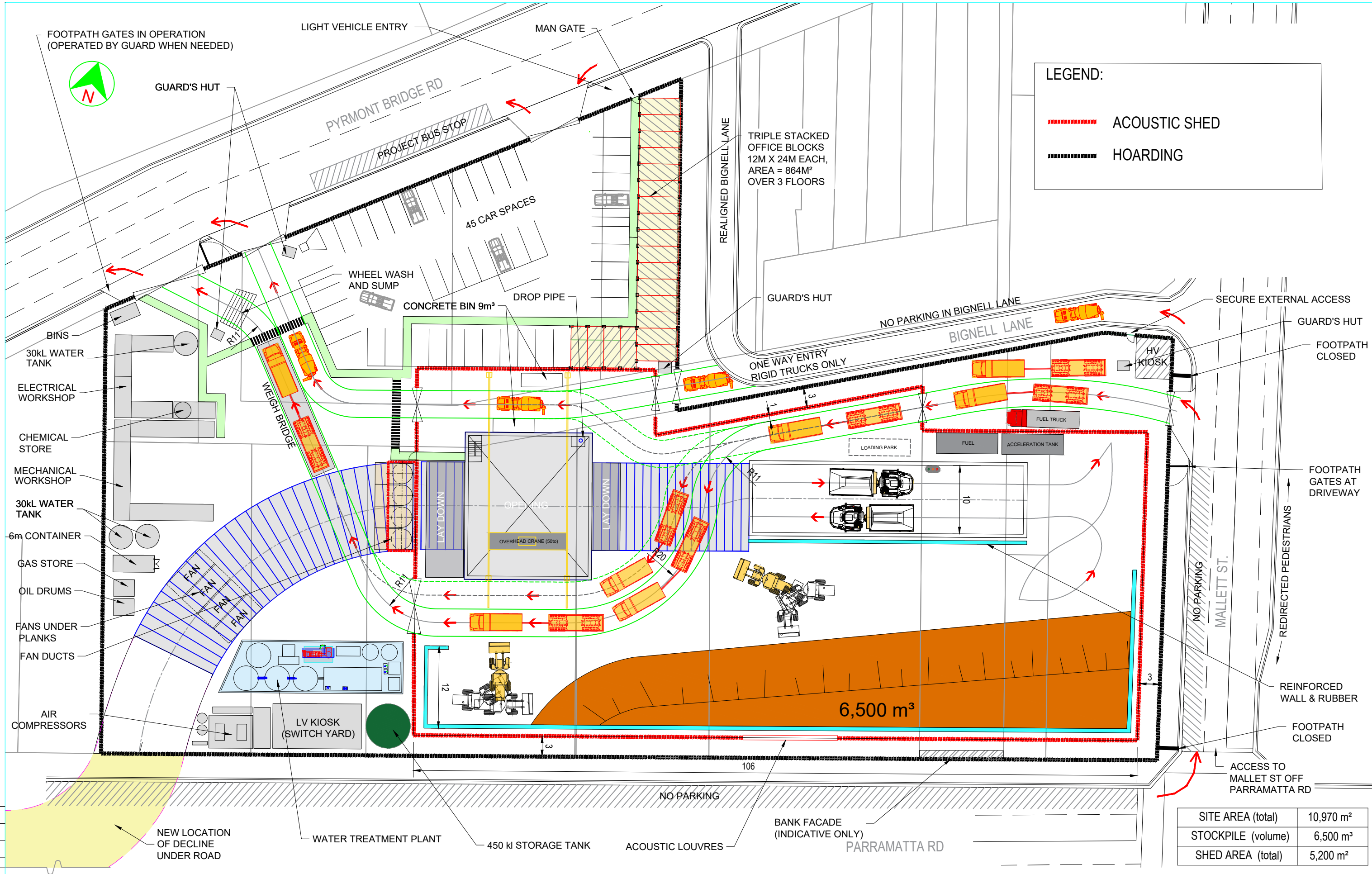
Appendix C

Site Layouts



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DRAWING FILE LOCATION \ NAME C:\Users\m.bautista\Documents\references from others\FROM CHARLES\charles\M4M5-LSBJ-SPI-TWK-TD01-DRG-0002-A (SPI Compound Layout-Tunnel and Civil Operations).dwg		PLOT DATE / TIME 14/08/2018 11:50:10 AM		PLOT BY M.BAUTISTA		PACKAGE NUMBER		PLOT DATE / TIME 14/08/2018		PLOT BY M.BAUTISTA		CLIENT Sydney Motorway Corporation WestConnex		M4-M5 LINK MAIN TUNNEL WORKS CONSTRUCTION SITE ESTABLISHMENT SPI SITE COMPOUND LAYOUT TUNNEL & CIVIL OPERATIONS		A3		
DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING		REV A	DATE 17/07/2018	AMENDMENT / REVISION DESCRIPTION TENDER ISSUE		APPROVAL CW	SCALES ON A3 SIZE DRAWING 1:1000 FULL SIZE A3		DRAWINGS / DESIGN PREPARED BY LENLEASE SAMSUNG BOUYGUES JOINT VENTURE		TITLE DRAWN DRG CHECK DESIGN DESIGN CHECK DESIGN MNGR PROJECT MNGR		NAME C.LEMON C.WOELLNER		DATE 17-07-2018 17-07-2018		ISSUE STATUS EDMS No.	
CO-ORDINATE SYSTEM MGA ZONE 56		HEIGHT DATUM AHD		PROJECT M4M5 - LSBJ SPI		AREA / LOCATION TWK TD01		ROLE Drg-0002		ORIGINATOR B		TYPE 1 OF 1		NUMBER 1 OF 1		REVISION		



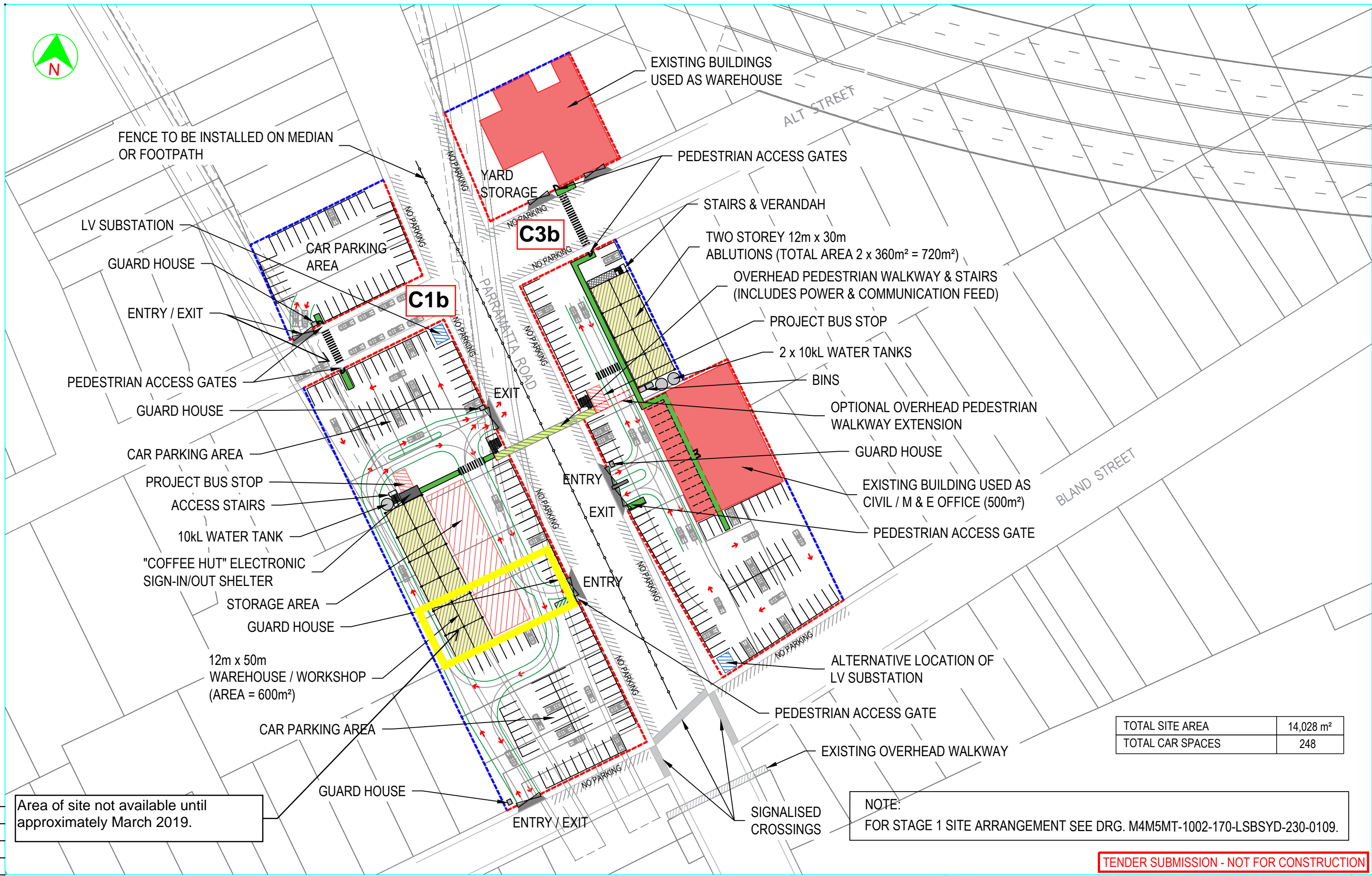
LEGEND:

- ACOUSTIC SHED
- HOARDING

SITE AREA (total)	10,970 m ²
STOCKPILE (volume)	6,500 m ³
SHED AREA (total)	5,200 m ²

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DRAWING FILE LOCATION \ NAME C:\Users\c.lemo\Desktop\New folder (2)\M4M5-LSBJ-PBR-TWK-TD01-DRG-0002-A.dwg		PLOT DATE \ TIME 10/08/2018 3:21:08 PM		PLOT BY C.LEMON		PACKAGE NUMBER		PLOT DATE / TIME 10/08/2018		PLOT BY C.LEMON		CLIENT Sydney Motorway Corporation WestConnex		M4-M5 LINK MAIN TUNNEL WORKS A3	
DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING		REV	DATE	AMENDMENT / REVISION DESCRIPTION		APPROVAL	SCALES ON A3 SIZE DRAWING		DRAWINGS / DESIGN PREPARED BY		TITLE	NAME	DATE	CONSTRUCTION SITE ESTABLISHMENT PYRMONT BRIDGE ROAD GENERAL ARRANGEMENT	
		0	09/08/2018	FIRST ISSUE			1:500 FULL SIZE A3		LENLEASE SAMSUNG BOUYGUES JOINT VENTURE		DRG CHECK	C.LEMON	09-08-2018	PROJECT AREA / LOCATION ROLE ORIGINATOR TYPE NUMBER REVISION	
		A	10/08/2018	REVISED AS PER COMMENTS			CO-ORDINATE SYSTEM MGA ZONE 56				DESIGN			M4M5 -LSBJ-PBR-TWK TD01 Drg-0002 A	
							HEIGHT DATUM AHD				DESIGN CHECK			© Roads and Maritime Services	
											DESIGN MNGR				
											PROJECT MNGR				



FENCE TO BE INSTALLED ON MEDIAN OR FOOTPATH

EXISTING BUILDINGS USED AS WAREHOUSE

ALT STREET

PEDESTRIAN ACCESS GATES

YARD STORAGE

STAIRS & VERANDAH

LV SUBSTATION

C3b

TWO STOREY 12m x 30m ABLUTIONS (TOTAL AREA 2 x 360m² = 720m²)

GUARD HOUSE

CAR PARKING AREA

OVERHEAD PEDESTRIAN WALKWAY & STAIRS (INCLUDES POWER & COMMUNICATION FEED)

ENTRY / EXIT

C1b

PROJECT BUS STOP

PEDESTRIAN ACCESS GATES

GUARD HOUSE

2 x 10kL WATER TANKS

CAR PARKING AREA

BINS

PROJECT BUS STOP
ACCESS STAIRS

OPTIONAL OVERHEAD PEDESTRIAN WALKWAY EXTENSION

10kL WATER TANK
"COFFEE HUT" ELECTRONIC SIGN-IN/OUT SHELTER

EXIT

GUARD HOUSE

STORAGE AREA

GUARD HOUSE

ENTRY

EXISTING BUILDING USED AS CIVIL / M & E OFFICE (500m²)

12m x 50m WAREHOUSE / WORKSHOP (AREA = 600m²)

ENTRY

PEDESTRIAN ACCESS GATE

CAR PARKING AREA

GUARD HOUSE

ALTERNATIVE LOCATION OF LV SUBSTATION

PEDESTRIAN ACCESS GATE

EXISTING OVERHEAD WALKWAY

ENTRY / EXIT

SIGNALISED CROSSINGS

NOTE:
FOR STAGE 1 SITE ARRANGEMENT SEE DRG. M4M5MT-1002-170-LSBSYD-230-0109.

TOTAL SITE AREA	14,028 m²
TOTAL CAR SPACES	248

Area of site not available until approximately March 2019.

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DESIGN MODEL FILE(S) USED FOR DOCUMENTATION OF THIS DRAWING		REV	DATE	AMENDMENT / REVISION DESCRIPTION		APPROVAL	SCALES ON A3 SIZE DRAWING	DRAWINGS / DESIGN PREPARED BY		TITLE	NAME	DATE	ISSUE STATUS		PROJECT		AREA / LOCATION	ROLE	ORIGINATOR	TYPE	NUMBER	REVISION	
		A	19/04/2018	TENDER ISSUE		CW	1:1000 FULL SIZE A3			DRAWN	I.SINICCO	19-04-2018	-		M4M5MT-1002 -170 - LSBSYD -230 -0110							A	
							CO-ORDINATE SYSTEM MGA ZONE 56			DRG CHECK	-	-	EDMS No.										
							HEIGHT DATUM AHD			DESIGN	C.WOELLNER	19-04-2018	-										
										DESIGN CHECK	-	-	-										
										DESIGN MNGR	-	-	-										
										PROJECT MNGR	-	-	-										

Appendix D

Sensitive Area Plans

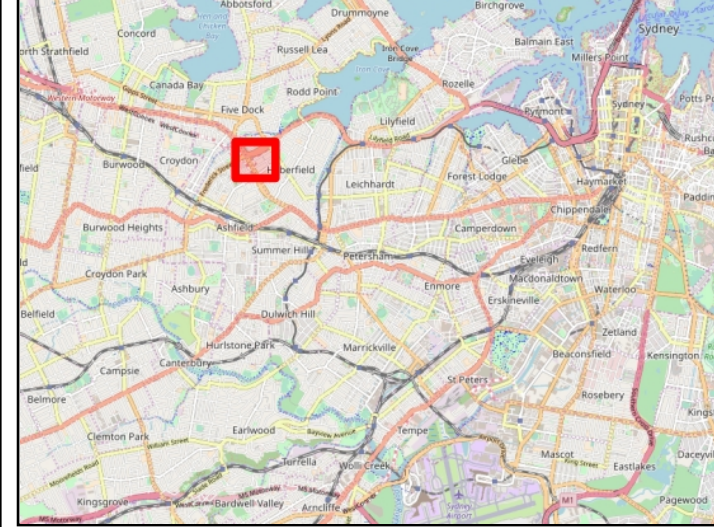
M4-M5 Link Mainline Tunnels (the Project)

Sensitive Area Plan

Northcote Street (C3a), Haberfield (C2b), Parramatta Road East (C3b), Parramatta Road West (C1b) and Wattle Street (C1a) Sites

Legend

- Project Tunnel Alignment
 - Ancillary Facilities
 - Historical Archaeological Management Unit
 - NCA Boundary
- Local Environmental Plan**
- ▨ Conservation Area - General
 - ▨ Item - Archaeological
 - ▨ Item - General
 - ▨ Item - Landscape
- Land Use**
- Residential
 - Garage
 - Commercial
 - Aged Care
 - Cafe/Bar
 - Child Care
 - Educational
 - Hotel
 - Medical
 - Outdoor Area
 - Public Building
 - Place of Worship
 - Other
- Ecological Survey (03/08/18)**
- Broad-leaf Privet (*Ligustrum lucidum*)
 - Cockspur Coral Tree (*Erythrina crista-galli*)
 - Camphor Laurel (*Cinnamomum camphora*)
 - Small-leaved Privet (*Ligustrum vulgare*)
 - Potential Microbat Habitat



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M4-M5 Link Mainline Tunnels (the Project)

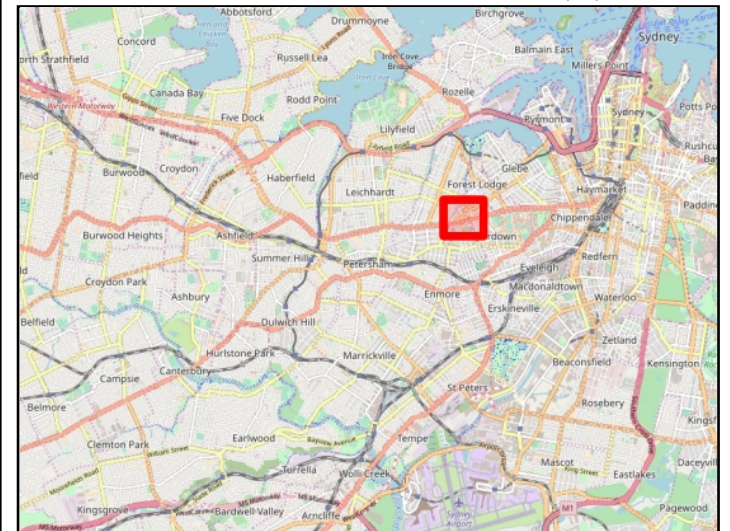
Sensitive Area Plan

Pyrmont Bridge Road Site (C9)

Legend

- | | |
|---|-------------------------------|
| — Project Tunnel Alignment | Local Environmental Plan |
| □ Ancillary Facilities | □ Conservation Area - General |
| □ Historical Archaeological Management Unit | □ Item - Archaeological |
| — NCA Boundary | □ Item - General |
| □ Potential heritage item | □ Item - Landscape |
| — Waterway | |
| Land Use | |
| ■ Residential | |
| ■ Garage | |
| ■ Commercial | |
| ■ Aged Care | |
| ■ Cafe/Bar | |
| ■ Child Care | |
| ■ Educational | |
| ■ Hotel | |
| ■ Medical | |
| ■ Outdoor Area | |
| ■ Public Building | |
| ■ Place of Worship | |
| ■ Other | |

0 78.09 156.2 Meters
(A3) 1: 3,074



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M4-M5 Link Mainline Tunnels (the Project)

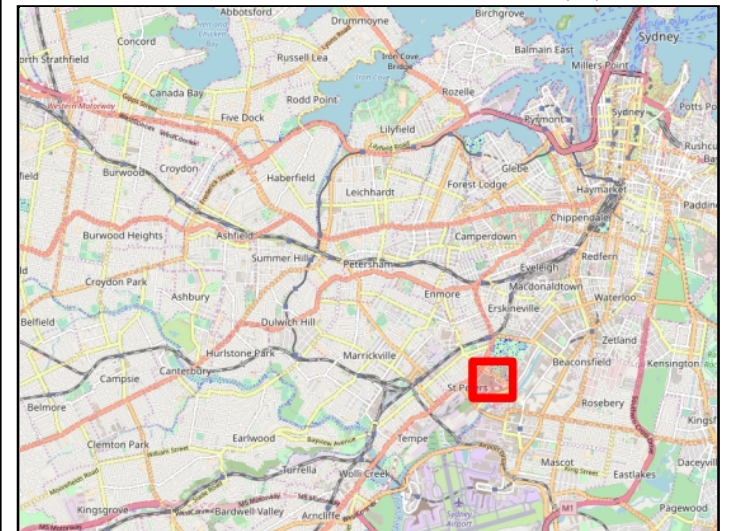
Sensitive Area Plan

Campbell Road Site (C10)

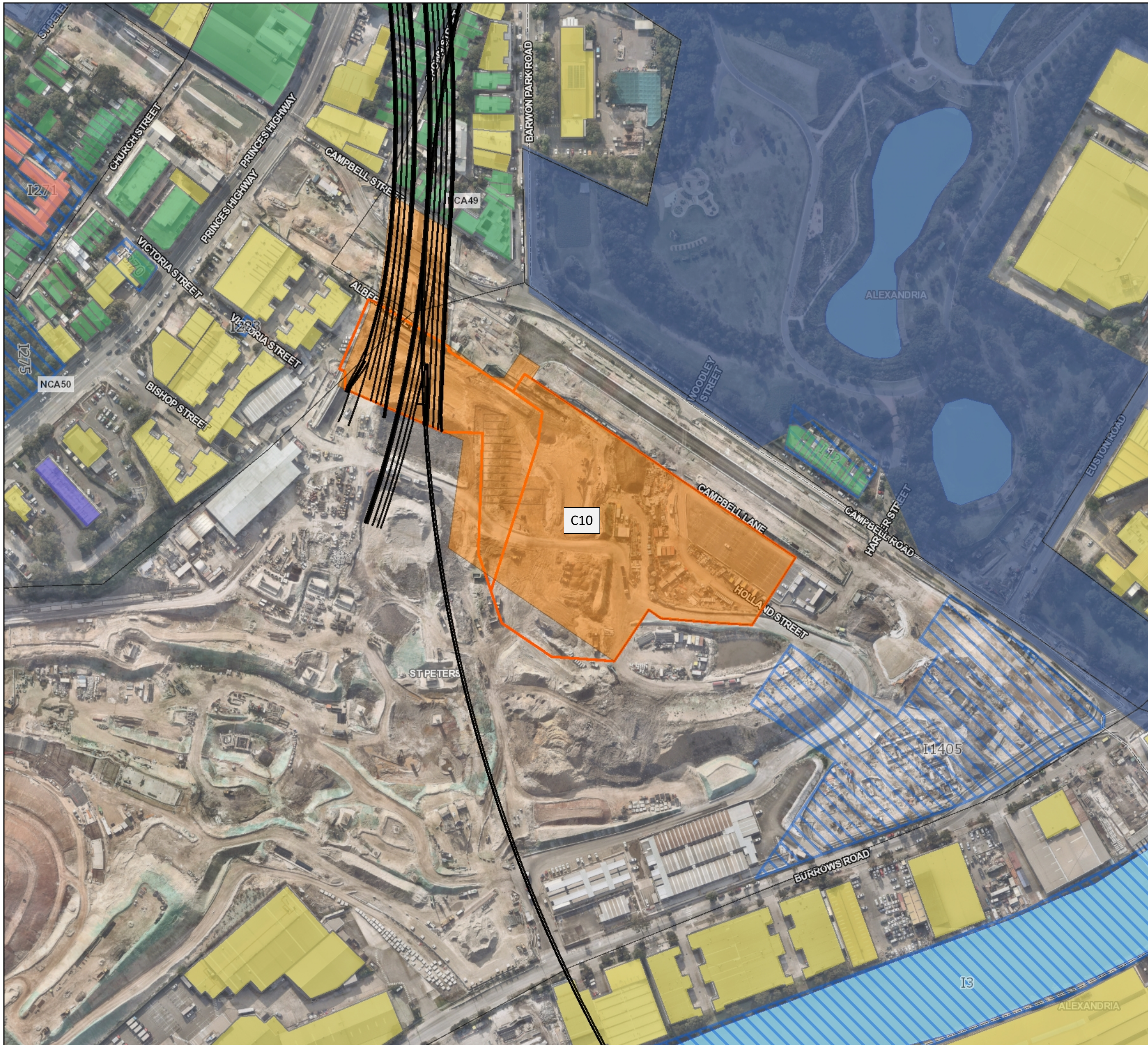
Legend

- | | |
|---|-------------------------------|
| — Project Tunnel Alignment | Local Environmental Plan |
| □ Ancillary Facilities | □ Conservation Area - General |
| ■ Historical Archaeological Management Unit | ■ Item - Archaeological |
| — NCA Boundary | ■ Item - General |
| ■ Waterbody | ■ Item - Landscape |
| Land Use | |
| ■ Residential | |
| ■ Garage | |
| ■ Commercial | |
| ■ Aged Care | |
| ■ Cafe/Bar | |
| ■ Child Care | |
| ■ Educational | |
| ■ Hotel | |
| ■ Medical | |
| ■ Outdoor Area | |
| ■ Public Building | |
| ■ Place of Worship | |
| ■ Other | |

0 78.09 156.2 Meters
(A3) 1: 3,074



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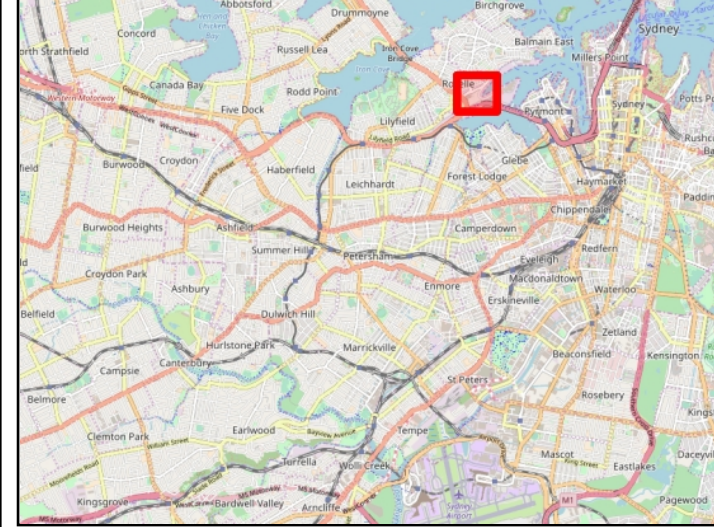
M4-M5 Link Mainline Tunnels (the Project)

Sensitive Area Plan

White Bay Site (C11)

Legend

-  Project Tunnel Alignment
-  Ancillary Facilities
-  Historical Archaeological Management Unit
-  NCA Boundary
-  Waterbody
- Land Use**
-  Residential
-  Garage
-  Commercial
-  Aged Care
-  Cafe/Bar
-  Child Care
-  Educational
-  Hotel
-  Medical
-  Outdoor Area
-  Public Building
-  Place of Worship
-  Other
-  Potential heritage item
-  Sandstone cutting
-  Southern Penstock
-  Former White Bay Hotel Archaeology
-  State Heritage Register Area
-  Sydney Regional Environmental Plan No 26 (City West) - Heritage Register Item



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Appendix E

Unexpected Contaminated Land and Asbestos Finds Procedure

Document control

Approval and authorisation

Title	M4-M5 Link Mainline Tunnels Contaminated Land Management Plan
Document No/Ref	M4M5-LSBJ-PRW-EN-GE01-PRC-0001-01
Document Path	

Note:

Revision 01 Document Number has changed from M4M5-LSBJ-PRW-GEN-EV01-PRC-0001-E (previous revisions) to M4M5-LSBJ-PRW-EN-GE01-PRC-0001-01.

Glossary / Abbreviations

Abbreviations	Expanded text
ACM	Asbestos Containing Materials
AMP	Asbestos Management Plan
ASS	Acid Sulfate Soil
CEMP	Construction Environmental Management Plan
Client, the	Sydney Motorway Corporation
CLMP	Contaminated Land Management Plan
CLM Act	<i>Contaminated Land Management Act 1997</i>
CoA	Conditions of Approval
EC	Environmental Coordinator
EM	Environment and Sustainability Manager
EPA	Environmental Protection Agency
ER	Environmental Representative
EWMS	Environmental Work Method Statement
LSBJV	Lendlease Samsung Bouygues Joint Venture
PPE	Personal Protective Equipment
Project, the	The M4-M5 Link Mainline Tunnels
RAP	Remediation Action Plan
REMM	Revised Environmental Management Measures (from the SPIR)
Roads and Maritime	Roads and Maritime Services
SEMP	Site Establishment Management Plan
SM	Safety Manager
SMC	Sydney Motorway Corporation
SS	Site Supervisor
SSWMP	Soil and Surface Water Management Sub-plan
WTP	Water Treatment Plants

1 Introduction

This Unexpected Contaminated Land and Asbestos Finds Procedure (the Procedure) forms part of the Contaminated Land Management Plan (CLMP) developed for the construction of the M4-M5 Link Mainline Tunnels (the Project).

This Procedure details the actions to be taken and describes how the Lendlease Samsung Bouygues Joint Venture (LSBJV) will manage unexpected contaminated and asbestos finds discovered during construction activities.

This Procedure has been prepared to address the requirements of the Minister's Conditions of Approval (CoA), the WestConnex M4-M5 Link Environmental Impact Statement (EIS), the revised environmental management measures (REMM) listed in the WestConnex M4-M5 Link Submissions and Preferred Infrastructure Report (SPIR) and all applicable guidance and legislation.

This procedure will be reviewed and updated in accordance with the Soil and Surface Water Management Sub-plan (SSWMP) and/or Site Establishment Management Plan (SEMP).

2 Purpose

There is the potential for previously unidentified contaminants to be uncovered during construction of the Project. Unexpected finds may include the discovery of hazardous materials, such as asbestos containing materials (ACM), contaminants, or unexpected acid sulfate soils (ASS) in addition to that identified on site.

3 Induction / Training

All personnel on site, including employees, contractors and sub-contractors, will be trained and made aware of the requirements of this procedure in accordance with the SSWMP during the Project induction and in toolbox talks where relevant. Key personnel will be trained in the identification and management procedures of unexpected potentially contaminated or asbestos containing materials.

4 Scope

This Procedure is applicable to all activities conducted by personnel on the Project that have the potential to uncover/encounter contaminated soil/material. For further details regarding the general management of Contaminated Lands for the Project, refer to the CLMP. For further details regarding the general management of asbestos refer to the Asbestos Management Plan (AMP) prepared as part of the CEMP.

This procedure will be implemented by LSBJV throughout construction.

5 Requirements

The CoA, REMM and Roads and Maritime QA Specifications G36 relevant to this procedure are listed in Table 5-1 below. A cross reference is also included to indicate where the requirements are addressed in this procedure or other Project management documents.

Table 5-1 CoA, REMMs, Roads and Maritime QA Specifications G36 relevant to the Unexpected Contaminated Lands and Asbestos Finds Procedure

Requirement	Commitment	Timing	Document Reference
CoA			
E184	An Unexpected Contaminated Land and Asbestos Finds Procedure must be prepared and must be followed should unexpected contaminated land or asbestos be excavated or otherwise discovered during construction.	Prior to Construction / Construction	SSWMP CLMP AMP This plan
E185	The Unexpected Contaminated Land and Asbestos Finds Procedure must be implemented throughout construction.	Construction	SSWMP CLMP AMP Section 4
REMMs			
CM06	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 2013) and detailed in the CEMP. The procedure will include: <ul style="list-style-type: none"> • Cease work in the vicinity • Initial assessment by an appropriately qualified environmental consultant • Further assessment and management of contamination, if confirmed, in accordance with section 105 of the CLM Act. 	Construction	SSWMP CLMP AMP Section 6.1, 6.2, 6.3, 6.4 Section 7
RW10	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 2013) and detailed in the CEMP.	Construction	SSWMP CLMP AMP Section 6.1, 6.2, 6.3, 6.4 Section 7
Roads and Maritime QA Specifications G36			
Section 4.2.2	Include in your CEMP a Contaminated Land Management Sub-Plan, which must comply	Prior to Construction	SSWMP

Requirement	Commitment	Timing	Document Reference
	<p>with the <i>Contaminated Land Management Act 1997</i> (NSW), Roads and Maritime Services publication “Contaminated Land Management Guideline”, Roads and Maritime Services “Environmental Incident Classification and Reporting Procedure”, and Environmental Protection Authority (EPA) guidelines on contaminated land management.</p> <p>The Contaminated Land Management Sub-Plan must provide for dealing with:</p> <ul style="list-style-type: none"> • areas of known contamination (if applicable) • unexpected contamination finds • any land contamination caused by you. 		<p>CLMP AMP Section 6.1, 6.2, 6.3, 6.4 Section 7</p>
Section 4.2.3	<p>Unexpected contamination find - Promptly notify the Roads and Maritime Services Representative of any suspected or potential contamination exposed during construction activities, and cease all work activities within the vicinity of actual or suspected contaminated land.</p> <p>The Roads and Maritime Services Representative may at its discretion choose to take over the investigation and management of an unexpected contamination find, and directly appoint an EPA accredited contaminated site auditor.</p>	Construction	<p>SSWMP CLMP AMP Section 7</p>
Section 4.2.4	<p>Where the contamination is known or an unexpected contamination find has been identified, a Remediation Action Plan may be provided by the Roads and Maritime Services Representative. If a Remedial Action Plan is not provided by the Roads and Maritime Services Representative, prepare a Remediation Action Plan for remediating the known areas of contamination or an unexpected contamination find, and areas of potential contamination in their immediate vicinity.</p> <p>The Remediation Action Plan must be prepared in accordance with EPA guidelines on contaminated land management, and must include the following:</p>	Construction	<p>SSWMP CLMP AMP Section 6.6 Section 7</p>

Requirement	Commitment	Timing	Document Reference
	<p>(a) testing requirements for any contaminated material prior to its disposal off site</p> <p>(b) validation plan, which must include the area in the immediate vicinity of (both below and adjacent to) the known contamination</p> <p>(c) implications of the validation results on the waste classification for material that may be excavated in the vicinity of the known contamination.</p>		

6 Procedure

6.1 Potential Asbestos Containing Materials

If unexpected Asbestos Containing Materials (ACM) are found during construction activities, LSBJV will follow the general procedure shown in Figure 6-1.

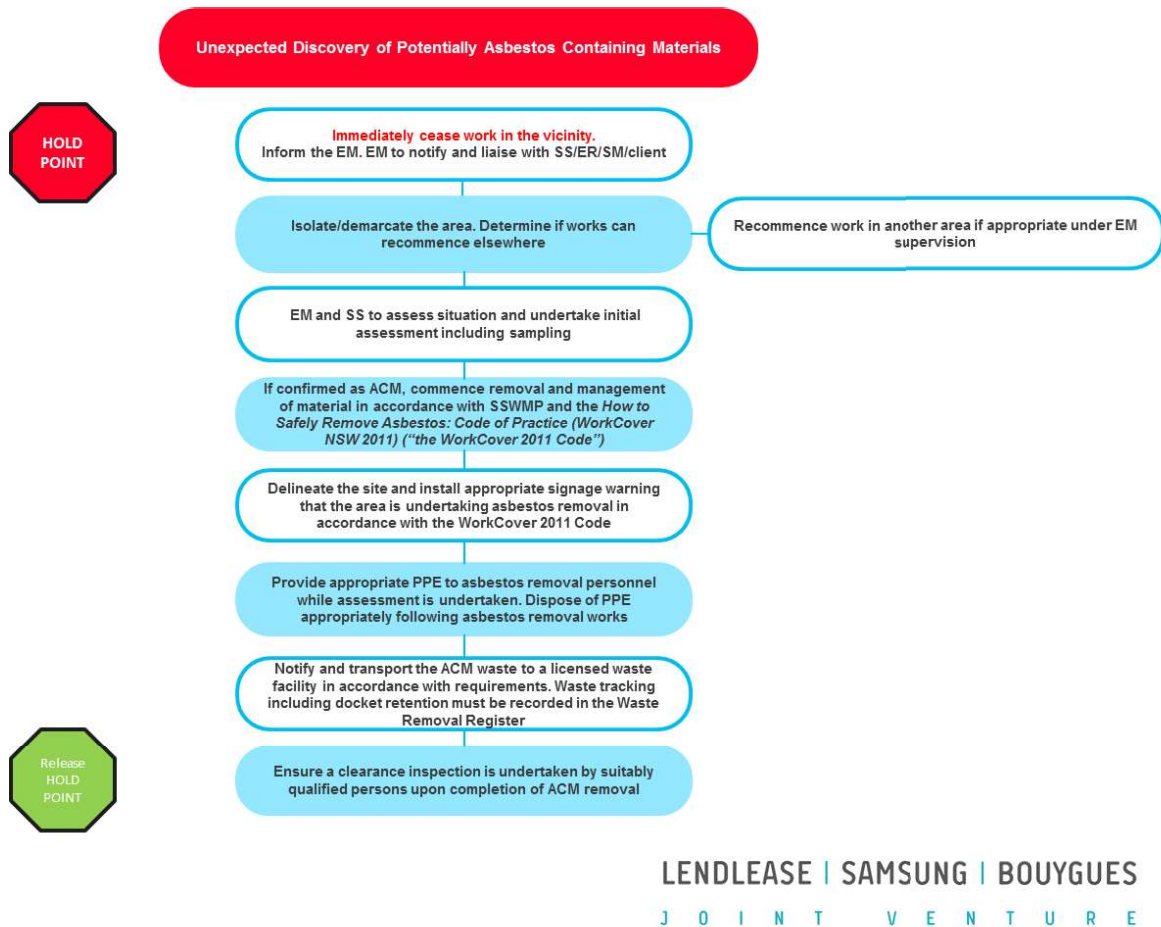


Figure 6-1 Unexpected Asbestos finds flowchart

(EM = Environmental Manager, ER = Environmental Representative, SS = Site Supervisor / Foreman, SM = Safety Manager, client = Sydney Motorway Corporation)

6.2 Potential Contamination

If unexpected contamination is found during construction activities, LSBJV will follow the general procedure shown in Figure 6-2.

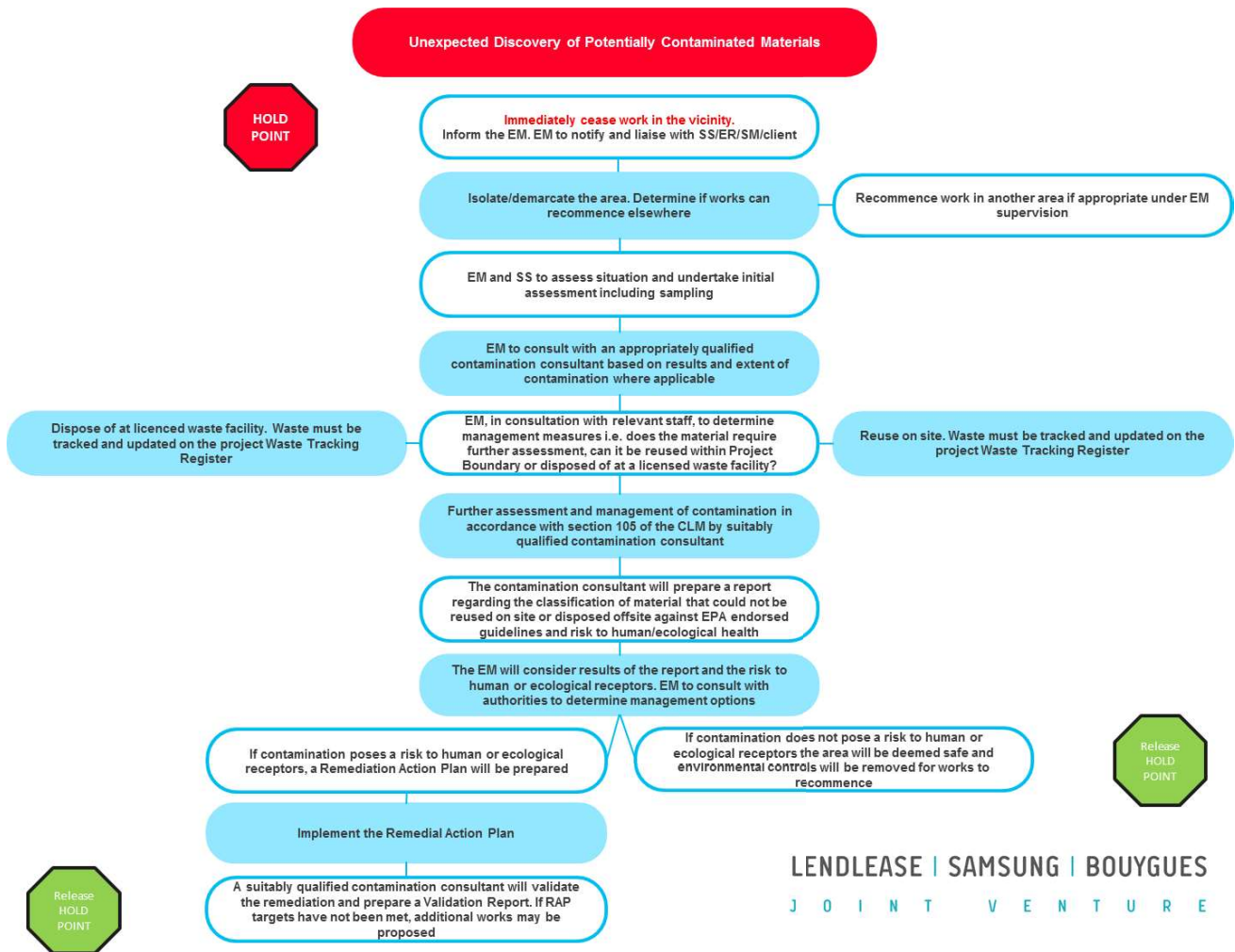
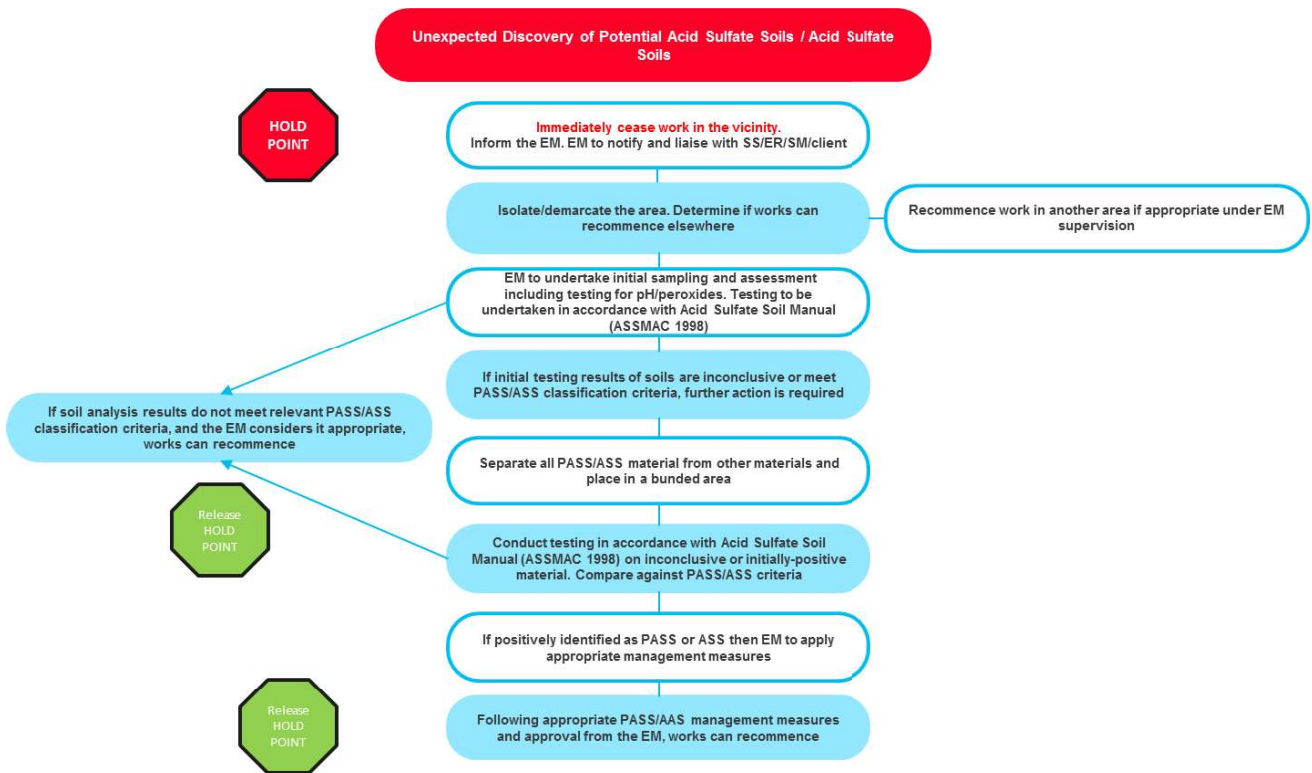


Figure 6-2 Unexpected discovery of Contamination flowchart

(EM = Environmental Manager, ER = Environmental Representative, SS = Site Supervisor / Foreman, SM = Safety Manager, client = Sydney Motorway Corporation)

6.3 Potential Acid Sulfate Soils

If unexpected acid sulfate soils are encountered during construction activities, LSBJV will follow the general procedure shown in Figure 6-3.



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JOINT VENTURE

Figure 6-3 Unexpected discovery of Acid Sulfate Soils flowchart

(EM = Environmental Manager, ER = Environmental Representative, SS = Site Supervisor / Foreman, SM = Safety Manager, client = Sydney Motorway Corporation)

6.4 Contaminated Groundwater

Construction Water Treatment Plants (WTP) would be used to treat groundwater intercepted by tunnelling works. These WTPs would be designed to treat groundwater in accordance with CoA E186. As such this unexpected find protocol does not include the treatment and management of contaminated groundwater. Refer to the Groundwater Management Plan (GMP) and Groundwater Monitoring Program both prepared as part of the Construction Environmental Management Plan for groundwater treatment and management procedures. Should groundwater be encountered that is contaminated beyond expected parameters identified in the GMP and monitoring program, water treatment or offsite disposal will be evaluated. The following procedure will be followed:

- Groundwater will be inspected and sampled by the Environment Team or Project environmental consultant
- Evaluate the ability of the water treatment plant to treat the water to a quality suitable for disposal. Where the water treatment plant is not able to treat the contaminants present, other options for treatment or disposal will be considered including disposal to a liquid waste contractor.

6.5 Personal Protective Equipment (PPE)

Prior to any contamination investigation or management, appropriate personal protective equipment (PPE) is to be worn as per the relevant Material Safety Data Sheet(s). This may include, but not be limited to:

- Eye goggles
- Face mask
- Rubber boots
- Rubber gloves
- Appropriate work clothes (i.e. long sleeve shirt/pants and steel capped boots).

PPE will be utilised in accordance with the Project Safety Management Plan.

6.6 Site/Area Contamination Investigation and Remedial Action

In accordance with the relevant CoA, REMMs and guidelines, unexpected contamination will be subjected to an initial assessment when discovered. An LSBJV EM or Environmental Coordinator (EC) will assess the situation and if considered necessary, commission a suitably qualified contamination specialist to undertake a contamination investigation in the area of the find. The material will be classified in accordance with the Waste Classification Guidelines Part 1: Classifying Waste (NSW EPA 2014).

If contamination is confirmed, it will be managed in accordance with this guideline, the Roads and Maritime Guideline for the Management of Contamination (2013), Roads and Maritime Environmental Incident Classification and Reporting Procedure (2017) and guidelines endorsed under Section 105 of the *Contaminated Land Management Act 1997* (NSW) (CLM Act). The EM (in consultation with specialists and the relevant authorities if necessary) will determine the appropriate management measures to be implemented. This may include treatment or offsite disposal. If the material is to be disposed of offsite, ensure the waste facility is appropriately licensed.

If contamination posing a risk to human or ecological receptors is identified as a result of these further investigations, a Remediation Action Plan (RAP) will be prepared.

For activities within the vicinity of actual or suspected contaminated land LSBJV will submit the RAP at least 5 working days prior. The Nominated Authority may request additional information in respect of the submitted documents. In accordance with Roads and Maritime QA Specification G36 and relevant EPA guidelines, the RAP will include the following:

- (a) testing requirements for any contaminated material prior to its disposal off site
- (b) validation plan, which must include the area in the immediate vicinity of (both below and adjacent to) the known contamination
- (c) implications of the validation results on the waste classification for material that may be excavated in the vicinity of the known contamination.

Any changes to the RAP must be agreed to by the Roads and Maritime Representative.

Remedial actions are to be incorporated into specific Environmental Work Method Statements (EWMS) and training provided to site personnel and subcontractors through inductions and toolbox training sessions. Remedial works are to be undertaken in line with the EWMS.

7 Notification and Reporting

If LSBJV uncover any suspected or potential contamination exposed during construction activities the LSBJV Environmental Manager will notify Sydney Motorway Corporation (SMC) and Roads and Maritime in accordance with the requirements of Roads and Maritime QA Specification G36.

Records containing details of the unexpected finds will be maintained by LSBJV and stored appropriately.

If material is to be disposed of offsite, material tracking would be undertaken in accordance with the *Protection of the Environment Operations Act 1997* and the measures outlined in Section 5.6 of the Waste Management Sub-plan.

Notification and reporting to authorities such as the EPA will be undertaken in accordance with the Roads and Maritime Guideline for the Management of Contamination (2013), NSW EPA Guidelines on the Duty to Report Contamination (2009) and *CLM Act 1997* where relevant. In the event that suspected contamination is uncovered during delivery of the Project the following would occur:

- Reporting under the “Reportable Event” category in accordance with the Roads and Maritime Environmental Incident Classification and Reporting Procedure (September 2017)
- Where it is deemed that the contamination has been, or could have been caused, or changed by the operations of LSBJV, the EPA would be notified in accordance with Section 60 of the *CLM Act 1997*.